

Microwave Digital Archive

IEEE Microwave Theory and Techniques Society

1975-1977

Welcome

Getting Started

Publications

Issues

Papers

Authors



Welcome

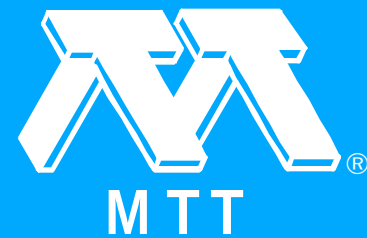
The Microwave Theory and Techniques Society of the IEEE has finished a complete archive of all reviewed and published material since 1953. Yearly updates of the published material will be compiled in the future. As digital media changes over the years, it will be necessary to update the format of the material, so this initial electronic release blazes a trail into the future.

The section "Getting Started" tells you how to optimize the Acrobat Reader Preferences to improve the readability of the document. If you need customer support before January 2001, call 831.657.2420 or 800.447.9100. If you find errors in the CD-ROM, e-mail a note to c.jackson@ieee.org, or mail a comment to the current President of the MTT Society.

Remember that the quality of the old journals is not perfect, and that some photographs will not be as clear as Technicolor. Also, the optical character recognition is good, but not perfect, so some spelling errors will occur. None the less, you can copy and paste the material for your own uses and personal study.

All papers were electronic files or images scanned from hard copy and converted to Adobe Acrobat PDF file format for cross-platform access. Since some of the papers were scanned from hard copy, the viewing quality will vary with the size and quality of fonts used. Even though the viewing quality on your monitor may vary, all papers print clearly.

Thank You and Enjoy!



IEEE

Contents



Welcome

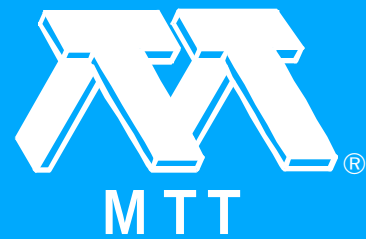
ACKNOWLEDGMENTS

This CD- ROM was assembled from the electronic files provided to us by Adam Philippidis at IEEE headquarters and from scanned originals provided by Ted Saad. Many people have contributed to the entire CD-ROM Archival effort. Most notably, Ted Saad provided nearly all the hard copy material, and sacrificed his entire collection of journals for the project. He also wrote a number of the original articles. Another notable contributor, Roger Pollard convinced the Society that this was a worthwhile project. The team at Sony Electronic Publishing Services, and Adam Philippidis, at the IEEE Headquarters, have also provided substantial amounts of help in completing this archival project.

REFERENCES

IEEE Catalog Number: JP-17-0-0-C-0

ISBN: 0-7803-9906-4



IEEE
Contents



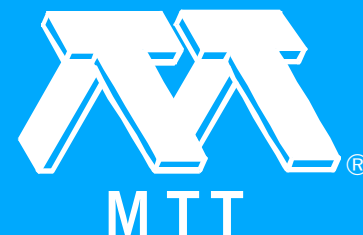
Welcome

COPYRIGHT

Copyright discussions are appropriate, although, at times they seem tedious. The amount of Intellectual Property contained in this Microwave Digital Archive is astounding. Please treat it with the respect that our profession demands.

Libraries are permitted to photocopy beyond the limits of U.S. copyright law, for private use of patrons, those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. For other copying, reprint, or republication permission, write to the Manager, IEEE Intellectual Property Rights, IEEE Operations Center, 445 Hoes Lane, Piscataway, NJ 08855-1331. All rights reserved.

Copyright © 1999 by The Institute of Electrical and Electronics Engineers, Inc.



IEEE

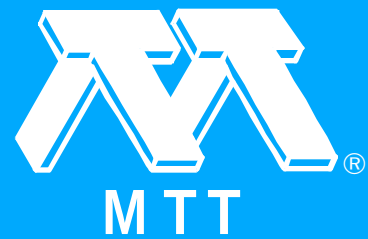
Contents



Welcome

TRADEMARKS

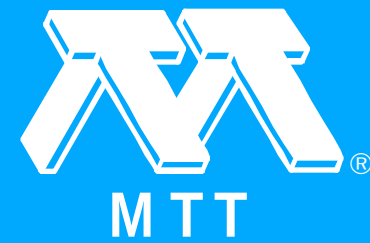
Sony is a registered trademark of Sony Corporation. Adobe, the Adobe logo, Acrobat and the Acrobat logo are trademarks of Adobe Systems Incorporated or its subsidiaries and may be registered in certain jurisdictions. Macintosh is a registered trademark of Apple Computer, Inc. HP is a registered trademark and HP-UX is a trademark of Hewlett-Packard Company. Motif is a trademark of Open Software Foundation, Inc. Solaris is a registered trademark of Sun Microsystems, Inc., Sun and OpenWindows are trademarks of Sun Microsystems, Inc. SPARC is a registered trademark of SPARC International, Inc. SPARCstation is a registered trademark of SPARC International, Inc., licensed exclusively to Sun Microsystems, Inc. and is based upon an architecture developed by Sun Microsystems, Inc. UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company, Ltd. Windows is a trademark of Microsoft Corporation. X Window System is a trademark of the Massachusetts Institute of Technology. I386, 486 and Pentium are trademarks of Intel Corporation. All other products or name brands are trademarks of their respective holders.



IEEE
Contents



Getting Started



IEEE

Contents

INTRODUCTION

This Electronic Guide file contains hypertext links to separate article files. Links are represented by colored text (e.g. a name or title); clicking on the text activates the link.

Before you start browsing and using the information on this CD-ROM, you will need to install Adobe Acrobat Reader + Search 3.0. If you already have Acrobat Reader installed on your system, make sure it is version 3.0 or higher and includes the Search plug-in.

In many instances, we refer to the “menu bar”, shown here for reference.

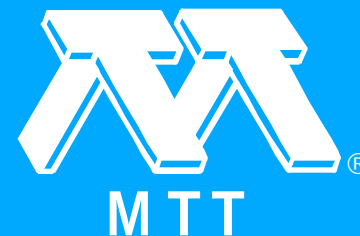


ACROBAT PREFERENCES

To make viewing and searching easier, we recommend changing two default Acrobat Preferences (found under File > Preferences on the menu bar.)



Getting Started



IEEE
Contents

In the dialog box shown for **General** Preferences, turn OFF the “Open Cross-Document Links in Same Window” option; this will keep the Guide file open when you view article files and allows you to return to the same page in the Guide when you close an article.

In the dialog box shown for **Search** Preferences, turn ON the “Show Fields” option so that Title, Author, Keywords, and Subject fields are visible when specifying search criteria. If for some reason this preference option is not present on your system, check to see that you have the Search plug-in installed. The

Search icon  will be present on the Acrobat Toolbar if the function is properly installed. Specifics of the Search function are described later in this section.

EXITING AN ARTICLE

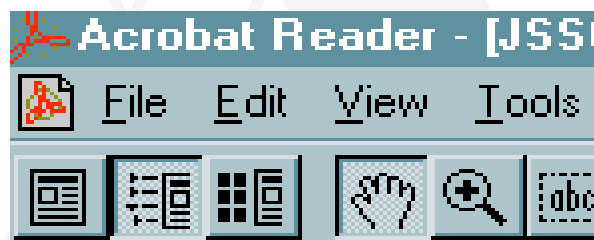
To exit an article after viewing, and return to the electronic guide, select File > Close from the menu bar. To switch between the article and the electronic guide or any other PDF file that is open, select “Window” and pick the open file you wish to return to.



Getting Started

USING BOOKMARKS

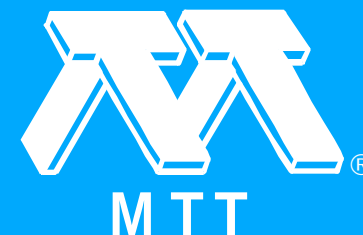
In addition to links, you can navigate through the Electronic Guide using Bookmarks. If they are not already visible, choose View > Bookmarks and Page from the menu bar or press the “Display Page and Bookmarks” button on the tool bar. A panel opens on the left side of the screen displaying Bookmarks in a hierarchy.



- Contents
- Welcome
- Getting Started
- ▷ □ Publications
- ▷ □ Authors
- ▷ □ Subjects
- ▷ □ Conferences

Each Bookmark corresponds to a page in the Guide. Click on the text in a Bookmark to go to that page.

Entries with lower level Bookmarks show an arrowhead, pointing down when subordinate Bookmarks are visible, pointing right when hidden. To view subordinate Bookmarks, click on the arrowhead. To hide them, click on the arrowhead again. Dragging the right margin of the bookmark panel resizes it.



IEEE

Contents



Getting Started

PRINTING ARTICLES

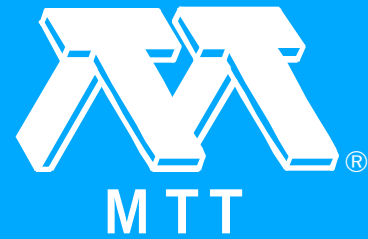
Articles may have text outside normal print-area defaults. We recommend selecting “Shrink to Fit” in the print menu (File > Print) to capture the complete image for your printout. This setting will become your new default.

SELECTING GRAPHICS

To copy graphics to the Clipboard, choose Tools > Select Graphics from the menu bar. The cursor changes to the cross-hair icon.

Drag a rectangle around the graphic to select it. When you release the mouse button, the selected graphic is highlighted.

Choose Edit > Copy from the menu bar to copy the selected graphic to the Clipboard. To view the graphic, choose Window > Show Clipboard. The graphic is copied in the WMF (Windows), PICT (Macintosh), or XPIXMAP (UNIX) format. With UNIX, the graphic is pasted in the primary selection.



IEEE

Contents



Getting Started

NAVIGATION BUTTONS

This Guide contains a variety of navigational aids to help you easily explore the contents.

Section Map

The Electronic Guide is constructed in sections: e.g. Sessions, Authors, Getting Started. The current section is shown at the top of each page. The “path” to this section is shown at the right. Clicking these text buttons moves you to the start of that section.

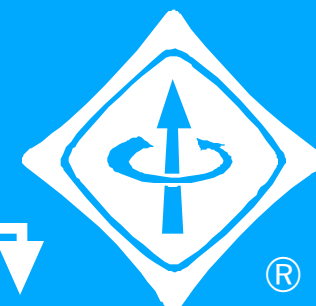
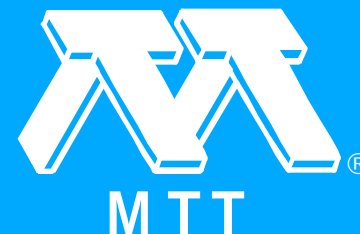
Next Page button

Click to advance to the next page in the section.

Previous Page button

Click to go back to the previous page in the section. The first and last pages of a section show only one button.

The Page Up and Page Down keys perform the same functions.

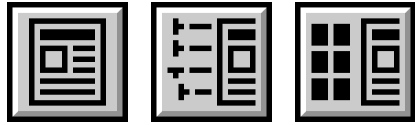


Contents

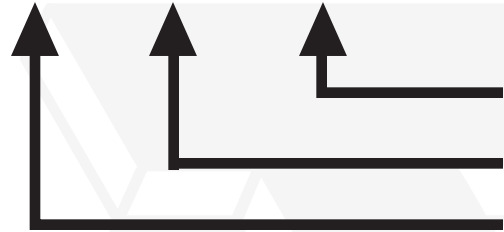


Getting Started

ACROBAT TOOLBAR



View Modes



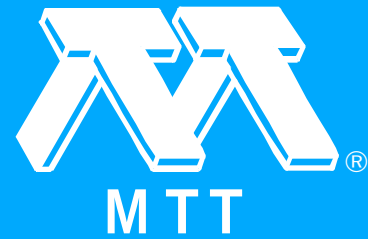
Display Thumbnails and Page
Display Bookmarks and Page
Display Page



Zoom/Selection



Select Text
Zoom In (Magnify)
Move Page Image



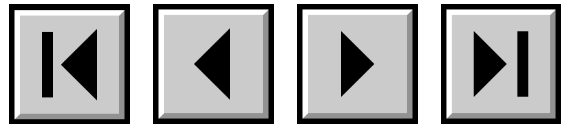
IEEE

Contents

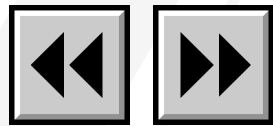
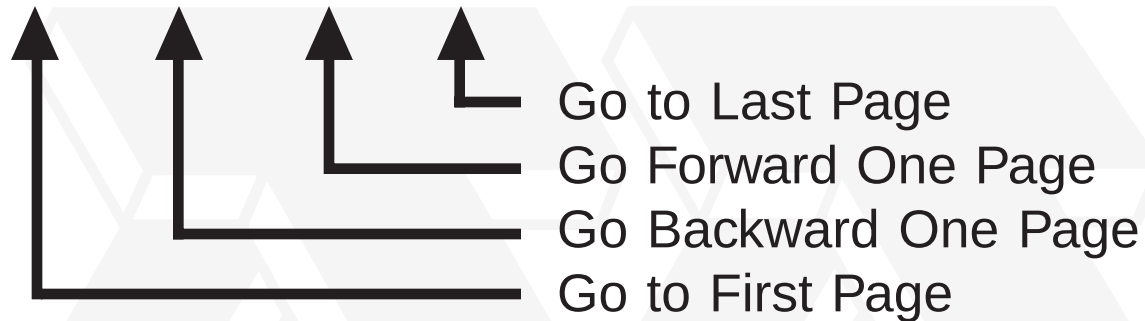


Getting Started

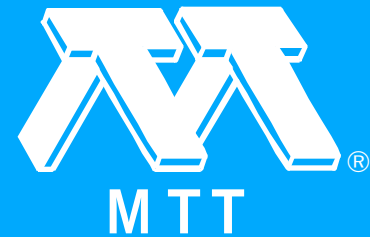
ACROBAT TOOLBAR (continued)



Navigation



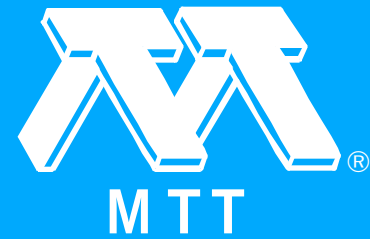
History



IEEE
Contents



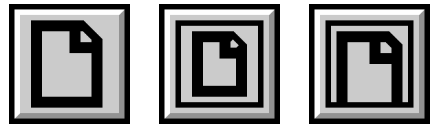
Getting Started



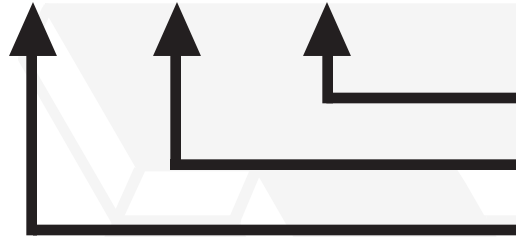
IEEE

Contents

ACROBAT TOOLBAR (continued)



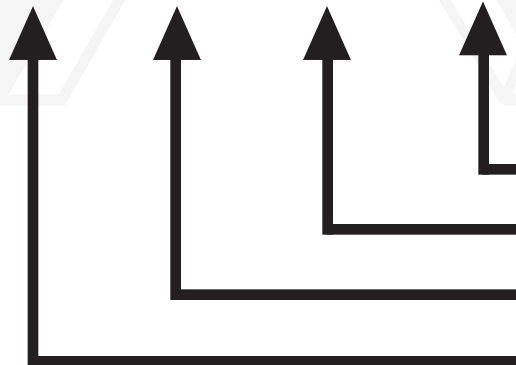
Page View



Fit Width
Fit Page
Actual Size



Find/Search



Next Hit
Previous Hit
View Search Results
Search
Find



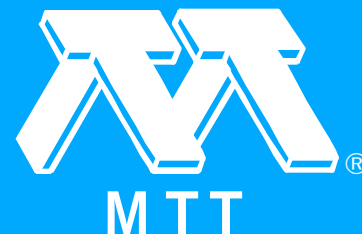
Getting Started

SEARCHING

Two types of searching are possible with Acrobat: Find and full-text Search. Choosing Find (from the Toolbar or Tools > Find) opens a dialog box. Type a search string in the field provided, check the appropriate options and press the “Find” button. Find searches linearly through the currently open Acrobat file (not necessarily the entire Electronic Guide) from the cursor forward.

Choosing the Search button or Search menu item (Tools > Search), selecting the Query item, opens a dialog box from which you can access the more powerful full-text search engine (if you installed Acrobat with the Search plug-in from this CD-ROM). Its dialog box is shown on the next page.

Typing a term in the text box at the top of the Search dialog box and pressing the “Search” button causes a full-text search of all words in the body of papers in the collection. Entering a term in one or more of the fixed fields (Title, Author, Subject or Keywords) will cause a search for hits in only those fields.



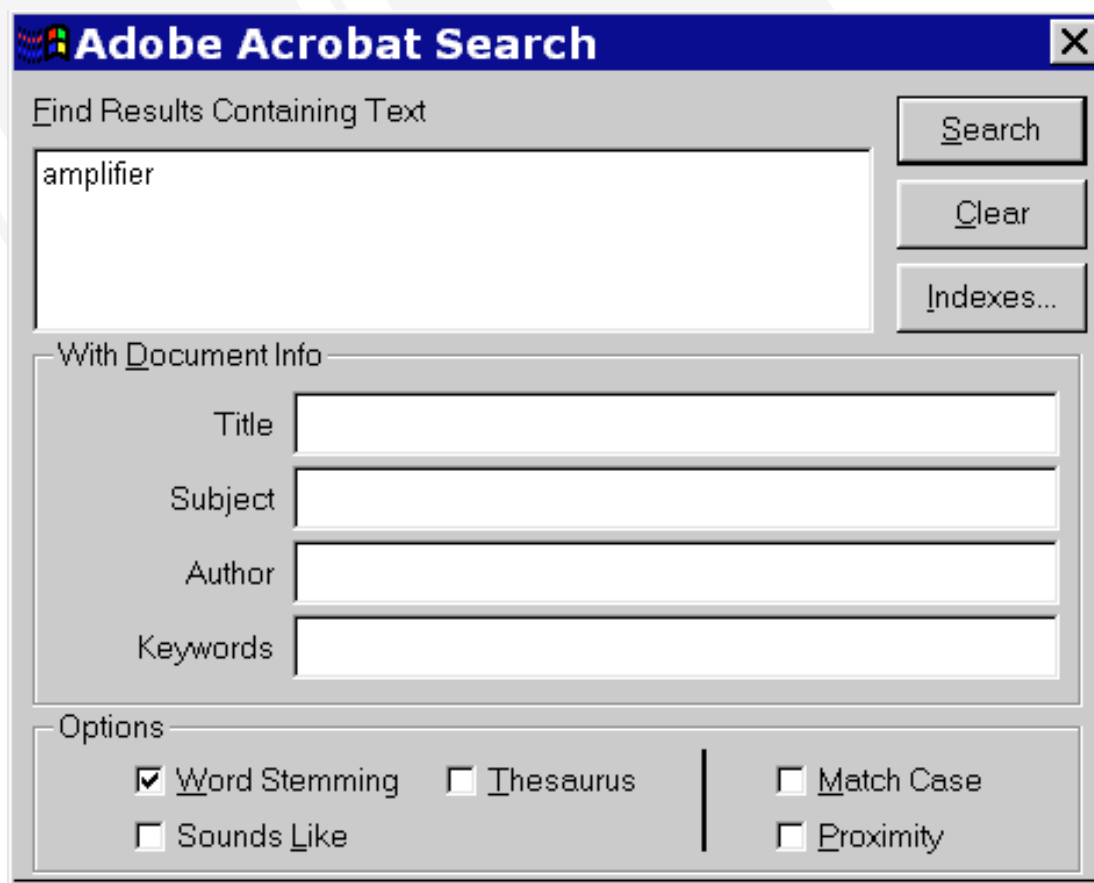
IEEE
Contents



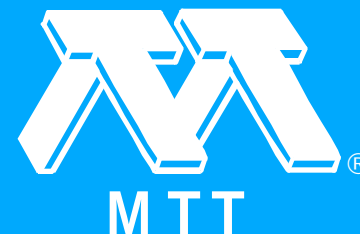
Getting Started

If you are not finding files you think should show in the results list, Acrobat may not be attached to the correct index file. To check, press the “Indexes...” button for a list of available indexes. If this title is not listed, press the “Add...” button and look in the root directory of the CD-ROM for a file called “index.pdx”. Click on that file to add it to the list. If none exists, this title was not indexed.

See the Search Online Guide (on Help menu) for more complete instructions on selecting appropriate options, constructing boolean queries, etc.



The screenshot shows the 'Adobe Acrobat Search' dialog box. It has a title bar with the Adobe logo and the text 'Adobe Acrobat Search'. The main area is titled 'Find Results Containing Text' and contains a text input field with the word 'amplifier'. To the right of this field are three buttons: 'Search', 'Clear', and 'Indexes...'. Below the main input field is a section titled 'With Document Info' containing four labeled text input fields: 'Title', 'Subject', 'Author', and 'Keywords'. At the bottom is an 'Options' section with four checkboxes: 'Word Stemming' (checked), 'Thesaurus' (unchecked), 'Match Case' (unchecked), and 'Sounds Like' (unchecked). The 'Proximity' checkbox is also present but is partially obscured by the bottom edge of the dialog box.



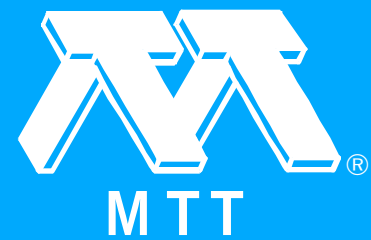
IEEE

Contents



Publications

- ❑ [1975 Transactions on Microwave Theory and Techniques](#)
- ❑ [1976 Transactions on Microwave Theory and Techniques](#)
- ❑ [1977 Transactions on Microwave Theory and Techniques](#)
- ❑ [1975 MTT-S International Microwave Symposium Digest of Technical Papers](#)
- ❑ [1976 MTT-S International Microwave Symposium Digest of Technical Papers](#)
- ❑ [1977 MTT-S International Microwave Symposium Digest](#)



IEEE

Contents

Click on title for a list of issues.

Issues by Publication



IEEE

[Contents](#)

[Publications](#)

1975 Transactions on Microwave Theory and Techniques

- ☐ Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)
- ☐ Feb. 1975 [T-MTT]
- ☐ Mar. 1975 [T-MTT]
- ☐ Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)
- ☐ May 1975 [T-MTT]
- ☐ Jun. 1975 [T-MTT]
- ☐ Jul. 1975 [T-MTT]
- ☐ Aug. 1975 [T-MTT]
- ☐ Sep. 1975 [T-MTT]
- ☐ Oct. 1975 [T-MTT]
- ☐ Nov. 1975 [T-MTT]
- ☐ Dec. 1975 [T-MTT] (1975 Symposium Issue)

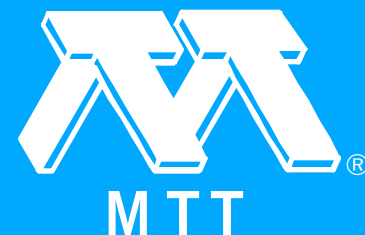
Click on issue for a list of papers.



Issues by Publication

1976 Transactions on Microwave Theory and Techniques

- ☐ [Jan. 1976 \[T-MTT\]](#)
- ☐ [Feb. 1976 \[T-MTT\]](#)
- ☐ [Mar. 1976 \[T-MTT\]](#)
- ☐ [Apr. 1976 \[T-MTT\]](#)
- ☐ [May 1976 \[T-MTT\]](#)
- ☐ [Jun. 1976 \[T-MTT\] \(Special Issue on Microwave Field-Effect Transistors\)](#)
- ☐ [Jul. 1976 \[T-MTT\]](#)
- ☐ [Aug. 1976 \[T-MTT\]](#)
- ☐ [Sep. 1976 \[T-MTT\]](#)
- ☐ [Oct. 1976 \[T-MTT\]](#)
- ☐ [Nov. 1976 \[T-MTT\] \(Special Issue on Millimeter Waves: Circuits, Components, and Systems\)](#)
- ☐ [Dec. 1976 \[T-MTT\] \(1976 Symposium Issue\)](#)



[Contents](#)

[Publications](#)

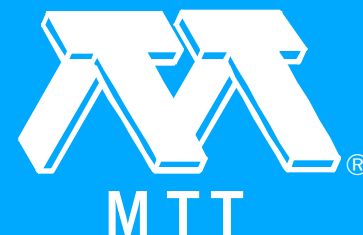
Click on issue for a list of papers.



Issues by Publication

1977 Transactions on Microwave Theory and Techniques

- ☐ Jan. 1977 [T-MTT]
- ☐ Feb. 1977 [T-MTT]
- ☐ Mar. 1977 [T-MTT]
- ☐ Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)
- ☐ May 1977 [T-MTT]
- ☐ Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)
- ☐ Jul. 1977 [T-MTT]
- ☐ Aug. 1977 [T-MTT]
- ☐ Sep. 1977 [T-MTT]
- ☐ Oct. 1977 [T-MTT]
- ☐ Nov. 1977 [T-MTT]



IEEE

Contents

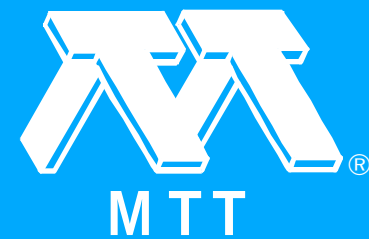
Publications

Click on issue for a list of papers.



Issues by Publication

▣ Dec. 1977 [T-MTT] (1977 Symposium Issue)



IEEE

Contents

Publications

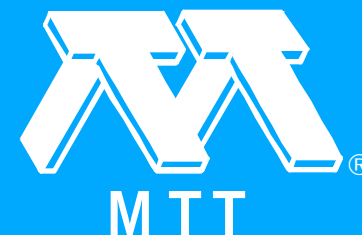
Click on issue for a list of papers.



Issues by Publication

1975 MTT-S International Microwave Symposium Digest of Technical Papers

□ [1975 \[MWSYM\]](#)



IEEE

[Contents](#)

[Publications](#)

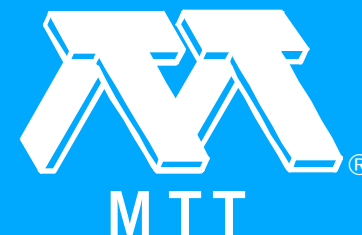
Click on issue for a list of papers.



Issues by Publication

1976 MTT-S International Microwave Symposium Digest of Technical Papers

□ [1976 \[MWSYM\]](#)



[Contents](#)

[Publications](#)

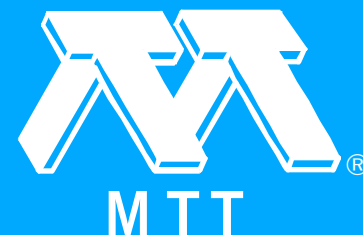
Click on issue for a list of papers.



Issues by Publication

1977 MTT-S International Microwave Symposium Digest

▣ [1977 \[MWSYM\]](#)



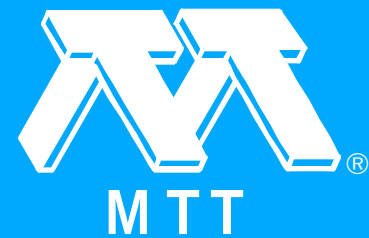
[Contents](#)

[Publications](#)

Click on issue for a list of papers.



Issues



IEEE

[Contents](#)

[Publications](#)

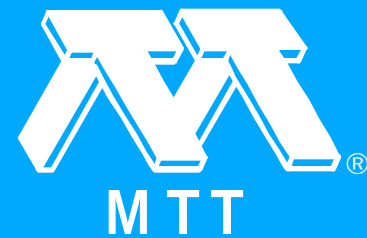
- ❑ Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)
- ❑ Feb. 1975 [T-MTT]
- ❑ Mar. 1975 [T-MTT]
- ❑ Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)
- ❑ May 1975 [T-MTT]
- ❑ Jun. 1975 [T-MTT]
- ❑ Jul. 1975 [T-MTT]
- ❑ Aug. 1975 [T-MTT]
- ❑ Sep. 1975 [T-MTT]
- ❑ Oct. 1975 [T-MTT]
- ❑ Nov. 1975 [T-MTT]
- ❑ Dec. 1975 [T-MTT] (1975 Symposium Issue)
- ❑ Jan. 1976 [T-MTT]
- ❑ Feb. 1976 [T-MTT]

Click on issue for a list of papers.



Issues

- ❑ Mar. 1976 [T-MTT]
- ❑ Apr. 1976 [T-MTT]
- ❑ May 1976 [T-MTT]
- ❑ Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)
- ❑ Jul. 1976 [T-MTT]
- ❑ Aug. 1976 [T-MTT]
- ❑ Sep. 1976 [T-MTT]
- ❑ Oct. 1976 [T-MTT]
- ❑ Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)
- ❑ Dec. 1976 [T-MTT] (1976 Symposium Issue)
- ❑ Jan. 1977 [T-MTT]
- ❑ Feb. 1977 [T-MTT]
- ❑ Mar. 1977 [T-MTT]



IEEE

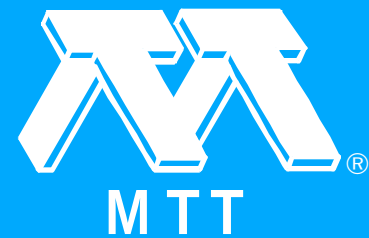
Contents

Publications

Click on issue for a list of papers.



Issues



IEEE

Contents

Publications

- ❑ Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)
- ❑ May 1977 [T-MTT]
- ❑ Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)
- ❑ Jul. 1977 [T-MTT]
- ❑ Aug. 1977 [T-MTT]
- ❑ Sep. 1977 [T-MTT]
- ❑ Oct. 1977 [T-MTT]
- ❑ Nov. 1977 [T-MTT]
- ❑ Dec. 1977 [T-MTT] (1977 Symposium Issue)
- ❑ 1975 [MWSYM]
- ❑ 1976 [MWSYM]
- ❑ 1977 [MWSYM]

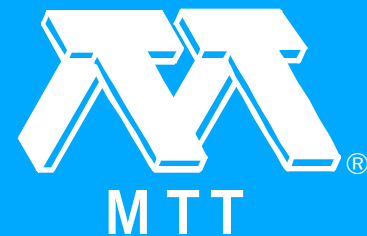
Click on issue for a list of papers.



Papers by Issue

Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)

- ☐ [Front Cover \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Editorial \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [An Introduction to Integrated Optics](#)
- ☐ [The Progress of Integrated Optics in Japan](#)
- ☐ [Heterostructure Injection Lasers](#)
- ☐ [Integrated Optics at 10.6- \$\mu\text{m}\$ Wavelength](#)
- ☐ [GaAs and GaAlAs Devices for Integrated Optics](#)
- ☐ [Optical Waveguide Modulators](#)
- ☐ [Nonreciprocal Magnetooptic Waveguides](#)
- ☐ [Radiation Fields of a Tapered Film and a Novel Film-to-Fiber Coupler](#)
- ☐ [Tapered Optical Directional Coupler](#)
- ☐ [Coupling from Multimode to Single-Mode Linear Waveguides Using Horn-Shaped Structures](#)



[Contents](#)

[Publications](#)

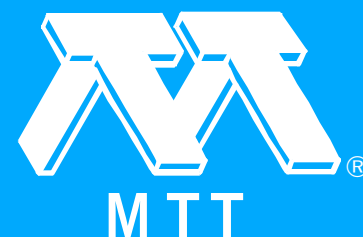
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ☐ Propagation, Attenuation, and Dispersion Characteristics of Inhomogeneous Dielectric Slab Waveguides
- ☐ Propagation Effects in Optical Fibers
- ☐ Pulse Propagation in Multimode Fibers with Frequency-Dependent Coupling
- ☐ Theory of Periodic Dielectric Waveguides
- ☐ Reflection at a Curved Dielectric Interface -- Electromagnetic Tunneling
- ☐ Radiation from Bends in Dielectric Rod Transmission Lines
- ☐ Rays, Beams, and Modes Pertaining to the Excitation of Dielectric Waveguides
- ☐ Modal Analysis of Coupling Problems in Optical Fibers
- ☐ Quasi-Guided Modes and Related Radiation Losses in Optical Dielectric Waveguides with External Higher Index Surroundings
- ☐ A Method for Measuring the Refractive Index Profile of Thin-Film Waveguides (Letters)



Contents

Publications

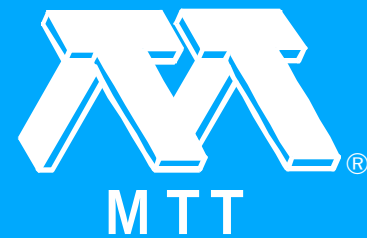
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Distributed Capacitance of a Thin-Film Electrooptic Light Modulator \(Letters\)](#)
- ❑ [Power Transfer of a Parallel Optical Fiber Directional Coupler \(Letters\)](#)
- ❑ [A Semi-Transparent Mirror-Type Directional Coupler for Optical Fiber Applications \(Letters\)](#)
- ❑ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Jan. 1975 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

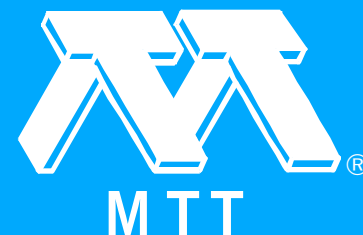
Click on title for a paper summary.



Papers by Issue

Feb. 1975 [T-MTT]

- ☐ [Front Cover \(Feb. 1975 \[T-MTT\]\)](#)
- ☐ [Scattering of Surface Waves by Metallic Obstacles on the Dielectric-Image Line](#)
- ☐ [Scattering of Surface Waves at a Dielectric Discontinuity on a Planar Waveguide](#)
- ☐ [On the Resonances of a Dielectric Resonator of Very High Permittivity](#)
- ☐ [The Excitation of Dielectric Resonators of Very High Permittivity](#)
- ☐ [High Order Modes in a Spherical Fabry-Perot Resonator](#)
- ☐ [A Unified Variational Solution to Microstrip Array Problems](#)
- ☐ [Wide-Band Network Modeling of Interacting Inductive Irises and Steps](#)
- ☐ [Long-Wavelength Analysis of Plane Wave Irradiation of a Prolate Spheroid Model of Man](#)



IEEE

[Contents](#)

[Publications](#)

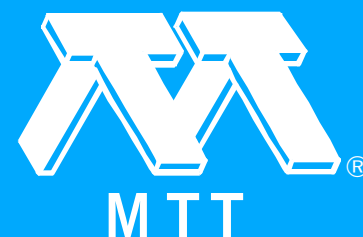
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ☐ Design Equations for an Interdigitated Directional Coupler (Short Papers)
- ☐ Intermodulation Distortion and Gain Compression in Varactor Frequency Converters (Short Papers)
- ☐ Slant Dielectric Interface Discontinuity in a Waveguide (Short Papers)
- ☐ The Relations Between Scalar Modes in a Lenslike Medium and Vector Modes in a Self-Focusing Optical Fiber (Short Papers)
- ☐ On the Expansion of Axial Field Components in Terms of Normal Modes in Perturbed Waveguides (Letters)
- ☐ Power Deposition in a Spherical Model of Man Exposed to 1-20 MHz Electromagnetic Fields (Correction)
- ☐ Variational Solution of Integral Equations (Correction)
- ☐ Surface Electromagnetic Modes of a Ferrite Slab (Correction)
- ☐ Contributors (Feb. 1975 [T-MTT])
- ☐ Back Cover (Feb. 1975 [T-MTT])



Contents

Publications

Issues

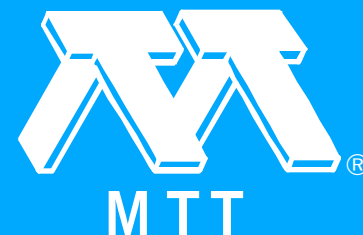
Click on title for a paper summary.



Papers by Issue

Mar. 1975 [T-MTT]

- ☐ [Front Cover \(Mar. 1975 \[T-MTT\]\)](#)
- ☐ [Editor's Note \(Mar. 1975 \[T-MTT\]\)](#)
- ☐ [Comments from the Editor \(Mar. 1975 \[T-MTT\]\)](#)
- ☐ [Harmonically Pumped Stripline Down-Converter](#)
- ☐ [An Integrated-Circuit Balanced Mixer, Image and Sum Enhanced](#)
- ☐ [In-Line Signal Circuit for Broad-Band Parametric Amplifiers](#)
- ☐ [Design Data for Radial-Waveguide Circulators Using Partial-Height Ferrite Resonators](#)
- ☐ [Computer Analysis of Short-Boundary Planar Circuits](#)
- ☐ [Broad-Band 180° Phase Shift Section in X Band \(Short Papers\)](#)
- ☐ [Laser Fiber Coupling with a Hyperbolic Lens \(Short Papers\)](#)
- ☐ [RF Cavity Irradiation Dosimetry \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

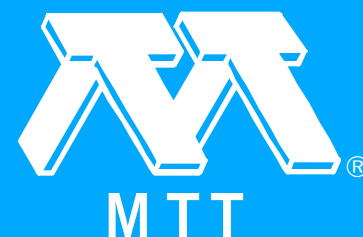
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Behavioral Suppression by 383-MHz Radiation (Short Papers)
- ❑ The Double-Swept-Frequency Locating Reflectometer (Short Papers)
- ❑ Slotted Line Measurements for Propagation Constant in Lossy Waveguide (Short Papers)
- ❑ Measurement of the Electromagnetic-Field Components in a Rectangular Drift Tube-Loaded Cavity Using Various Perturbing Objects (Short Papers)
- ❑ A New Type of Isolator Using the Edge-Guided Mode (Letters)
- ❑ A Lower Limit on the Interaction Between Symmetrical Odd-Mode Fringing Capacitances (Letters)
- ❑ Contributors (Mar. 1975 [T-MTT])
- ❑ Back Cover (Mar. 1975 [T-MTT])



IEEE

Contents

Publications

Issues

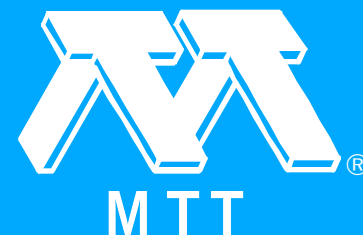
Click on title for a paper summary.



Papers by Issue

Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)

- ☐ [Front Cover \(Apr. 1975 \[T-MTT\]\)](#)
- ☐ [Foreword \(Apr. 1975 \[T-MTT\]\)](#)
- ☐ [A High-Capacity Digital Communication System Using TE/sub 01/ Transmission in Circular Waveguide](#)
- ☐ [400-Mb/s QPSK Repeater for 20-GHz Digital Radio-Relay System](#)
- ☐ [Improved Microwave Repeaters for Hungarian All-Solid-State Communications Systems](#)
- ☐ [A Low-Cost Multiple-Channel 12-GHz Receiver for Satellite Television Broadcasting](#)
- ☐ [Optimum Modulator Design for a High-Sensitivity Homodyne System--Binary Modulation Method](#)
- ☐ [Linearity Improvement of Microwave FM Oscillators by Harmonic Tuning](#)



IEEE

[Contents](#)

[Publications](#)

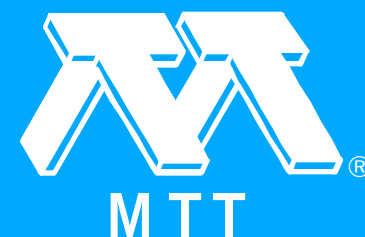
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ☐ Gunn-Effect Amplifiers for Microwave Communication Systems in X, Ku, and Ka Bands
- ☐ Analysis and Design of a Low-Noise X-Band MIC Mixer 1-GHz IF Amplifier
- ☐ Guidance of 100-GHz Beams by Cylindrical Mirrors
- ☐ Molecular Transfer Characteristics of Air Between 40 and 140 GHz
- ☐ Evaluation of Linearity by Transformation of the Amplitude Characteristic
- ☐ A Dynamic Calibration Method for Biphasic Phase-Shift-Keyed Modulators
- ☐ Contributors (Apr. 1975 [T-MTT])
- ☐ Back Cover (Apr. 1975 [T-MTT])



Contents

Publications

Issues

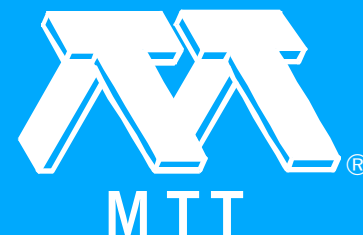
Click on title for a paper summary.



Papers by Issue

May 1975 [T-MTT]

- ☐ [Front Cover \(May 1975 \[T-MTT\]\)](#)
- ☐ [Propagation Along a Braided Coaxial Cable in a Circular Tunnel](#)
- ☐ [Propagation In Dielectric-Lined Square Waveguides](#)
- ☐ [Minimum-Phase Behavior of Random Media](#)
- ☐ [Statistical Coupled Equations in Lossless Optical Fibers](#)
- ☐ [Symmetry-Induced Modal Characteristics of Uniform Waveguides -- I: Summary of Results](#)
- ☐ [Symmetry-Induced Modal Characteristics of Uniform Waveguides -- II: Theory](#)
- ☐ [On the Performance of the Least Squares Method for Waveguide Junctions and Discontinuities \(Short Papers\)](#)
- ☐ [The Solution of Electromagnetic Eigenvalue Problems by Least Squares Boundary Residuals \(Short Papers\)](#)
- ☐ [The Microstrip Double-Ring Resonator \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

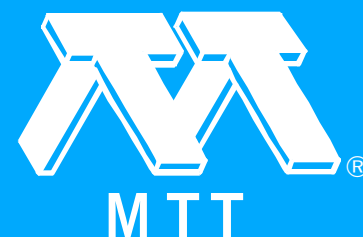
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [A Coupled-Line Model for Dispersion in Parallel-Coupled Microstrips \(Short Papers\)](#)
- ❑ [The Phase Shift Through Symmetrical 3-Port Circulators \(Short Papers\)](#)
- ❑ [Power Generation and Efficiency in GaAs Traveling-Wave Amplifiers \(Short Papers\)](#)
- ❑ [Dispersion of Nonlinear Elements as a Source of Electromagnetic Shock Structure \(Letters\)](#)
- ❑ [Rebuttal of "Dispersion of Nonlinear Elements as a Source of Electromagnetic Shock Structure" \(Letters\)](#)
- ❑ [Characterization of Microwave Oscillator and Amplifier Circuits Using an IMPATT Diode Biased Below Breakdown \(Comments and Authors' Reply\)](#)
- ❑ [The Numerical Solution of Some Important Transmission-Line Problems \(Correction\)](#)
- ❑ [Microstrip Discontinuity Capacitances for Right-Angle Bends, T Junctions, and Crossings \(Correction\)](#)



IEEE

[Contents](#)

[Publications](#)

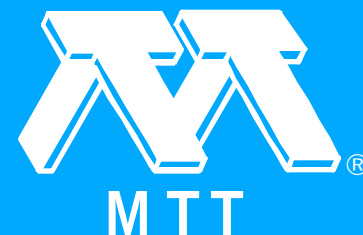
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [An S-Band Radiometer Design with High Absolute Precision \(Comments\)](#)
- ❑ [The ZEPLS Program for Solving Characteristic Equations of Electromagnetic Structures \(Computer Program Descriptions\)](#)
- ❑ [Contributors \(May 1975 \[T-MTT\]\)](#)
- ❑ [Back Cover \(May 1975 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.

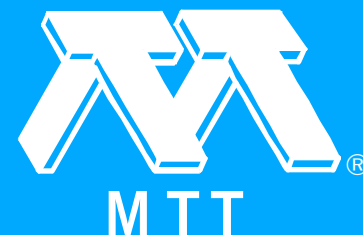


Papers by Issue

Jun. 1975 [T-MTT]

- ☐ [Front Cover \(Jun. 1975 \[T-MTT\]\)](#)
- ☐ [Performance of Dual-Gate GaAs MESFET's as Gain-Controlled Low-Noise Amplifiers and High-Speed Modulators](#)
- ☐ [High Data-Rate Solid-State Millimeter-Wave Transmitter Module](#)
- ☐ [Frequency Multiplication by a P-I-N Diode when Driven into Avalanche Breakdown](#)
- ☐ [The Design of Coupled Microstrip Lines](#)
- ☐ [Effect of 2450-MHz Radiation on the Rabbit Eye](#)
- ☐ [Equivalent Circuit of the Schottky-Barrier Field-Effect Transistor at Microwave Frequencies \(Short Papers\)](#)
- ☐ [Broad-Band Varactor-Tuned IMPATT-Diode Oscillator \(Short Papers\)](#)
- ☐ [X-Band Microstrip-Inserted Puck Circulator Using Arc-Plasma-Sprayed Ferrite \(Short Papers\)](#)

Click on title for a paper summary.



IEEE

[Contents](#)

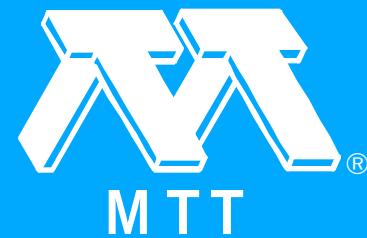
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ A Millimeter-Wave Reflection-Beam Isolator (Short Papers)
- ❑ Numerical Analysis of Eigenvalue Solution of Disk Resonator (Short Papers)
- ❑ A New Class of Nonreciprocal Components Using Slot Line (Short Papers)
- ❑ The Edge-Guided-Wave Circulator (Short Papers)
- ❑ Measurements of Intercavity Couplings (Short Papers)
- ❑ Loss Considerations for Microstrip Resonators (Short Papers)
- ❑ Microwave Measurement of the Temperature Coefficient of Permittivity for Sapphire and Alumina (Short Papers)
- ❑ Electromagnetic Power Absorption in Anisotropic Tissue Media (Short Papers)
- ❑ Fiber and Diffused Waveguide Structures for Distributed-Feedback Lasers (Short Papers)
- ❑ Error in Impedance Measurement When the Signal is Introduced Across the Slotted-Line Probe (Comments and Author's Reply)



IEEE

Contents

Publications

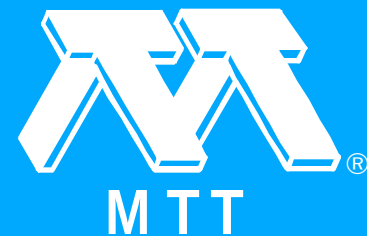
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [A Class of Waveguide Filters for Over-Moded Applications \(Correction\)](#)
- ❑ [Contributors \(Jun. 1975 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Jun. 1975 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

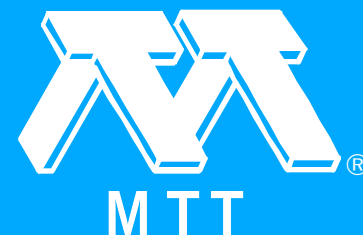
Click on title for a paper summary.



Papers by Issue

Jul. 1975 [T-MTT]

- ☐ [Front Cover \(Jul. 1975 \[T-MTT\]\)](#)
- ☐ [Analysis of Coupled Slots and Coplanar Strips on Dielectric Substrate](#)
- ☐ [Scattering Matrices of Junction Circulator with Chebyshev Characteristics](#)
- ☐ [Propagation in Rectangular Waveguides with Arbitrary Internal and External Media](#)
- ☐ [Randomly Imperfect Waveguides for Millimeter and Submillimeter Wavelengths for Long-Distance Transmission Applications](#)
- ☐ [Propagation of Light Beam through Lens-Like Media with Complex Permittivity](#)
- ☐ [A Method for the Calculation of the Radiation-Pattern and Mode-Conversion Properties of a Solid-State Heterojunction Laser](#)



[Contents](#)

[Publications](#)

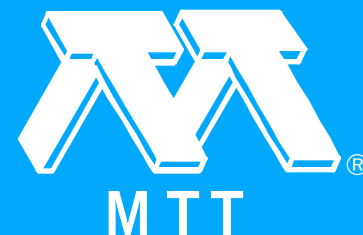
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Characteristic Impedance and Field Patterns of the Shielded Microstrip on a Ferrite Substrate (Short Papers)
- ❑ Capacitance of a Circular Disk for Applications in Microwave Integrated Circuits (Short Papers)
- ❑ A Note on Green's Function for Microstrip (Short Papers)
- ❑ Field Propagation in an Open-Beam Waveguide (Short Papers)
- ❑ Application of the Beam Mode Expansion to the Analysis of Noise Reduction Structure (Short Papers)
- ❑ Contributors (Jul. 1975 [T-MTT])
- ❑ Overseas Abstracts (Jul. 1975 [T-MTT])
- ❑ Back Cover (Jul. 1975 [T-MTT])



Contents

Publications

Issues

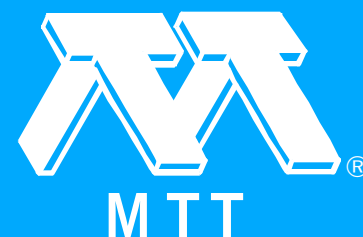
Click on title for a paper summary.



Papers by Issue

Aug. 1975 [T-MTT]

- ☐ Front Cover (Aug. 1975 [T-MTT])
- ☐ Analytic Constraints on Electromagnetic Field Computations
- ☐ Numerical Solution of Steady-State Electromagnetic Scattering Problems Using the Time-Dependent Maxwell's Equations
- ☐ Worst Case Network Tolerance Optimization
- ☐ A New Fast and Accurate Algorithm for the Computation of Microstrip Capacitances
- ☐ Calculation of Microstrip Discontinuity Inductances
- ☐ The Equivalent Circuit of Some Microstrip Discontinuities
- ☐ Design and Performance of X-Band Oscillators with GaAs Schottky-Gate Field-Effect Transistors
- ☐ Harmonic Mixing with an Antiparallel Diode Pair (Aug. 1975 [T-MTT])
- ☐ Effect of Temperature on Device Admittance of GaAs and Si IMPATT Diodes



Contents

Publications

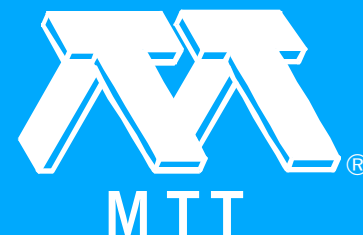
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Explicit Design Formulas for Waveguide Single-Sided Filters](#)
- ❑ [Temperature-Stabilized 1.7-GHz Broad-Band Lumped-Element Circulator](#)
- ❑ [Low-Noise Design of Microwave Transistor Amplifiers \(Short Papers\)](#)
- ❑ [Bias Frequency Modulation of GaAs Millimeter-Wave Diode Oscillators \(Short Papers\)](#)
- ❑ [Variation of the Electrical Characteristics of an Inhomogeneous Microstrip Line with the Dielectric Constant of the Substrate and with the Geometrical Dimensions \(Short Papers\)](#)
- ❑ [Inductance of Nonstraight Conductors Close to a Ground Return Plane \(Short Papers\)](#)
- ❑ [Prototype Characteristics for a Class of Dual-Mode Filters \(Short Papers\)](#)
- ❑ [Approximations for the Symmetrical Parallel-Strip Transmission Line \(Letters\)](#)



IEEE

[Contents](#)

[Publications](#)

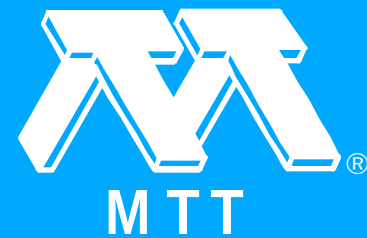
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [An Accurate Determination of the Characteristic Impedance of the Coaxial System Consisting of a Square Concentric with a Circle \(Letters\)](#)
- ❑ [Transmission Line Impedance Matching Using the Smith Chart \(Comments\)](#)
- ❑ [An Alternate Derivation and Procedure for Cristal's Transformation for Transmission-Line Networks \(Letters\)](#)
- ❑ [Contributors \(Aug. 1975 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Aug. 1975 \[T-MTT\]\)](#)



[Contents](#)

[Publications](#)

[Issues](#)

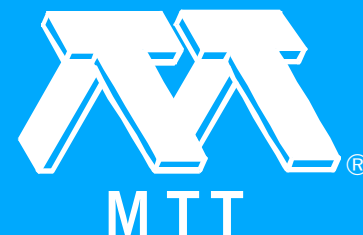
Click on title for a paper summary.



Papers by Issue

Sep. 1975 [T-MTT]

- ☐ [Front Cover \(Sep. 1975 \[T-MTT\]\)](#)
- ☐ [Optical Fibers with Coupled Dispersive Modes](#)
- ☐ [Spectral-Domain Calculation of Microstrip Characteristic Impedance](#)
- ☐ [Circular Waveguide with Sinusoidally Perturbed Walls](#)
- ☐ [Asymmetric Coupled Transmission Lines in an Inhomogeneous Medium](#)
- ☐ [Long-Wavelength Electromagnetic Power Absorption in Prolate Spheroidal Models of Man and Animals](#)
- ☐ [Bias-Tuning and Modulation Characteristics of Transferred-Electron Oscillators](#)
- ☐ [The Method of Series Expansion in the Frequency Domain Applied to Multidielectric Transmission Lines \(Short Papers\)](#)
- ☐ [Useful Matrix Chain Parameter Identities for the Analysis of Multiconductor Transmission Lines \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

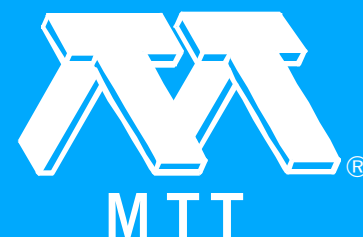
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Green's Function in a Region with Inhomogeneous, Isotropic Dielectric Media (Short Papers)
- ❑ On the Question of Computation of the Dyadic Green's Function at the Source Region in Waveguides and Cavities (Short Papers)
- ❑ Enhancement of Surface-Acoustic-Wave Piezoelectric Coupling in Three-Layer Substrates (Short Papers)
- ❑ Microwave Propagation in Rectangular Waveguide Containing a Semiconductor Subject to a Transverse Magnetic Field (Short Papers)
- ❑ Transmission Line Transformation Between Arbitrary Impedances Using the Smith Chart (Letters)
- ❑ Analysis of DC Blocks Using Coupled Lines (Letters)
- ❑ The Synthesis of Quarter-Wave Transformers, Low-Pass and Half-Wave Filters in the Sine Plane (Letters)
- ❑ Single Hybrid Tee Frequency Discriminator (Letters)
- ❑ Broadside-Coupled Strips in a Layered Dielectric Medium (Correction)



IEEE

Contents

Publications

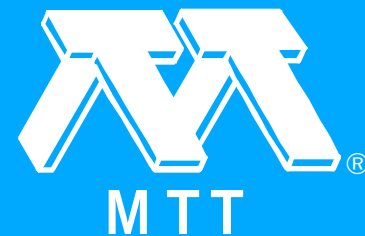
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Radiation from Curved Dielectric Slabs and Fibers (Correction)
- ☐ Contributors (Sep. 1975 [T-MTT])
- ☐ Back Cover (Sep. 1975 [T-MTT])



IEEE

Contents

Publications

Issues

Click on title for a paper summary.

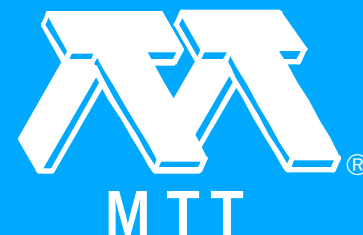


Papers by Issue

Oct. 1975 [T-MTT]

- ☐ [Front Cover \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [Low-Noise Room-Temperature and Cryogenic Mixers for 80-120 GHz](#)
- ☐ [New Waveguide Structures for Millimeter-Wave and Optical Integrated Circuits \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [Computation of Coplanar-Type Strip-Line Characteristics by Relaxation Method and its Application to Microwave Circuits](#)
- ☐ [Efficient Minimax Design of Networks without Using Derivatives](#)
- ☐ [Microwave Effect on Rabbit Superior Cervical Ganglion \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [Nonreciprocal Delay Line for Use in S Band Tubes](#)
- ☐ [An Annotated Bibliography of Microwave Circulators and Isolators: 1968-1975](#)
- ☐ [Measured Odd- and Even-Mode Dispersion of Coupled Microstrip Lines \(Short Papers\)](#)

Click on title for a paper summary.



IEEE

[Contents](#)

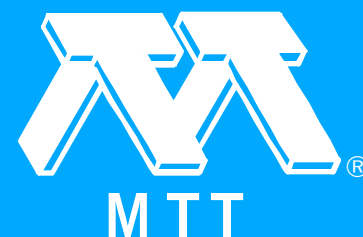
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ A Technique for Determining the Local Oscillator Waveforms in a Microwave Mixer (Short Papers)
- ❑ Wide-Band Characteristics of a Coaxial-Cavity Solid-State Device Mount (Short Papers)
- ❑ Wide-Bandwidth Millimeter-Wave Gunn Amplifier in Reduced-Height Waveguide (Short Papers)
- ❑ Optimization of Microwave Networks (Short Papers)
- ❑ Minimax Optimization by Algorithms Employing Modified Lagrangians (Short Papers)
- ❑ Integrated TRAPATT Diode Arrays (Short Papers)
- ❑ Commercial Glow Discharge Tubes As Detectors of X-Band Radiation (Short Papers)
- ❑ Light Transmittance and Microwave Attenuation of a Gold-Film Coating on a Plastic Substrate (Short Papers)
- ❑ NOVA (Network Optimization Via Adjoints) (Computer Program Descriptions)
- ❑ Contributors (Oct. 1975 [T-MTT])



IEEE

Contents

Publications

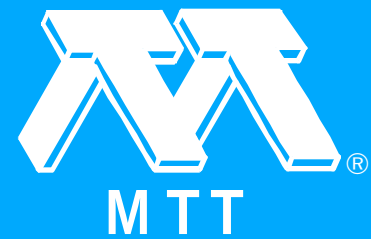
Issues

Click on title for a paper summary.



Papers by Issue

■ [Back Cover \(Oct. 1975 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

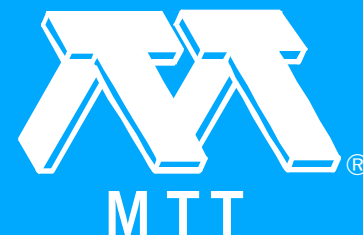
Click on title for a paper summary.



Papers by Issue

Nov. 1975 [T-MTT]

- ☐ [Front Cover \(Nov. 1975 \[T-MTT\]\)](#)
- ☐ [Fundamental- and Harmonic-Frequency Circuit-Model Analysis of Interdigital Transducers with Arbitrary Metallization Ratios and Polarity Sequences](#)
- ☐ [A Chebyshev Approximation Method for Microstrip Problems](#)
- ☐ [Numerical Solution of Coupling Between Two Collinear Parallel-Plate Waveguides](#)
- ☐ [Nondegenerate Surface-Wave Mode Coupling Between Dielectric Waveguides](#)
- ☐ [Single-Mode Pulse Dispersion in Optical Waveguides](#)
- ☐ [Computation of the Electromagnetic Fields and Induced Temperatures Within a Model of the Microwave-Irradiated Human Eye](#)
- ☐ [Even- and Odd-Mode Waves for Nonsymmetrical Coupled Lines in Nonhomogeneous Media](#)



[Contents](#)

[Publications](#)

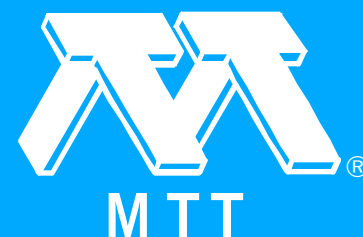
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ☐ Annotated Literature Survey of Microwave Ferrite Control Components and Materials for 1968-1974
- ☐ Effect of Discontinuities on the Group Delay of a Microwave Transmission Line (Short Papers)
- ☐ Performance Characteristics of 4-Port Stripline Circulators (Short Papers)
- ☐ Insertion Loss of 3-Port Circulator with One Port Terminated in Variable Short Circuit (Short Papers)
- ☐ Application of a Property of the Airy Function to Fiber Optics (Short Papers)
- ☐ The Relation of Teratogenesis in Tenebrio Molitor to the Incidence of Low-Level Microwaves (Short Papers)
- ☐ The Coupling of a Single-Ridge Waveguide to a Fabry-Perot Resonator (Short Papers)
- ☐ Radiation from Curved Dielectric Slabs and Fibers (Comments)
- ☐ Contributors (Nov. 1975 [T-MTT])
- ☐ Join IEEE (Advertisement) (Nov. 1975 [T-MTT])



IEEE

Contents

Publications

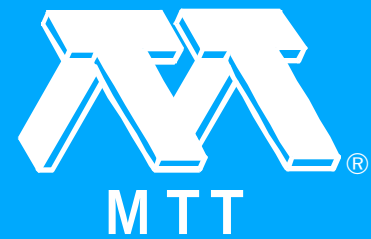
Issues

Click on title for a paper summary.



Papers by Issue

■ Back Cover (Nov. 1975 [T-MTT])



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.



Papers by Issue



IEEE

Contents

Publications

Issues

Dec. 1975 [T-MTT] (1975 Symposium Issue)

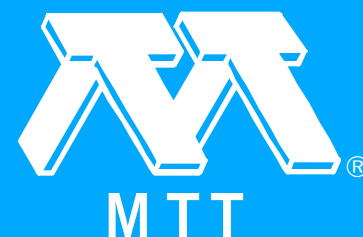
- ☐ [Front Cover \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Table of Contents \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Editor's Overview \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [International Microwave Symposium \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [MTT Awards for 1974](#)
- ☐ [The 1975 S-MTT National Lectureship](#)
- ☐ [Microstrip Varactor-Tuned Millimeter-Wave IMPATT Diode Oscillators \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers](#)
- ☐ [Satellite Altimetry Applications \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Automated Calibration of Directional-Coupler-Bolometer-Mount Assemblies \(Dec. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Three-Dimensional Transmission-Line Matrix Computer Analysis of Microstrip Resonators
- ❑ Microstrip Excitation of Magnetostatic Surface Waves: Theory and Experiment
- ❑ Tapped-Line Coupled Transmission Lines with Applications to Interdigital and Compline Filters (Dec. 1975 [T-MTT])
- ❑ Synthesis of Interstage Networks of Prescribed Gain Versus Frequency Slopes
- ❑ Conditions of Strongest Electromagnetic Power Deposition in Man and Animals
- ❑ Modeling and Computer Simulation of a Microwave-to-DC Energy Conversion Element (Dec. 1975 [T-MTT])
- ❑ IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature (Dec. 1975 [T-MTT])
- ❑ The Operation of S-Band TRAPATT Oscillators with Tuning at Multiple Harmonic Frequencies (Short Papers)
- ❑ Picosecond-Pulse Sequential Waveform Generation (Short Papers)



IEEE

Contents

Publications

Issues

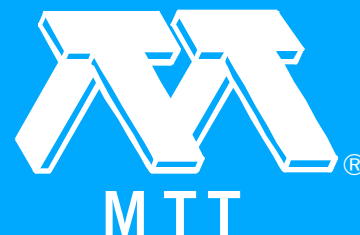
Click on title for a paper summary.



Papers by Issue

- ❑ Depolarization Measurements on the ATS-6 20-GHz Downlink: A Description of the VPI & SU Experiment and Some Initial Results (Short Papers)
- ❑ Microwave Scattering from the Ocean Surface (Short Papers)
- ❑ Microwave Irradiation Design Using Dielectric Lenses (Short Papers)
- ❑ On the Synthesis of Waveguides and Cavities Realized with Nonseparable Solutions of Helmholtz Wave Equation (Short Papers)
- ❑ Tapered Asymmetric Microstrip Magic Tee (Short Papers)
- ❑ Evaluation of the Equivalent Circuit Parameters of Microstrip Discontinuities through Perturbation of a Resonant Ring (Short Papers)
- ❑ The Accurate Measurement of Range by the Use of Microwave Delay Line Techniques (Short Papers)
- ❑ A Transferred-Electron Frequency Memorizer (Short Papers)

Click on title for a paper summary.



Contents

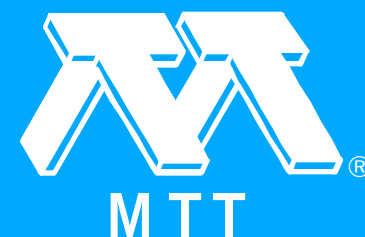
Publications

Issues



Papers by Issue

- ❑ [Nondestructive Measurement of Complex Permittivity for Dielectric Slabs \(Short Papers\)](#)
- ❑ [Integrated Diode Phase-Shifter Elements for an X-Band Phased-Array Antenna \(Short Papers\)](#)
- ❑ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ❑ [Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-23, 1975](#)
- ❑ [Join IEEE \(Advertisement\) \(Dec. 1975 \[T-MTT\]\)](#)
- ❑ [Annals of the IEEE \(Advertisement\) \(Dec. 1975 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Dec. 1975 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

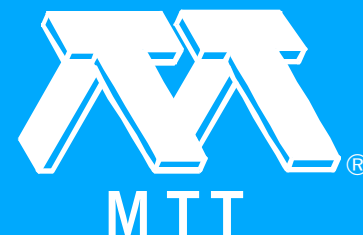
Click on title for a paper summary.



Papers by Issue

Jan. 1976 [T-MTT]

- ☐ [Front Cover \(Jan. 1976 \[T-MTT\]\)](#)
- ☐ [Synthesis of Two Classes of Acoustic Surface-Wave Filter Tap Weights](#)
- ☐ [Symmetrical Four-Port Edge-Guided Wave Circulators](#)
- ☐ [Rate Effects in Isolated Turtle Hearts Induced by Microwave Irradiation](#)
- ☐ [Circular TE/sub 0n/ Mode Filters for Guided Millimeter-Wave Transmission \(Jan. 1976 \[T-MTT\]\)](#)
- ☐ [Wide-Band Varactor-Tuned Coaxial Oscillators](#)
- ☐ [On the Design of Dielectric Loaded Waveguides](#)
- ☐ [A Probe for Measuring Temperature in Radio-Frequency-Heated Material \(Short Papers\)](#)
- ☐ [A Computer Program for the Direct Calibration of Two-Port Reflectometers for Automated Microwave Measurements \(Short Papers\)](#)
- ☐ [A Coaxial to Microstrip Transition \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

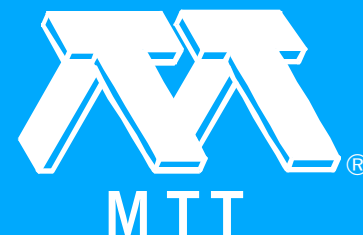
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ On an Automatic System for Simultaneous Measurement of Amplitude and Phase of Millimeter-Wave Fields (Short Papers)
- ❑ Time-Domain Measurement of Loss and Dispersion (Short Papers)
- ❑ Real-Time Fourier Analysis of Spread Spectrum Signals Using Surface-Wave-Implemented Chirp-Z Transformation (Short Papers)
- ❑ Waveguide Interferometer for Measuring Electric Susceptibility in Gases (Short Papers)
- ❑ A Microwave Applicator for In Vivo Rapid Inactivation of Enzymes in the Central Nervous System (Short Papers)
- ❑ Dynamic Microwave Frequency Division Characteristics of Coplanar Transferred-Electron Devices in a Resistive Circuit (Letters)
- ❑ A Broad-Band 40--60-GHz Balanced Mixer (Letters)



Contents

Publications

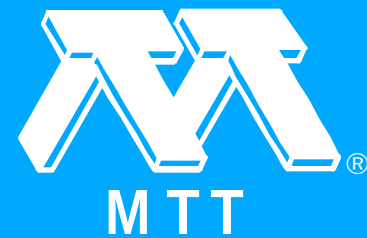
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [A Transformer Cascade, Optimally Matched to a Conductance Shunted by a Stub, Exhibiting Reflection Coefficient Zeros \(Letters\)](#)
- ❑ [Contributors \(Jan. 1976 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Jan. 1976 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

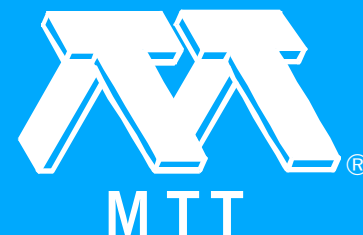
Click on title for a paper summary.



Papers by Issue

Feb. 1976 [T-MTT]

- ☐ [Front Cover \(Feb. 1976 \[T-MTT\]\)](#)
- ☐ [A Study of Nonlinearities and Intermodulation Characteristics of 3-Port Distributed Circulators](#)
- ☐ [A Theoretical Study of Light Beams Guided Along Tapered Lenslike Media, and Their Applications](#)
- ☐ [The Capacitances and Surface-Charge Distributions of a Shielded Balanced Pair](#)
- ☐ [Coupling Between Narrow Transverse Inductive Strips in Waveguide](#)
- ☐ [Dielectric Loss in Microstrip Lines \(Short Papers\)](#)
- ☐ [The Electric-Dipole Resonances of Ring Resonators of Very High Permittivity \(Short Papers\)](#)
- ☐ [Resonant Frequency of a \$TE_{01\delta}\$ Dielectric Resonator](#)
- ☐ [Reciprocity Theorem for a Region with Inhomogeneous Bianisotropic Media and Surface Impedance \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

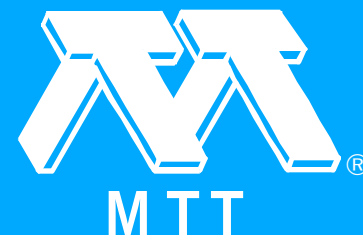
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [New Results in the Least pth Approach to Minimax Design](#)
- ❑ [Analysis of the Transient Temperature Distribution in a Stripline with Triple-Layer Dielectric \(Short Papers\)](#)
- ❑ [An All-Harmonic Coupling-Band Hybrid \(Letters\)](#)
- ❑ [The Characteristic Impedance of Rectangular Coaxial Line with Ratio 2:1 of Outer-to-Inner Conductor Side Length \(Letters\)](#)
- ❑ [A Waveguide Applicator for Sheet Materials \(Letters\)](#)
- ❑ [Contributors \(Feb. 1976 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Feb. 1976 \[T-MTT\]\)](#)



[Contents](#)

[Publications](#)

[Issues](#)

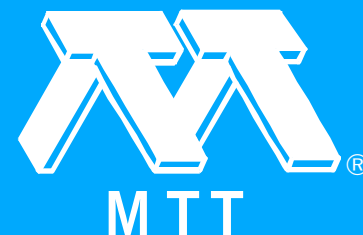
Click on title for a paper summary.



Papers by Issue

Mar. 1976 [T-MTT]

- ☐ [Front Cover \(Mar. 1976 \[T-MTT\]\)](#)
- ☐ [A New Edge-Mode Isolator in the Very High Frequency Range](#)
- ☐ [A New Impedance-Matched Wide-Band Balun and Magic Tee](#)
- ☐ [Equivalent Circuit Parameters of Microstrip Step Change in Width and Cross Junctions \(Short Papers\)](#)
- ☐ [A New Integrated Waveguide-Microstrip Transition \(Short Papers\)](#)
- ☐ [Oscillation Characteristics of Millimeter-Wave IMPATT Diodes Mounted in Low-Impedance Waveguide Mounts \(Short Papers\)](#)
- ☐ [A Stabilized MIC Oscillator Using a Germanium Avalanche Diode \(Short Papers\)](#)
- ☐ [Avalanche Diode Noise Sources at Short Centimeter and Millimeter Wavelengths \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

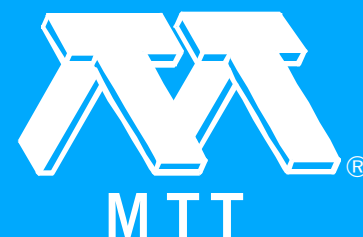
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [Microstrip Varactor-Tuned Millimeter-Wave Transmitter \(Letters\)](#)
- ❑ [Asymmetric Odd-Mode Fringing Capacitances \(Letters\)](#)
- ❑ [Transmission-Line Transformation Between Arbitrary Impedances \(Letters\)](#)
- ❑ [A Wide-Band Parametric Amplifier with Triple-Tuned Signal Circuit and Single-Tuned Idler Circuit \(Letters\)](#)
- ❑ [Temperature-Stabilized 1.7-GHz Broad-Band Lumped-Element Circulator \(Correction\)](#)
- ❑ [Measurements of Intercavity Couplings \(Letters\)](#)
- ❑ [High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers \(Correction\)](#)
- ❑ [Contributors \(Mar. 1976 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Mar. 1976 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

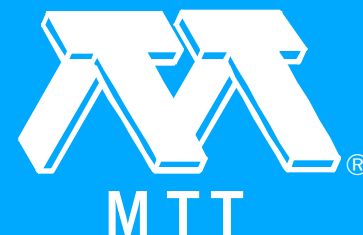
Click on title for a paper summary.



Papers by Issue

Apr. 1976 [T-MTT]

- ☐ [Front Cover \(Apr. 1976 \[T-MTT\]\)](#)
- ☐ [Internal Dynamics and Microwave Properties of X-Band Transferred-Electron Devices](#)
- ☐ [Filters with Single Transmission Zeros at Real or Imaginary Frequencies](#)
- ☐ [The Resonant Frequency and Tuning Characteristics of a Narrow-Gap Reentrant Cylindrical Cavity](#)
- ☐ [Efficient Calculation of Exact Group Delay Sensitivities](#)
- ☐ [Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations](#)
- ☐ [Exact Analysis of Rectangular Waveguides Inhomogeneously Filled with a Transversely Magnetized Semiconductor](#)
- ☐ [On a Direct Use of Edge Condition in Modal Analysis \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

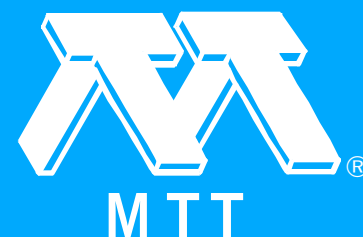
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Improved Accuracy for Commensurate-Line Synthesis (Short Papers)
- ❑ Differential Phase Shift at Microwave Frequencies Using Planar Ferrites (Short Papers)
- ❑ Electric-Field Distribution Along Finite Length Lossy Dielectric Slabs in Waveguide
- ❑ Scattering of Microwaves by Dielectric Materials Used in Laboratory Animal Restrainers
- ❑ Bidirectionality in Gyrotropic Waveguides (Short Papers)
- ❑ The Piezoelectric-Magnetoelastic Wave Propagation through the Conducting Plate in a Composite Medium (Short Papers)
- ❑ An Improved Microstrip-to-Microslot Transition (Letters)
- ❑ Efficient Minimax Design of Networks without Using Derivatives (Correction)
- ❑ Contributors (Apr. 1976 [T-MTT])
- ❑ Annals of the IEEE (Advertisement) (Apr. 1976 [T-MTT])



IEEE

Contents

Publications

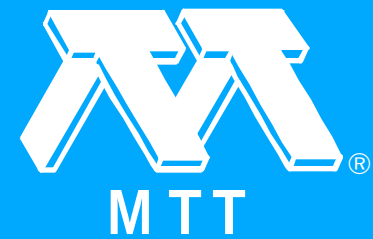
Issues

Click on title for a paper summary.



Papers by Issue

■ [Back Cover \(Apr. 1976 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.

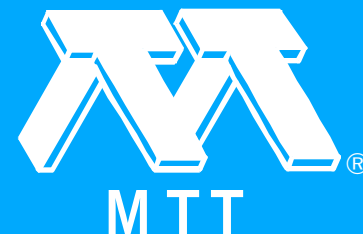


Papers by Issue

May 1976 [T-MTT]

- ☐ [Front Cover \(May 1976 \[T-MTT\]\)](#)
- ☐ [A New Band-Splitting Filter for Guided-Millimeter-Wave Transmission Systems](#)
- ☐ [TEM Pseudoelliptic-Function Bandstop Filters Using Noncommensurate Lines](#)
- ☐ [High-Power C-Band Multiple-IMPATT-Diode Amplifiers](#)
- ☐ [Local-Oscillator Noise Cancellation in the Subharmonically Pumped Down-Converter \(Short Papers\)](#)
- ☐ [The Ridged-Waveguide-Cavity Gunn Oscillator for Wide-Band Tuning \(Short Papers\)](#)
- ☐ [Design and Performance of a 60-90-GHz Broad-Band Mixer \(Short Papers\)](#)
- ☐ [Effect of Thin-Film Bi/sub 2/O/sub 3/ Overlay on the Quality Factor of a Microstrip Resonator \(Short Papers\)](#)
- ☐ [Shuttle Pulse Measurement of Mode Coupling and Conversion \(Short Papers\)](#)

Click on title for a paper summary.



IEEE

[Contents](#)

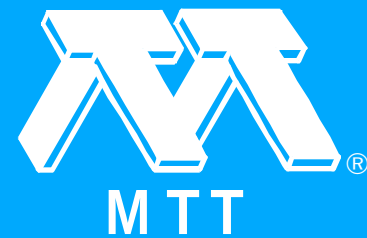
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ [A Wide-Band Rotating Coupler for VHF Use \(Short Papers\)](#)
- ❑ [A Microstrip and Stripline Crossover Structure \(Letters\)](#)
- ❑ [Suppression of Higher Order Modes in Waveguide-Junction Circulators Using Coupled Open Dielectric Resonators \(Letters\)](#)
- ❑ [Complex Permittivity and Penetration Depth of Muscle and Fat Tissues Between 40 and 90 GHz \(Letters\)](#)
- ❑ [Contributors \(May 1976 \[T-MTT\]\)](#)
- ❑ [Back Cover \(May 1976 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.

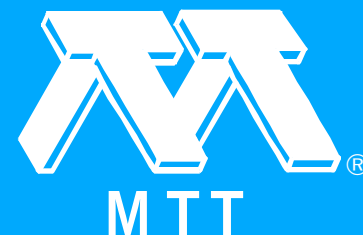


Papers by Issue

Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)

- ☐ [Front Cover \(Jun. 1976 \[T-MTT\]\)](#)
- ☐ [Foreword \(Jun. 1976 \[T-MTT\]\)](#)
- ☐ [Microwave Field-Effect Transistors--1976](#)
- ☐ [Submicron Single-Gate and Dual-Gate GaAs MESFET's with Improved Low Noise and High Gain Performance](#)
- ☐ [A Power Silicon Microwave MOS Transistor](#)
- ☐ [Power GaAs MESFET with a High Drain-Source Breakdown Voltage](#)
- ☐ [Some Aspects of GaAs MESFET Reliability](#)
- ☐ [Reliability Study of GaAs MESFET's](#)
- ☐ [GaAs MESFET Small-Signal X-Band Amplifiers](#)
- ☐ [Broad-Band Medium-Power Amplification in the 2-12.4-GHz Range with GaAs MESFET's](#)
- ☐ [Wide-Band Gallium Arsenide Power MESFET Amplifiers](#)

Click on title for a paper summary.



[Contents](#)

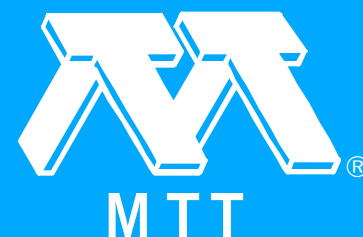
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ Performance of GaAs MESFET Mixers at X Band
- ❑ Microwave MESFET Mixer
- ❑ GaAs MESFET Regenerator for Phase-Shift Keying Signals at the Carrier Frequency
- ❑ Submicrometer Self-Aligned GaAs MESFET (Short Papers)
- ❑ Performance of GaAs MESFET's at Low Temperatures (Short Papers)
- ❑ A 6-GHz Four-Stage GaAs MESFET Power Amplifier (Short Papers)
- ❑ Feedback Effects in the GaAs MESFET Model (Letters)
- ❑ The GaAs MESFET as a Pulse Regenerator in the Gigabit per Second Range (Letters)
- ❑ Contributors (Jun. 1976 [T-MTT])
- ❑ Page Charges (Announcement) (Jun. 1976 [T-MTT])
- ❑ Back Cover (Jun. 1976 [T-MTT])



Contents

Publications

Issues

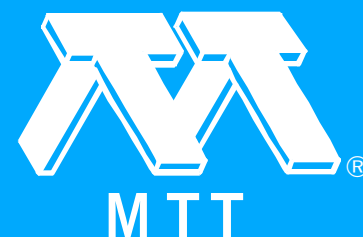
Click on title for a paper summary.



Papers by Issue

Jul. 1976 [T-MTT]

- ☐ [Front Cover \(Jul. 1976 \[T-MTT\]\)](#)
- ☐ [Power Amplification of Microwave FM Communication Signals Using a Phase-Locked Voltage-Tuned Oscillator](#)
- ☐ [Propagation of Cladded Inhomogeneous Dielectric Waveguides](#)
- ☐ [Fringing-Field Effects in Edge-Guided Wave Devices](#)
- ☐ [Analysis of Wave Propagation in Optical Fibers Having Core with alpha-Power Refractive-Index Distribution and Uniform Cladding](#)
- ☐ [A Scattering Variable Approach to the Volterra Analysis of Nonlinear Systems](#)
- ☐ [Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies](#)
- ☐ [Analysis of Optical Waveguide Consisting of a Square-Law Lenslike Medium and its Analogies to Circular TE/sub 01/ waveguide](#)



IEEE

[Contents](#)

[Publications](#)

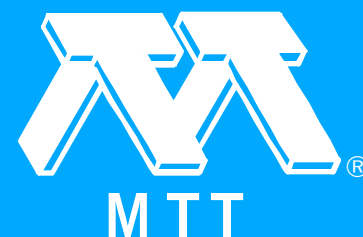
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Computation of Propagation Constants for the Fundamental and Higher Order Modes in Microstrip (Short Papers)
- ❑ General Noise Analysis for Bias- and RF-Voltage-Dependent Transferred-Electron Devices (Short Papers)
- ❑ On Some Integral Relationships for Commensurate Transmission-Line Networks (Short Papers)
- ❑ A Note on the Finite-Element Solution of Exterior-Field Problems (Short Papers)
- ❑ Hall Field and Magnetoresistance Effects in Rectangular Waveguide Completely Filled with Semiconductor (Short Papers)
- ❑ Propagation Along a Braided Coaxial Cable Located Close to a Tunnel Wall (Short Papers)
- ❑ Reflection Coefficient of Unequal Displaced Rectangular Waveguides (Letters)
- ❑ A 60-W CW Solid-State Oscillator at C Band (Letters)
- ❑ Measuring Dielectric Constant of Substrates for Microstrip Applications (Letters)



IEEE

Contents

Publications

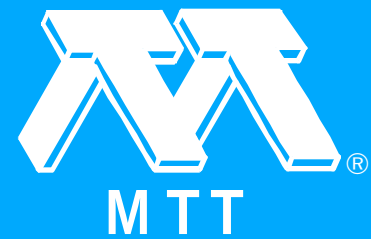
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Contributors (Jul. 1976 [T-MTT])
- ☐ IEEE Press Books Coupon (Jul. 1976 [T-MTT])
- ☐ Back Cover (Jul. 1976 [T-MTT])



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

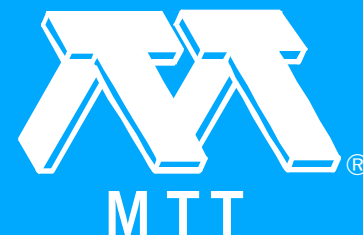
Click on title for a paper summary.



Papers by Issue

Aug. 1976 [T-MTT]

- ☐ [Front Cover \(Aug. 1976 \[T-MTT\]\)](#)
- ☐ [Reflection Problems in a Ferrite Stripline](#)
- ☐ [Quasi-Static Characteristics of Microstrip on an Anisotropic Sapphire Substrate](#)
- ☐ [2-18-GHz Dispersion Measurements on 10-100-Omega Microstrip Lines on Sapphire](#)
- ☐ [A Passive Electrodeless Method for Determining the Interior Field of Biological Materials](#)
- ☐ [On the Latching of Ferrite Microwave Devices \(Short Papers\)](#)
- ☐ [Multiple Branch-Guide Directional Coupler Using TE/sub 01/-Mode Semicircular Waveguide \(Short Papers\)](#)
- ☐ [A Frequency-Independent Large-Signal Equivalent Circuit for a BARITT Diode and Its Application to an Amplifier \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

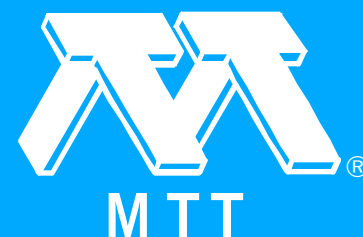
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ High-Quality Image Reconstruction from Double Microwave Holograms (Short Papers)
- ❑ Expressions for Wavelength and Impedance of a Slotline (Letters)
- ❑ Approximation for the Symmetrical Parallel-Strip Transmission Line (Comments)
- ❑ On the Accuracy of the Beam-Wave Theory of the Open Resonator (Letters)
- ❑ Microwave-Power Absorption by Rectangular-Shaped Conductive Dielectric Samples in Stripline (Letters)
- ❑ Additional Information on the Noise-Temperature Behavior of F8T5 Lamps (Letters)
- ❑ Scattering of Surface Waves at a Dielectric Discontinuity on a Planar Waveguide (Comments)
- ❑ Asymmetric Coupled Transmission Lines in an Inhomogeneous Medium (Comments)
- ❑ Theory of Periodic Dielectric Waveguides (Correction)



IEEE

Contents

Publications

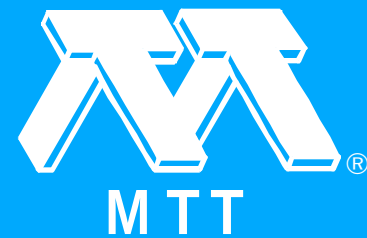
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [FLOPT2--A Program for Least pth Optimization with Extrapolation to Minimax Solutions \(Computer Program Descriptions\)](#)
- ❑ [MINOPT--An Optimization Program Based on Recent Minimax Results \(Computer Program Descriptions\)](#)
- ❑ [Contributors \(Aug. 1976 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Aug. 1976 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

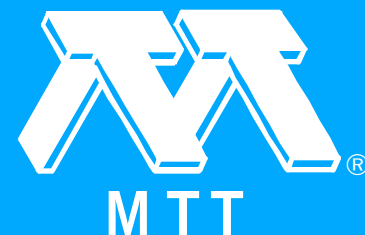
Click on title for a paper summary.



Papers by Issue

Sep. 1976 [T-MTT]

- ☐ [Front Cover \(Sep. 1976 \[T-MTT\]\)](#)
- ☐ [Electromagnetic Theory of the Loosely Braided Coaxial Cable: Part I](#)
- ☐ [Vector Variational Formulation of Electromagnetic Fields in Anisotropic Media](#)
- ☐ [A Perturbation Method for the Analysis of Wave Propagation in Inhomogeneous Dielectric Waveguides with Perturbed Media](#)
- ☐ [Slow-Wave Propagation Along Variable Schottky-Contact Microstrip Line](#)
- ☐ [Analysis of a Waveguide Mounting Configuration for Electronically Tuned Transferred-Electron-Device Oscillators and its Circuit Application](#)
- ☐ [Integrated Approach to Microwave Design \(Sep. 1976 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

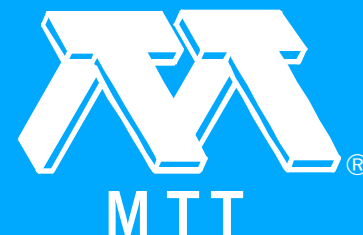
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [Effect of the Magnetic Perturbation on Magnetostatic Surface-Wave Propagation](#)
- ❑ [Different Representations of Dyadic Green's Functions for a Rectangular Cavity](#)
- ❑ [A New Approximation for the Capacitance of a Rectangular-Coaxial-Strip Transmission Line \(Short Papers\)](#)
- ❑ [A Coplanar Waveguide with Thick Metal-Coating \(Short Papers\)](#)
- ❑ [Analytical IC Metal-Line Capacitance Formulas \(Short Papers\)](#)
- ❑ [Equivalent Circuit of a Narrow Axial Strip in Waveguide \(Short Papers\)](#)
- ❑ [On the Theory of Coupling Between Finite Dielectric Resonators \(Short Papers\)](#)
- ❑ [Effect of Diode Parameters on Reflection-Type Phase Shifters \(Short Papers\)](#)
- ❑ [Effects of the Surroundings on Electromagnetic-Power Absorption in Layered-Tissue Media \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

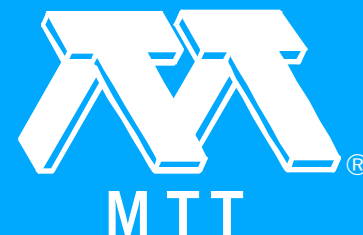
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ General Form of Green's Function for Multilayer Microstrip Line with Rectangular Side Walls (Letters)
- ❑ Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations (Correction)
- ❑ Design Equations for an Interdigitated Directional Coupler (Comments)
- ❑ Contributors (Sep. 1976 [T-MTT])
- ❑ Back Cover (Sep. 1976 [T-MTT])



Contents

Publications

Issues

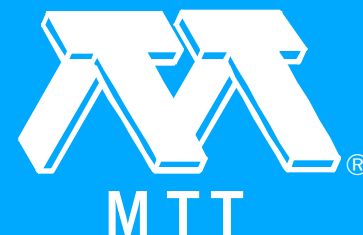
Click on title for a paper summary.



Papers by Issue

Oct. 1976 [T-MTT]

- ☐ [Front Cover \(Oct. 1976 \[T-MTT\]\)](#)
- ☐ [The Design and Performance of Three-Line Microstrip Couplers](#)
- ☐ [General TE/sub 011/-Mode Waveguide Bandpass Filters](#)
- ☐ [A Discriminator-Stabilized Microstrip Oscillator \(Short Papers\)](#)
- ☐ [Posttuning Drift of a Transferred-Electron-Device Voltage-Controlled Oscillator \(Short Papers\)](#)
- ☐ [Absolute Load Detection with Microwave Gunn Oscillators \(Short Papers\)](#)
- ☐ [A Variable Directional Coupler Using InSb Thin Films \(Short Papers\)](#)
- ☐ [The Segmentation Method--An Approach to the Analysis of Microwave Planar Circuits \(Short Papers\)](#)
- ☐ [Temperature Compensation of TE/sub 011/-Mode Circular Cavities \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

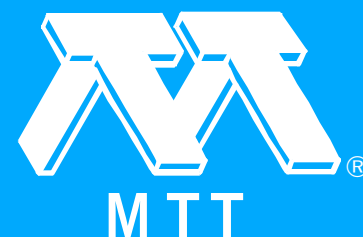
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Experimental Development of Simulated Biomaterials for Dosimetry Studies of Hazardous Microwave Radiation (Short Papers)
- ❑ Observation and Application of High-Order Azimuthal Modes in a Fabry-Perot Resonator (Short Papers)
- ❑ TLMRES--The TLM Computer Program for the Analysis of Microstrip Resonators (Computer Program Descriptions)
- ❑ Overseas Abstracts (Oct. 1976 [T-MTT])
- ❑ Contributors (Oct. 1976 [T-MTT])
- ❑ IEEE Press Books Coupon (Oct. 1976 [T-MTT])
- ❑ Back Cover (Oct. 1976 [T-MTT])



Contents

Publications

Issues

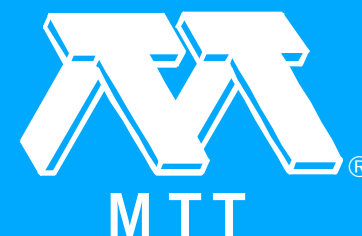
Click on title for a paper summary.



Papers by Issue

Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)

- ☐ [Front Cover \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [Foreword \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [Millimeter-Wave Semiconductor Devices](#)
- ☐ [Highly Reliable High-Power 86-GHz Components and Transmitter--Receiver Modules](#)
- ☐ [Schottky-Diode Realization for Low-Noise Mixing at Millimeter Wavelengths](#)
- ☐ [A Low-Noise 47-GHz Mixer Using a Permanent Josephson Junction](#)
- ☐ [The Challenge of Astronomy to Millimeter-Wave Technology](#)
- ☐ [K-Band Traveling-Wave Maser Using Ruby](#)
- ☐ [Traveling-Wave Masers for Radio Astronomy in the Frequency Range 20-40 GHz](#)



[Contents](#)

[Publications](#)

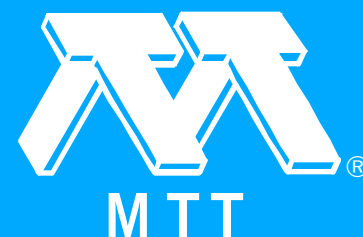
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ A Traveling-Wave Maser Amplifier for 85-90 GHz Using a Slot-Fed Image-Guide Slow-Wave Circuit
- ❑ High-Power 50-GHz Double-Drift-Region IMPATT Oscillators with Improved Bias Circuits for Eliminating Low-Frequency Instabilities
- ❑ Millimeter IMPATT Sources for the 130-170-GHz Range
- ❑ Nonlinear and Intermodulation Characteristics of Millimeter-Wave IMPATT Amplifiers
- ❑ Circuit Characterization of V-Band IMPATT Oscillators and Amplifiers
- ❑ Millimeter-Wave IMPATT Power Amplifier/Combiner
- ❑ New Modes of Operation for Avalanche Diodes: Frequency Multiplication and Upconversion
- ❑ InP Gunn-Effect Devices for Millimeter-Wave Amplifiers and Oscillators
- ❑ Generation of Millimeter-Wave Signals of High Spectral Purity
- ❑ A Versatile Millimeter-Wave Imaging System



Contents

Publications

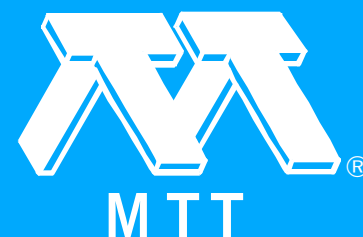
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ A Compact 60-GHz Transmitter--Receiver
- ❑ A V-Band Communication Transmitter and Receiver System Using Dielectric Waveguide Integrated Circuits
- ❑ Millimeter-Wave Thin-Film Downconverter
- ❑ Dielectric Waveguide Microwave Integrated Circuits--An Overview
- ❑ Measurement of Guide Wavelength in Rectangular Dielectric Waveguide
- ❑ Inverted Strip Dielectric Waveguide for Millimeter-Wave Integrated Circuits
- ❑ Double-Layered Slot Line for Millimeter-Wave Integrated Circuits
- ❑ 80-GHz-Band Low-Loss Ring-Type Channel Diplexer Using a Semicircular Electric Mode
- ❑ Analysis and Design of a Millimeter-Wave Bandpass Filter with a Stopband in the Specified Higher Frequencies
- ❑ A Millimeter-Wave Directional Filter Cavity



IEEE

Contents

Publications

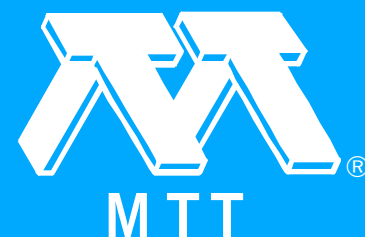
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Helical Coupler from Rectangular-to-Circular Waveguide](#)
- ❑ [Excess Conduction Losses at Millimeter Wavelengths](#)
- ❑ [200-GHz 50-mW CW Oscillation with Silicon SDR IMPATT \(Short Papers\)](#)
- ❑ [A 230-GHz Radiometer System Employing a Second-Harmonic Mixer \(Short Papers\)](#)
- ❑ [High-Efficiency Frequency Multiplication with GaAs Avalanche Diodes \(Short Papers\)](#)
- ❑ [Low-Loss Broad-Band EHF Circulator \(Short Papers\)](#)
- ❑ [Varactor-Tuned Millimeter-Wave MIC Oscillator \(Short Papers\)](#)
- ❑ [A Low-Noise Millimeter MIC Mixer \(Short Papers\)](#)
- ❑ [Dielectric Rod Antennas for Millimeter-Wave Integrated Circuits \(Short Papers\)](#)
- ❑ [E-Type Modes in Cylindrical Dielectric Waveguides with Periodic Boundary Perturbations \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

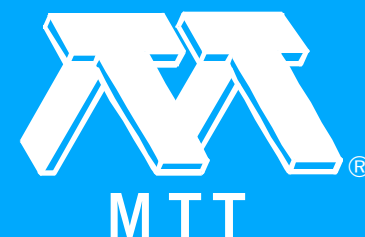
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ☐ A Tunable Bandpass Ring Filter for Rectangular Dielectric Waveguide Integrated Circuits (Short Papers)
- ☐ A New Form of Ferrite Device for Millimeter-Wave Integrated Circuits (Short Papers)
- ☐ The Fabrication of Dielectric Image Lines Using Casting Resins and the Properties of the Lines in the Millimeter-Wave Range (Short Papers)
- ☐ 22-GHz Measurements of Dielectric Constants and Loss Tangents of Castable Dielectrics at Room and Cryogenic Temperatures (Short Papers)
- ☐ Characterization of Magnetic Materials in the Millimeter-Wave Range (60-90 GHz) (Short Papers)
- ☐ Measurement of Surface Resistance in Oversized Circular Waveguide at Millimeter Wavelengths (Short Papers)
- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ Annals of the IEEE (Advertisement) (Nov. 1976 [T-MTT])
- ☐ Join IEEE (Advertisement) (Nov. 1976 [T-MTT])
- ☐ Back Cover (Nov. 1976 [T-MTT])



IEEE

Contents

Publications

Issues

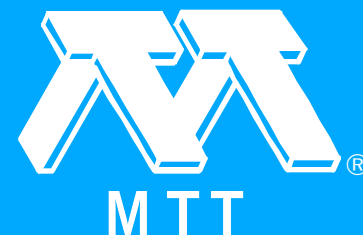
Click on title for a paper summary.



Papers by Issue

Dec. 1976 [T-MTT] (1976 Symposium Issue)

- ☐ [Front Cover \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [Table of Contents \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [Editor's Overview \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [President's Message--A Quarter Century of Progress](#)
- ☐ [The 1976 International Microwave Symposium \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [MTT Awards for 1975](#)
- ☐ [The 1976 S-MTT National Lectureship](#)
- ☐ [Acoustic Surface Waveguides and Comparisons with Optical Waveguides](#)
- ☐ [Transferred Electron Logic Devices for Gigabit-Rate Signal Processing \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [Multiplexing and Demultiplexing Techniques with Gunn Devices in the Gigabit-Per-Second Range](#)



[Contents](#)

[Publications](#)

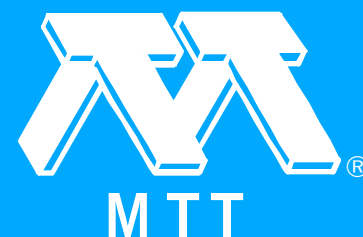
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Diode Circuits for Pulse Regeneration and Multiplexing at Ultrahigh Bit Rates
- ❑ Microwave Power GaAs FET Amplifiers
- ❑ Design, Fabrication, and Evaluation of BARITT Devices for Doppler System Applications
- ❑ Millimeter-Wave Receivers with Subharmonic Pump
- ❑ A 4-, 6-, 20-, and 30-GHz-Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (Dec. 1976 [T-MTT])
- ❑ The High-Power X-Band Planetary Radar at Goldstone: Design, Development, and Early Results
- ❑ MLS--A Practical Application of Microwave Technology (Dec. 1976 [T-MTT])
- ❑ Cryogenically Cooled GaAs FET Amplifier with a Noise Temperature Under 70 K at 5.0 GHz (Short Papers)
- ❑ A Quasi-Linear Approach to the Design of Microwave Transistor Power Amplifiers (Short Papers)



IEEE

Contents

Publications

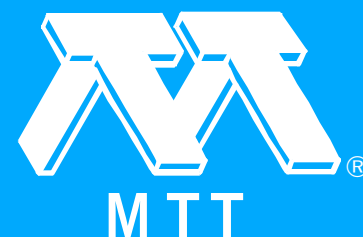
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides (Short Papers)
- ☐ Design, Implementation, and Performance Analysis of a Broad-Band V-Band Network Analyzer (Short Papers)
- ☐ Discussion of a 2-Gap Waveguide Mount (Short Papers)
- ☐ An Improved Solid-State Noise Source (Short Papers)
- ☐ A New 34-GHz 3.5-mm Low-Cost Utility Coaxial Connector Featuring Low Leakage, Low Standing-Wave Ratio, and Long Life (Short Papers)
- ☐ Contributors (Dec. 1976 [T-MTT])
- ☐ Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-24, 1976
- ☐ IEEE Press Books Coupon (Dec. 1976 [T-MTT])
- ☐ Join IEEE (Advertisement) (Dec. 1976 [T-MTT])
- ☐ Back Cover (Dec. 1976 [T-MTT])



Contents

Publications

Issues

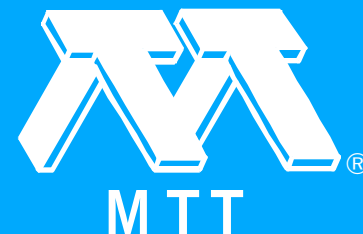
Click on title for a paper summary.



Papers by Issue

Jan. 1977 [T-MTT]

- ☐ [Front Cover \(Jan. 1977 \[T-MTT\]\)](#)
- ☐ [A Legendre Approximation Method for the Circular Microstrip Disk Problem](#)
- ☐ [Coupled Transmission Lines](#)
- ☐ [Analysis of Guided Waves Along the Cladded Optical Fiber: Parabolic-Index Core and Homogeneous Cladding](#)
- ☐ [Modal Theory of Spatially Periodic Media](#)
- ☐ [Generalized Analysis of Parallel Two-Post Mounting Structures in Waveguide](#)
- ☐ [Unified Approach to the Derivation of Variational Expression for Electromagnetic Fields](#)
- ☐ [Long-Wavelength Analysis of Plane Wave Irradiation of an Ellipsoidal Model of Man](#)
- ☐ [Long-Wavelength Electromagnetic Power Absorption in Ellipsoidal Model of Man and Animals](#)



IEEE

[Contents](#)

[Publications](#)

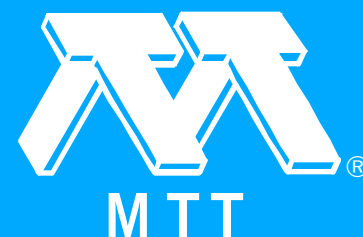
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [New Method for Computing the Resonant Frequencies of Dielectric Resonators \(Short Papers\)](#)
- ❑ [Conversion Loss Limitations on Schottky-Barrier Mixers \(Short Papers\)](#)
- ❑ [Mode Classification of a Triangular Ferrite Post for Y-Circulator Operation \(Short Papers\)](#)
- ❑ [Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue \(Short Papers\)](#)
- ❑ [Field and Power Density Distributions of the Dipolar Modes in a Partially Filled Cylindrical Plasma Waveguide \(Short Papers\)](#)
- ❑ [Guided Waves on a Flattened Sheath Helix \(Letters\)](#)
- ❑ [Influence of Spatial Dispersion of the Shield Transfer Impedance of a Braided Coaxial Cable \(Letters\)](#)
- ❑ [MIC Coupler with Improved Directivity Using Thin-Film Bi/sub 2/O/sub 3/ Overlay \(Letters\)](#)
- ❑ [Symmetry Experiments with Four-Mesa IMPATT Diodes \(Letters\)](#)



IEEE

[Contents](#)

[Publications](#)

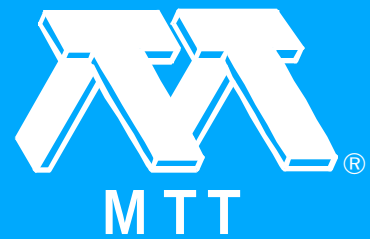
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [A New Edge-Mode Isolator in the Very High Frequency Range \(Comments\)](#)
- ❑ [CIA \(Circulator Analysis\) \(Computer Program Descriptions\)](#)
- ❑ [Transmission-Line Transformation Between Arbitrary Impedances \(Comments\)](#)
- ❑ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)
- ❑ [IEEE Membership \(Advertisement\) \(Jan. 1977 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Jan. 1977 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.

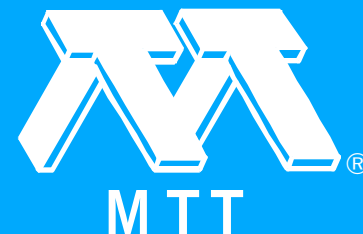


Papers by Issue

Feb. 1977 [T-MTT]

- ☐ [Front Cover \(Feb. 1977 \[T-MTT\]\)](#)
- ☐ [Studies in Overhead Wire--Goubau Line Above Ground](#)
- ☐ [Experimental Studies of the Losses and Radiations Due to Bends in the Goubau Line](#)
- ☐ [New Edge-Guided Mode Isolator Using Ferromagnetic Resonance Absorption \(Feb. 1977 \[T-MTT\]\)](#)
- ☐ [A Method for Calculating the Frequency-Dependent Properties of Microstrip Discontinuities](#)
- ☐ [Resonance Measurement of Single- and Coupled-Microstrip Propagation Constants](#)
- ☐ [A Dual Mode Tuning Circuit for Microwave Transistor Oscillators](#)
- ☐ [A Large-Signal Theory for Broad-Band Frequency Converters Using Abrupt Junction Varactor Diodes](#)
- ☐ [The Capacitances and Surface Charge Distributions of a Shielded Unbalanced Pair \(Short Papers\)](#)

Click on title for a paper summary.



[Contents](#)

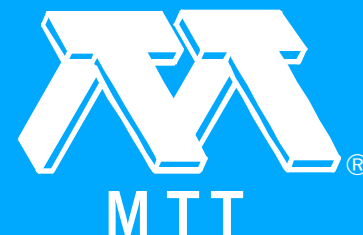
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ Equivalent Circuits and Characteristics of Inhomogeneous Nonsymmetrical Coupled-Line Two-Port Circuits (Short Papers)
- ❑ Spectral Domain Solution of Arbitrary Coplanar Transmission Line with Multilayer Substrate (Short Papers)
- ❑ Application of MIC Formulas to a Class of Integrated-Optics Modulator Analyses: A Simple Transformation (Short Papers)
- ❑ Central Metal Post in Stripline Circulators (Short Papers)
- ❑ Full-Band Low-Loss Continuous Tracking Circulation in K Band (Short Papers)
- ❑ Microwave Properties of Lithium Ferrites (Short Papers)
- ❑ Approximate Determination of the Characteristic Impedance of the Coaxial System Consisting of a Regular Polygon Concentric with a Circle (Letters)
- ❑ An Application of Conformal Mapping to the Determination of the Characteristic Impedance of a Class of Coaxial Systems (Letters)



Contents

Publications

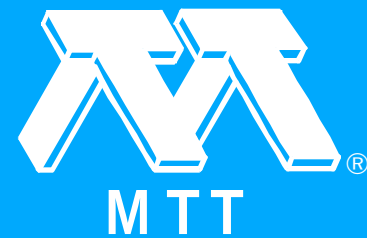
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Analysis of Straight Tapered Microstrip Transmission Lines---ASTMIC \(Computer Program Descriptions\)](#)
- ❑ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)
- ❑ [IEEE Membership \(Advertisement\) \(Feb. 1977 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Feb. 1977 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

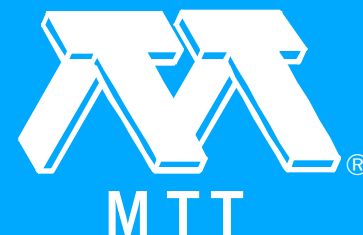
Click on title for a paper summary.



Papers by Issue

Mar. 1977 [T-MTT]

- ☐ [Front Cover \(Mar. 1977 \[T-MTT\]\)](#)
- ☐ [Analysis of Waveguide Post Configurations: Part I--Gap Immittance Matrices](#)
- ☐ [Analysis of Waveguide Post Configurations: Part II--Dual-Gap Cases](#)
- ☐ [Double Circulation Frequency Operation of Stripline Y-Junction Circulators](#)
- ☐ [Waveguide Subsidiary Resonance Ferrite Limiters](#)
- ☐ [Dispersion Characteristics of the Dipolar Modes in a Waveguide Partially Filled with a Magnetized Ferrite Column](#)
- ☐ [Interaction of Signals in Ferromagnetic Microwave Limiters](#)
- ☐ [Computer-Aided Synthesis of the Optimum Refractive-Index Profile for a Multimode Fiber](#)
- ☐ [Propagation in Circular Waveguide Loaded with an Azimuthally Magnetized Ferrite Tube \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

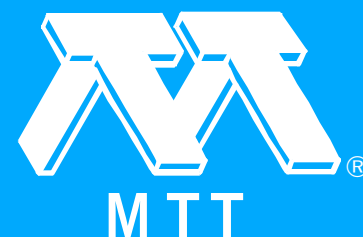
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Behavior of the Magnetostatic Wave in a Periodically Corrugated YIG Slab (Short Papers)
- ❑ On the Theory and Application of the Dielectric Post Resonator (Short Papers)
- ❑ Design of Coupled Microstrip Lines (Letters)
- ❑ The Resonant Frequency of a Narrow-Gap Cylindrical Cavity (Letters)
- ❑ Evaluation of MTT Transactions (1976)(Letters)
- ❑ Different Representations of Dyadic Green's Functions for a Rectangular Cavity (Correction)
- ❑ Contributors (Mar. 1977 [T-MTT])
- ❑ Call for Papers - Special Issue on Microwaves in Medicine (Mar. 1977 [T-MTT])
- ❑ IEEE Membership (Advertisement) (Mar. 1977 [T-MTT])
- ❑ Back Cover (Mar. 1977 [T-MTT])



Contents

Publications

Issues

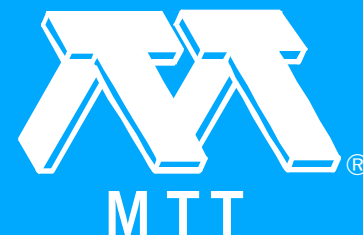
Click on title for a paper summary.



Papers by Issue

Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)

- ☐ [Front Cover \(Apr. 1977 \[T-MTT\]\)](#)
- ☐ [Foreword \(Apr. 1977 \[T-MTT\]\)](#)
- ☐ [Multiband Low-Noise Receivers for a Very Large Array](#)
- ☐ [System Implications of Large Radiometric Array Antennas](#)
- ☐ [Low-Noise Receiver Design Trends Using State-of-the-Art Building Blocks](#)
- ☐ [Low-Noise Millimeter-Wave Receivers](#)
- ☐ [A Cryogenically Cooled Two-Channel Paramp Radiometer for 47 GHz](#)
- ☐ [The Super-Schottky Diode](#)
- ☐ [The Measurement of Noise in Microwave Transmitters](#)
- ☐ [Design of Stable, Very Low Noise, Cavity-Stabilized IMPATT Oscillators for C Band](#)



[Contents](#)

[Publications](#)

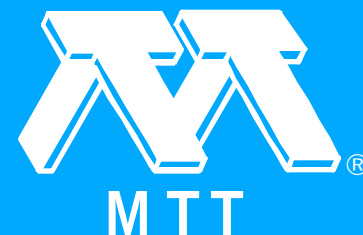
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Theory of Noise and Transfer Properties of IMPATT Diode Amplifiers
- ❑ The Aerospace Low-Noise Millimeter-Wave Spectral Line Receiver (Short Papers)
- ❑ Error Minimization in Network Analyzer Measurement of Varactor Quality (Short Papers)
- ❑ Contributors (Apr. 1977 [T-MTT])
- ❑ IEEE Membership (Advertisement) (Apr. 1977 [T-MTT])
- ❑ Back Cover (Apr. 1977 [T-MTT])



Contents

Publications

Issues

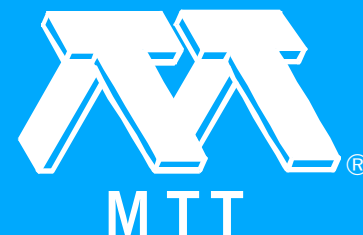
Click on title for a paper summary.



Papers by Issue

May 1977 [T-MTT]

- ❑ [Front Cover \(May 1977 \[T-MTT\]\)](#)
- ❑ [IMPATT Diode Circuit Design for Parametric Stability](#)
- ❑ [High-Order Triangular Finite Elements for Electromagnetic Waves in Anisotropic Media](#)
- ❑ [High-Azimuthal-Index Resonances in Ferrite MIC Disk Resonators](#)
- ❑ [Experimental Measurement of Microstrip Transistor-Package Parasitic Reactances](#)
- ❑ [Resonance Electromagnetic Absorption by Nonspherical Dielectric Objects](#)
- ❑ [Variational Finite-Element Solution for Dissipative Waveguides and Transportation Application](#)
- ❑ [Aperture Coupling Between Microstrip and Resonant Cavities](#)
- ❑ [A New Mixer Design for 140-220 GHz \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

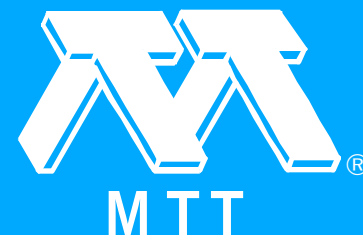
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ The Measurement of the Equivalent Admittance of 3-Port Circulators Via an Automated Measurement System (Short Papers)
- ❑ Dimensions of Microstrip Coupled Lines and Interdigital Structures (Short Papers)
- ❑ Asymmetric Even-Mode Fringing Capacitance (Short Papers)
- ❑ An Analytical Comparison of Two Simple High-Q Gunn Oscillators (Short Papers)
- ❑ Radiation Losses of Planar Circuit Resonators and the R/Q Parameter (Short Papers)
- ❑ Measurement of Microwave Loss Tangent by Means of Microwave Resonator Bridge (Short Papers)
- ❑ Comparison Method of Measurement Q of Microwave Resonators (Short Papers)
- ❑ A Gaussian-Beam Launcher for Microwave Exposure Studies (Short Papers)



IEEE

Contents

Publications

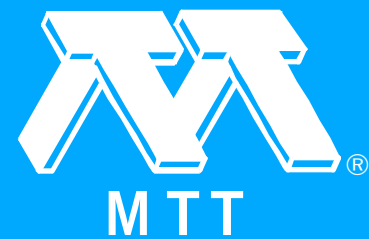
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ A Microwave Irradiation Chamber for Scientific Studies on Agricultural Products (Short Papers)
- ❑ A Multiple-Animal Array for Equal Power Density Microwave Irradiation (Short Papers)
- ❑ Computer Analysis of Gradually Tapered Waveguide with Arbitrary Cross Sections (Short Papers)
- ❑ Synthesis of Certain Transmission Lines Employed in Microwave Integrated Circuits (Letters)
- ❑ Computation of the Hecken Impedance Function (Letters)
- ❑ A Two- or Three-Dimensional Green's Function which can be Applied to Hyperfrequency Microelectronic Transmission Lines (Letters)
- ❑ The Locus of Points of Constant VSWR When Renormalized to a Different Characteristic Impedance (Letters)
- ❑ Efficient Calculation of Exact Group Delay Sensitivities (Correction)
- ❑ Contributors (May 1977 [T-MTT])



IEEE

Contents

Publications

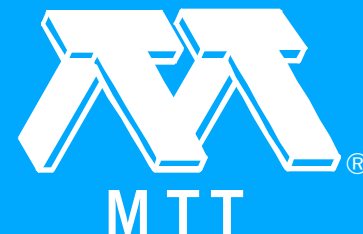
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [New Editorial Policy \(Announcement\) \(May 1977 \[T-MTT\]\)](#)
- ❑ [New from the IEEE Press, Turning Points in American Electrical History \(Advertisement\) \(May 1977 \[T-MTT\]\)](#)
- ❑ [IEEE Membership \(Advertisement\) \(May 1977 \[T-MTT\]\)](#)
- ❑ [Back Cover \(May 1977 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

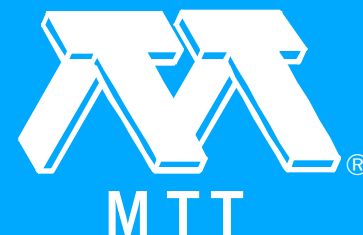
Click on title for a paper summary.



Papers by Issue

Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)

- ☐ [Front Cover \(Jun. 1977 \[T-MTT\]\)](#)
- ☐ [Foreword - Part I \(Jun. 1977 \[T-MTT\]\)](#)
- ☐ [Schottky-Barrier Diodes for Submillimeter Heterodyne Detection](#)
- ☐ [Submillimeter-Wave Detection with Submicron-Size Schottky-Barrier Diodes](#)
- ☐ [Comparison of Methods for Sensitivity Determination of Point-Contact Diodes at Submillimeter Wavelength](#)
- ☐ [Design of Printed Resonant Antennas for Monolithic-Diode Detectors](#)
- ☐ [The Josephson Self-Oscillator Mixer as a Submillimeter and Far-Infrared Detector](#)



IEEE

[Contents](#)

[Publications](#)

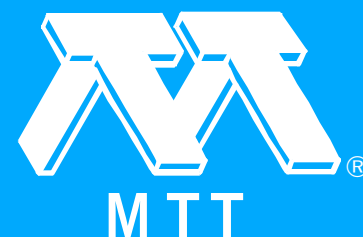
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Results, Potentials, and Limitations of Josephson-Mixer Receivers at Millimeter and Long Submillimeter Wavelengths
- ❑ Theory of an Efficient Electronic Phase Shifter Employing a Multilayer Dielectric-Waveguide Structure
- ❑ Calculations of Antenna Temperature, Horizontal Path Attenuation, and Zenith Attenuation Due to Water Vapor in the Frequency Band 150-700 GHz
- ❑ The Measurement of the Surface Resistivity of Evaporated Gold at 890 GHz
- ❑ Reflectivity of Common Materials in the Submillimeter Region
- ❑ Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes
- ❑ Dielectric Measurements in the Submillimeter Region and a Suggested Interpretation of the Poley Absorption
- ❑ Application of Submillimeter Spectroscopy to Magnetic Excitations



Contents

Publications

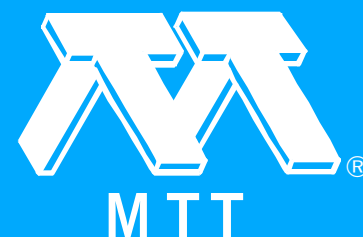
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Dispersive Fourier Transform Spectrometry with Variable-Thickness Variable-Temperature Liquid Cells
- ❑ Precise Dielectric Measurements of Low-Loss Materials at Millimeter and Submillimeter Wavelengths
- ❑ Foreword - Part II (Jun. 1977 [T-MTT])
- ❑ The Gyrotron
- ❑ The Electron Cyclotron Maser--An Historical Survey
- ❑ The Linear and Self-Consistent Nonlinear Theory of the Electron Cyclotron Maser Instability
- ❑ Mechanisms for Coherent Scattering of Electromagnetic Waves from Relativistic Electron Beams
- ❑ Application of Stimulated Electromagnetic Shock Radiation to the Generation of Intense Submillimeter Waves
- ❑ Submillimeter-Wave Production by Upshifted Reflection from a Moving Ionization Front
- ❑ Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front



IEEE

Contents

Publications

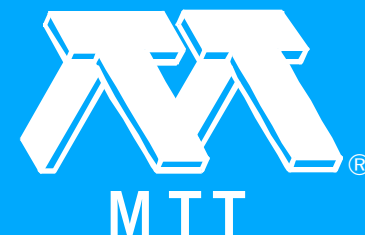
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Relativistic Electron-Beam-Generated Coherent Submillimeter Wavelength Cerenkov Radiation](#)
- ❑ [Microwave Generation Using Sheet Relativistic Electron Beams](#)
- ❑ [Back Cover \(Jun. 1977 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

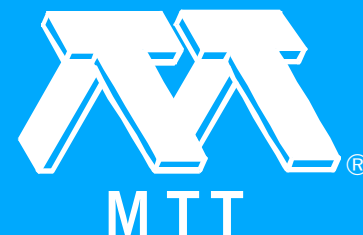
Click on title for a paper summary.



Papers by Issue

Jul. 1977 [T-MTT]

- ☐ [Front Cover \(Jul. 1977 \[T-MTT\]\)](#)
- ☐ [Theory and Applications of Coupled Optical Waveguides Involving Anisotropic or Gyrotropic Materials](#)
- ☐ [Linear Power Responses of an Optical Fiber](#)
- ☐ [Numerical Solution of the Coupled-Power Equation in Step-Index Optical Fibers](#)
- ☐ [Modes and Cutoff Frequencies of Crossed Rectangular Waveguides](#)
- ☐ [Resonant Frequency and Q of an Open-Ended Rectangular Cavity](#)
- ☐ [Ferrite Planar Circuits in Microwave Integrated Circuits](#)
- ☐ [Energy Analysis for the Amplification Phenomena of Magnetostatic Surface Waves in a YIG-Semiconductor Coupled System](#)
- ☐ [On Microwave-Induced Hearing Sensation](#)



IEEE

[Contents](#)

[Publications](#)

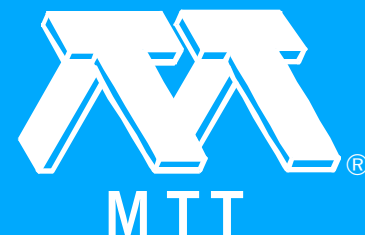
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ☐ Rank Reduction of Ill-Conditioned Matrices in Waveguide Junction Problems
- ☐ The New Similarity Rules Applied to Argon Microwave Noise Sources
- ☐ Interdependence of Gain and Idler Conversion Loss in Parametric Amplifiers (Letters)
- ☐ Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies (Comments)
- ☐ On the Design of Dielectric Loaded Waveguides (Comments)
- ☐ Discussion of "The Resonant Frequency and Tuning Characteristics of a Narrow-Gap Reentrant Cylindrical Cavity" (Letters)
- ☐ Contributors (Jul. 1977 [T-MTT])
- ☐ New from the IEEE Press, Turning Points in American Electrical History (Advertisement) (Jul. 1977 [T-MTT])
- ☐ IEEE Membership (Advertisement) (Jul. 1977 [T-MTT])
- ☐ Back Cover (Jul. 1977 [T-MTT])



IEEE

Contents

Publications

Issues

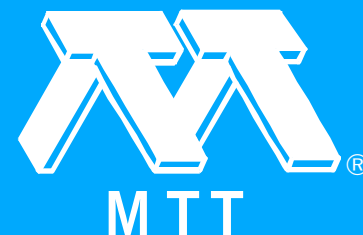
Click on title for a paper summary.



Papers by Issue

Aug. 1977 [T-MTT]

- ☐ [Front Cover \(Aug. 1977 \[T-MTT\]\)](#)
- ☐ [Transmission-Line Properties of a Strip on a Dielectric Sheet on a Plane](#)
- ☐ [Dissipation Loss Effects in Isolated and Coupled Transmission Lines](#)
- ☐ [Analysis of Distributed-Lumped Strip Transmission Lines](#)
- ☐ [Optimization of the Matching Network for a Hybrid Coupler Phase Shifter](#)
- ☐ [A Method for Broad-Band Matching of Microstrip Differential Phase Shifters](#)
- ☐ [Extending the Realizable Bandwidth of Edge-Coupled Stripline Filters](#)
- ☐ [A Statistical Measure for the Stability of Solid State Noise Sources](#)
- ☐ [30-GHz-Band Periodic Branching Filter Using a Traveling-Wave Resonator for Satellite Applications](#)



IEEE

[Contents](#)

[Publications](#)

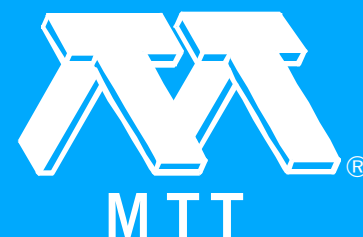
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Modeling Rectangular Waveguide Junctions by the Eigenfunction Method
- ❑ High-Efficiency Millimeter-Wave Bolometer Mount
- ❑ Complex Permittivity of GaAs and CdTe at Microwave Frequencies
- ❑ Precise Calibration of Plane-Wave Microwave Power Density Using Power Equation Techniques
- ❑ Measurements of 1.8--2.7-GHz Microwave Attenuation in the Human Torso
- ❑ An Alternate Derivation of Lewin's Formula (Letters)
- ❑ Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue (Correction)
- ❑ Analytical IC Metal-Line Capacitance Formulas (Correction)
- ❑ Waveguide Bend Spurious Mode Program (Computer Program Descriptions)
- ❑ Contributors (Aug. 1977 [T-MTT])



IEEE

Contents

Publications

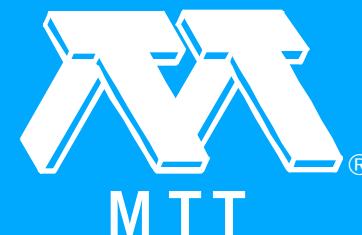
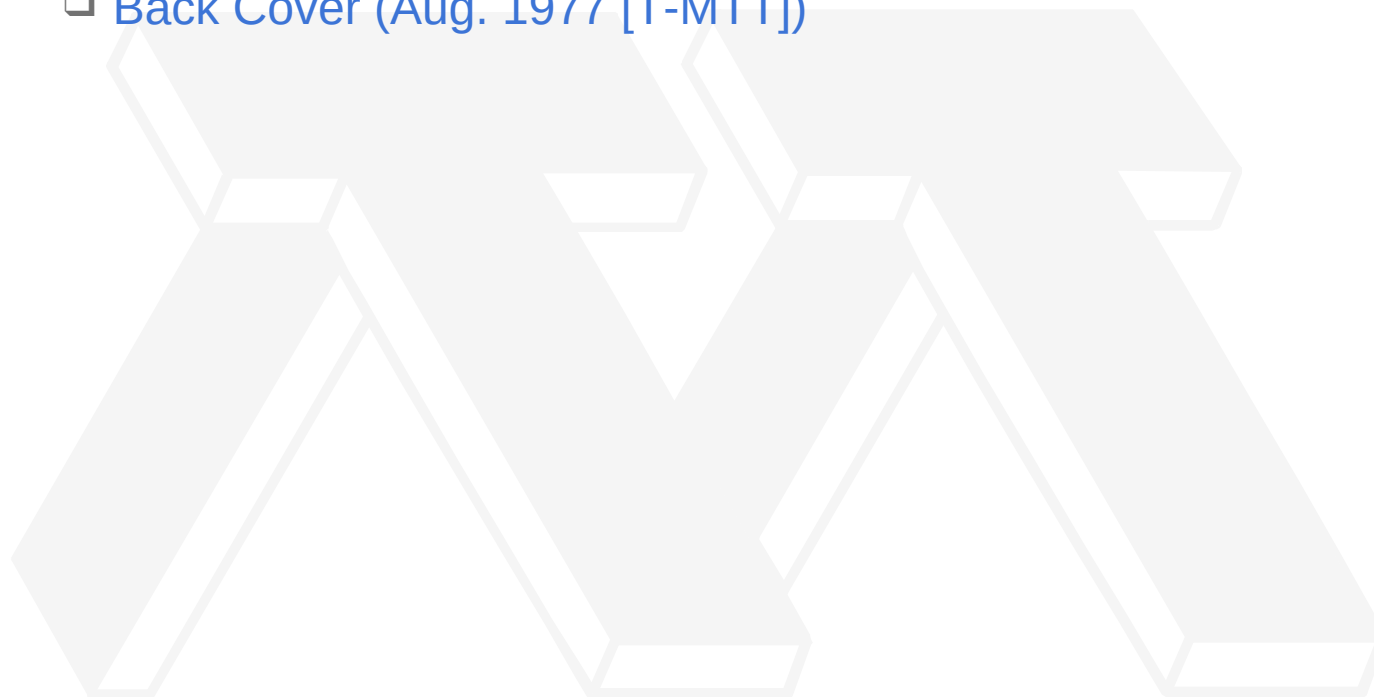
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Realization of Elliptic Function Bandstop Filters by Means of a Resonated Prototype](#)
- ❑ [Basic Parameters of Nonsymmetrical Coplanar Line](#)
- ❑ [Back Cover \(Aug. 1977 \[T-MTT\]\)](#)



[Contents](#)

[Publications](#)

[Issues](#)

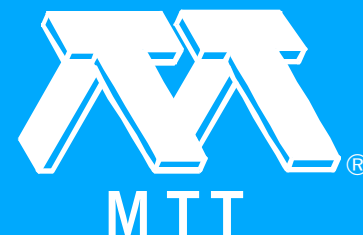
Click on title for a paper summary.



Papers by Issue

Sep. 1977 [T-MTT]

- ☐ [Front Cover \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [The Radiation of Electromagnetic Power by Microstrip Configurations](#)
- ☐ [On the Analysis of Symmetrical Three-Line Microstrip Circuits](#)
- ☐ [Intermodulation Distortion Analysis of Reflection-Type IMPATT Amplifiers Using Volterra Series Representation](#)
- ☐ [Effects of Depletion-Layer Modulation on Spurious Oscillations in IMPATT Diodes](#)
- ☐ [Model for Some Nonthermal Effects of Radio and Microwave Fields on Biological Membranes](#)
- ☐ [Internal EM Field and Absorbed Power Density in Human Torsos Induced by 1-500-MHz EM Waves](#)
- ☐ [Modal Characteristics of Crossed Rectangular Waveguides](#)
- ☐ [Iterative Solutions of Waveguide Discontinuity Problems](#)



[Contents](#)

[Publications](#)

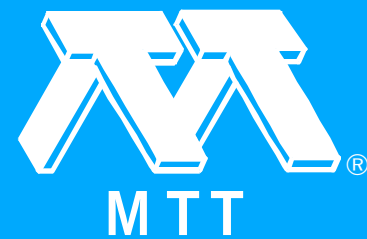
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [Analysis of a Waveguide Hybrid Junction by Rank Reduction](#)
- ❑ [Propagation Losses of Guided Modes in an Optical Graded-Index Slab Waveguide with Metal Cladding](#)
- ❑ [Transient Analysis of Systems with Exponential Transmission Lines](#)
- ❑ [General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part I: Full-Height Ferrite Configuration](#)
- ❑ [General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part II: Two-Disk Ferrite Configuration](#)
- ❑ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Sep. 1977 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.

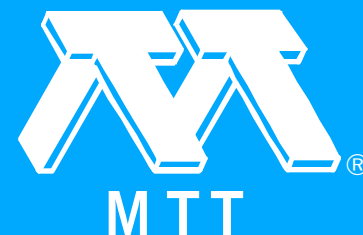


Papers by Issue

Oct. 1977 [T-MTT]

- ☐ [Front Cover \(Oct. 1977 \[T-MTT\]\)](#)
- ☐ [Direct Design Formulas for Asymmetric Bandpass Channel Diplexers](#)
- ☐ [Computer-Aided Synthesis of Planar Circuits](#)
- ☐ [Equivalent Circuit Capacitance of Microstrip Step Change in Width](#)
- ☐ [Equivalent Series Inductivity of a Narrow Transverse Slit in Microstrip](#)
- ☐ [Wide-Band Balanced Line Microwave Hybrids](#)
- ☐ [Upper Bound on Cell Size for Moment-Method Solutions](#)
- ☐ [Thermographic and Behavioral Studies of Rats in the Near Field of 918-MHz Radiations](#)
- ☐ [Transfer Function Approximations for a New Class of Bandpass Distributed Network Structures](#)
- ☐ [Gain-Bandwidth Limitations and Synthesis of Single-Stub Bandpass Transmission-Line Structures](#)

Click on title for a paper summary.



IEEE

[Contents](#)

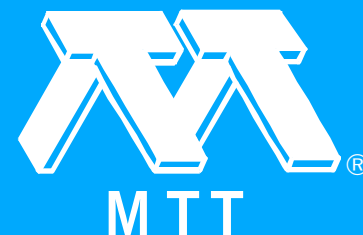
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ [Noise Calibration Repeatability of an Airborne Third-Generation Radiometer \(Letters\)](#)
- ❑ [Resonant Cavities Used as Frequency Selective Phase Shifters](#)
- ❑ [Contributors \(Oct. 1977 \[T-MTT\]\)](#)
- ❑ [Overseas Abstracts \(Oct. 1977 \[T-MTT\]\)](#)
- ❑ [A Directional Filter Diplexer Using Optical Techniques for Millimeter to Submillimeter Wavelengths](#)
- ❑ [Back Cover \(Oct. 1977 \[T-MTT\]\)](#)



[Contents](#)

[Publications](#)

[Issues](#)

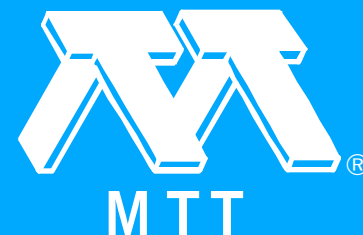
Click on title for a paper summary.



Papers by Issue

Nov. 1977 [T-MTT]

- ☐ [Front Cover \(Nov. 1977 \[T-MTT\]\)](#)
- ☐ [Fundamental Limits on Conversion Loss of Double Sideband Resistive Mixers](#)
- ☐ [Analysis of Frequency-Conversion Techniques in Measurements of Microwave Transistor Noise Temperatures](#)
- ☐ [Numerical Analysis of the Rectangular Dielectric Waveguide and its Modifications](#)
- ☐ [Solutions of the Vector Wave Equation for Inhomogeneous Dielectric Cylinders--Scattering in Waveguide](#)
- ☐ [Some Effects of Field Perturbation Upon Cavity-Resonance and Dispersion Measurements on MIC Dielectrics](#)
- ☐ [Analysis of an Inhomogeneously Loaded Rectangular Waveguide with Dielectric and Metallic Losses](#)
- ☐ [Dispersion in Shielded Planar Transmission Lines on Two-Layer Composite Substrate](#)



IEEE

[Contents](#)

[Publications](#)

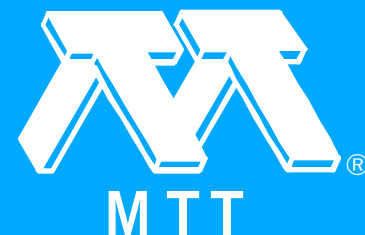
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Random Discrete Imperfections in Millimeter Waveguide Systems
- ❑ Accurate Resonant Frequencies of Dielectric Resonators
- ❑ Coupling Between Guided Surface Waves, Lateral Waves, and the Radiation Fields by Rough Surfaces--Full-Wave Solutions
- ❑ Traveling Waves in Coupled Yagi Structures
- ❑ Coupling of Circuit Structures to Magnetostatic Modes of Ferromagnetic Resonators
- ❑ Further Studies on the Microwave Auditory Effect
- ❑ Theoretical Analysis of Acoustic Signal Generation in Materials Irradiated with Microwave Energy
- ❑ Input Impedance of Coaxial Line to Circular Waveguide Feed
- ❑ Coupled Transmission Lines (Correction)
- ❑ Perturbation Theory Generalized to Arbitrary (p,l) Modes in a Fabry-Perot Resonator (Letters)



Contents

Publications

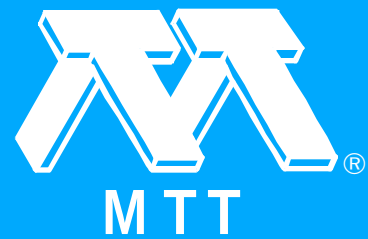
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Planar Network Analysis Programs-- PNAP1 and PNAP2 (Computer Program Descriptions)
- ❑ Contributors (Nov. 1977 [T-MTT])
- ❑ Back Cover (Nov. 1977 [T-MTT])



IEEE

Contents

Publications

Issues

Click on title for a paper summary.



Papers by Issue



IEEE

Contents

Publications

Issues

Dec. 1977 [T-MTT] (1977 Symposium Issue)

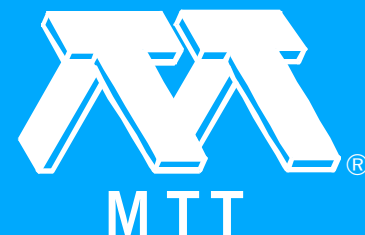
- ☐ Front Cover (Dec. 1977 [T-MTT])
- ☐ Table of Contents (Dec. 1977 [T-MTT])
- ☐ Editor's Overview (Dec. 1977 [T-MTT])
- ☐ The 1977 Microwave Symposium (Dec. 1977 [T-MTT])
- ☐ 1976 MTT Awards (Dec. 1977 [T-MTT])
- ☐ High Power GaAs IMPATT Amplifier (Dec. 1977 [T-MTT])
- ☐ A New Look at Noise in Transferred Electron Oscillators (Dec. 1977 [T-MTT])
- ☐ Design of GaAs MESFET Oscillator Using Large-Signal S-Parameters (Dec. 1977 [T-MTT])
- ☐ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (Dec. 1977 [T-MTT])
- ☐ An Environmentalized Low-Noise Parametric Amplifier (Dec. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Issue

- ❑ Low-Noise and Linear FET Amplifiers for Satellite Communications
- ❑ A 12-GHz Low-Cost Earth Terminal for Direct TV Reception from Broadcast Satellites (Dec. 1977 [T-MTT])
- ❑ New N-Way Hybrid Power Dividers (Dec. 1977 [T-MTT])
- ❑ New Application of Evanescent Mode Wave-Guide to Filter Design (Dec. 1977 [T-MTT])
- ❑ Dual-Mode Canonical Waveguide Filters (Dec. 1977 [T-MTT])
- ❑ Components for Microwave Integrated Circuits with Evanescent-Mode Resonators (Dec. 1977 [T-MTT])
- ❑ Short-Circuit Tuning Method for Singly Terminated Filters (Dec. 1977 [T-MTT])
- ❑ The Design of a Class of Microwave Filters Using Lumped and Distributed Elements
- ❑ Broad-Band Operation of Stripline Y Circulators
- ❑ Design and Performance Analysis of an Octave Bandwidth Waveguide Mixer



Contents

Publications

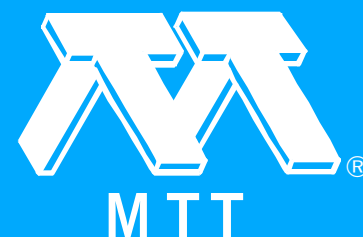
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ A Broad-Band Frequency Divider Using Microwave Varactors
- ❑ A Nonlinear Analysis of Schottky-Barrier Diode Upconverters
- ❑ Propagating Modes Along a Thin Wire Located Above a Grounded Dielectric Slab (Dec. 1977 [T-MTT])
- ❑ A Network Analyzer Incorporating Two Six-Port Reflectometers
- ❑ The Six-Port Reflectometer: An Alternative Network Analyzer (Dec. 1977 [T-MTT])
- ❑ An Improved Circuit for Implementing the Six-Port Technique of Microwave Measurements (Dec. 1977 [T-MTT])
- ❑ A Semiautomated Six Port for Measuring Millimeter-Wave Power and Complex Reflection Coefficient
- ❑ A Six-Port Automatic Network Analyzer (Dec. 1977 [T-MTT])



Contents

Publications

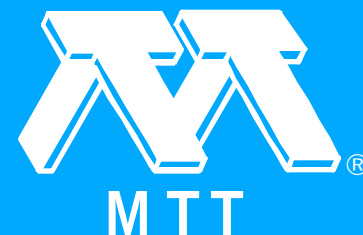
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Dielectric Measurements on Polymeric Materials by Using Superconducting Microwave Resonators
- ❑ A Generalization of the TSD Network-Analyzer Calibration Procedure, Covering n-Port Scattering-Parameter Measurements, Affected by Leakage Errors
- ❑ High Directivity CTL-Couplers and a New Technique for the Measurement of CTL-Coupler Parameters (Dec. 1977 [T-MTT])
- ❑ Performance Characteristics of an Automated Broad-Band Bolometer Unit Calibration System
- ❑ A Cost-Effective Modular Downconverter for S-Band WEFAX Reception (Short Papers)
- ❑ Theoretical Analysis of a Ridged-Waveguide Mounting Structure (Short Papers)
- ❑ Application of Gratings in a Dielectric Waveguide for Leaky-Wave Antennas and Band-Reject Filters (Short Papers)
- ❑ Dispersion Characteristics for Arbitrarily Configured Transmission Media (Short Papers)



Contents

Publications

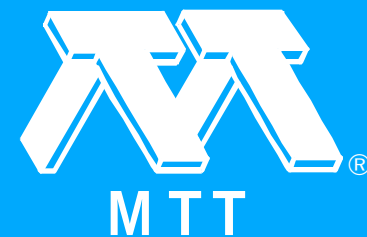
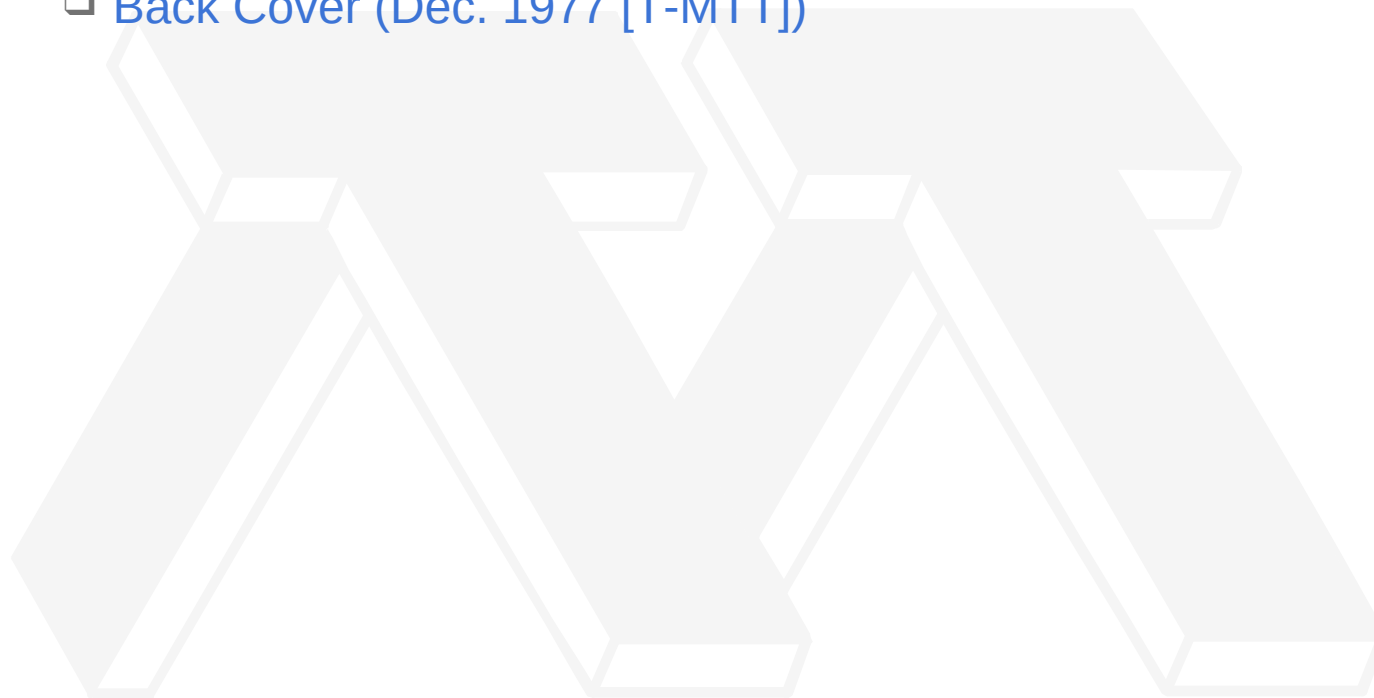
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-25, 1977
- ❑ Back Cover (Dec. 1977 [T-MTT])



IEEE

Contents

Publications

Issues

Click on title for a paper summary.

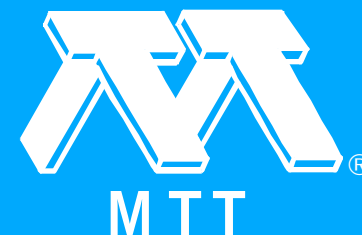


Papers by Issue

1975 [MWSYM]

- ☐ [Front Cover \(1975 \[MWSYM\]\)](#)
- ☐ [Copyright \(1975 \[MWSYM\]\)](#)
- ☐ [Foreword \(1975 \[MWSYM\]\)](#)
- ☐ [Committees \(1975 \[MWSYM\]\)](#)
- ☐ [Awards \(1975 \[MWSYM\]\)](#)
- ☐ [Program \(1975 \[MWSYM\]\)](#)
- ☐ [Session 1 -- Microwaves in Earth Sensing](#)
- ☐ [Passive Microwave Sensing of the Earth](#)
- ☐ [Satellite Altimetry Applications \(1975 \[MWSYM\]\)](#)
- ☐ [Microwave Scattering from the Ocean Surface](#)
- ☐ [Imaging RADAR Potentials for Earth Resources](#)
- ☐ [Session 2 -- Microwaves in Communication](#)
- ☐ [Some Aspects of Microwave Development in a Developing Country](#)

Click on title for a paper summary.



[Contents](#)

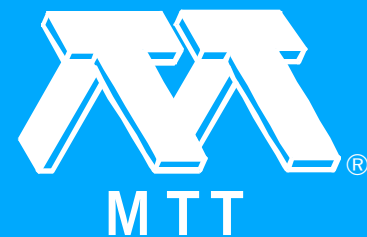
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ Bi-Polar IC's for Microwave Signal Processing
- ❑ Microwave QPSK Demodulation Techniques at the Receiver Front End
- ❑ Electronically-Tunable, Low Noise K/sub α -Band Paramp-Downconverter Satellite Communications Receiver
- ❑ Depolarization Measurements on the ATS-6 20 GHz Downlink: A Description of the VPI&SU Experiment and Some Initial Results (1975 [MWSYM])
- ❑ Session 3 -- Microwave Filters and Components I
- ❑ Solving the Approximation Problem for Narrowband Bandpass Filters with Equal-Ripple Passband Response and Arbitrary Phase Response
- ❑ Template Methods for Efficient Microwave Filter Design
- ❑ Microwave Filters with Single Attenuation Poles at Real or Imaginary Frequencies
- ❑ On the Field Energy and Power of Waveguides and Cavities Synthesized with Nonseparable Solutions of Helmholtz Wave Equation



Contents

Publications

Issues

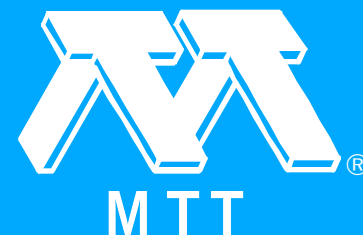
Click on title for a paper summary.



Papers by Issue

- ☐ Generalized TE/sub 011/ Mode Waveguide Bandpass Filters
- ☐ Microwave Bandpass Filters Containing Dielectric Resonators with Improved Temperature Stability and Spurious Response
- ☐ Session 4 -- Microwave Generation and Amplification
- ☐ Active Solid State Microwave Device Performance
- ☐ Microwave Octave-Band GaAs FET Amplifiers
- ☐ X-Band Silicon Power Transistor
- ☐ Wideband, High Gain, Dual Diode Gunn Amplifier Circuits
- ☐ C-Band Solid State TWT Replacement
- ☐ A High Power Waveguide IMPATT Amplifier
- ☐ Harmonic Tuning Effects of TRAPATT Oscillators
- ☐ High Power Pulsed UHF and L-Band p/sup +/-n-n/sup +/- Silicon TRAPATT Diode Oscillators
- ☐ Session 5 -- Microwave Measurements
- ☐ The Evolution of Automated Microwave Measurements

Click on title for a paper summary.



Contents

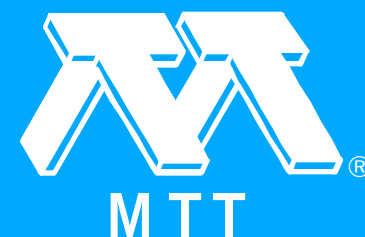
Publications

Issues



Papers by Issue

- ❑ Automated Calibration of Directional-Coupler-Bolometer-Mount Assemblies (1975 [MWSYM])
- ❑ Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios (1975 [MWSYM])
- ❑ Non Destructive Resonant Technique for the Measurement of Complex Permittivity -- Theoretical Analysis and Experimental Results
- ❑ Measurement of the Equivalent Circuit Parameters of Discontinuities in a Resonant Microstrip Ring
- ❑ Resonance Measurement of Even and Odd Mode Propagation Constants in Coupled Microstrips
- ❑ Session 6 -- Microwave Filters and Components II
- ❑ Tapped-Line Coupled-Transmission-Lines with Applications to Compline and Interdigital Filters (1975 [MWSYM])
- ❑ Multi-Section Inhomogeneous Coupled-Line Filters with Large Mode-Velocity Ratios
- ❑ A New N-Way Power Divider/Combiner Suitable for High-Power Applications



IEEE

Contents

Publications

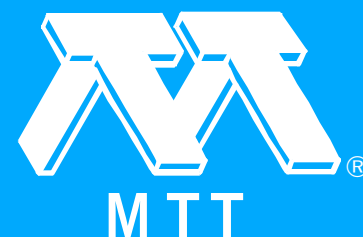
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Characteristics of Unsymmetrical Broadside-Coupled Strips in an Inhomogeneous Dielectric Medium
- ☐ Wideband, Totally Coupled Directional Transformers
- ☐ High Directivity Microstrip Couplers Using Dielectric Overlays
- ☐ Session 7 -- Professional Action (Panel Session)
- ☐ The New Pensions Law and How You Might Benefit from it
- ☐ Session 8 -- Microwave Integrated Circuits
- ☐ Tapered Asymmetric Microstrip Magic Tee
- ☐ An Efficient Microstrip Upconverter for K/sub a/-Band
- ☐ Design and Performance of a Broadband MIC Low Noise K-Band Balanced Mixer, Polar Discriminator and Related Components
- ☐ New Developments with Integrated Fin-Line and Related Printed Millimeter Circuits
- ☐ Low Noise Microwave and Millimeter Wave Integrated Circuit Mixers



IEEE

Contents

Publications

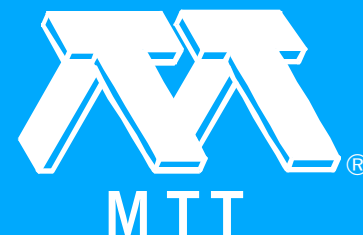
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ A New "Phased-Type" Image Enhanced Mixer
- ☐ A 3.5 Watt High Efficiency Frequency Quadrupler for X-Band Applications
- ☐ Characteristics and Applications of Coupled Microstrip Lines
- ☐ Session 9 -- Technology Forecasting and Assessment
- ☐ Technology Forecasting and Assessment (1975 [MWSYM])
- ☐ Session 10 -- Microwave Diode Control Devices
- ☐ Integrated Diode Phase Shifters and Performance in a 502-Element X-Band Array
- ☐ Recent Advances in Binary-Programmed Electronically-Tunable Bandpass Filters of the "Flauto" Type
- ☐ 4 GHz 8x8 Switch Matrix for SDMA System
- ☐ Diode Structures for a Millimeter Wave Phase Shifter
- ☐ A Transferred-Electron Frequency Memorizer
- ☐ Octave Bandwidth High Speed Limiter with Uniform Suppression Characteristics



Contents

Publications

Issues

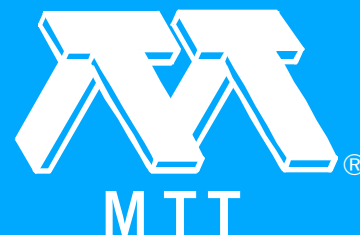
Click on title for a paper summary.



Papers by Issue

- ❑ RF Burnout of Mixer Diodes as Induced Under Controlled Laboratory Conditions and Correlation to Simulated System Performance
- ❑ Picosecond Pulse Sequential Waveform Generation
- ❑ Session 11 -- Computer Aided Microwave Practices
- ❑ Analysis of Microwave Network Circuits by Time and Frequency-Domain Comparisons
- ❑ A Complete Computer Program for the Synthesis of Matching Networks for Microwave Amplifiers
- ❑ Modeling and Computer Simulation of a Microwave-to-DC Energy Conversion Element (1975 [MWSYM])
- ❑ Network Modelling of Interacting Capacitive Irises and Steps in Waveguide
- ❑ Three-Dimensional Numerical Analysis of Microwave Cavities Using the TLM Method
- ❑ Solution of Large, Sparse Systems in Design and Analysis
- ❑ Integrated Approach to Microwave Design (1975 [MWSYM])

Click on title for a paper summary.



Contents

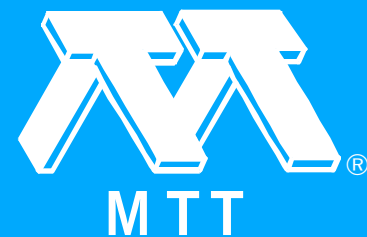
Publications

Issues



Papers by Issue

- ❑ Session 12 -- Millimeter Wave Communications in Japan (Invited Session)
- ❑ W-40G Guided Millimeter-Wave Transmission System
- ❑ 20G-400M Digital Radio-Relay System
- ❑ Receiving Part of Satellite Borne Millimeter Wave Transponder
- ❑ 150 GHz Band IMPATT Oscillators, Frequency Converters and Doublers
- ❑ Wideband Tunable and Highly Stabilized Millimeterwave IMPATT Diode Oscillators
- ❑ Waveguide Components for Millimeter-Wave Communications at 40-90GHz
- ❑ Low-Loss Bandpass Filters at 80 GHz Using Cylindrical TE/sub 111/ -Mode Cavities
- ❑ Advanced Loss-Reduction Techniques in Millimeter Waveguide Instruments
- ❑ Circular Arc Polygonal Type TE_{on} Mode Filter



IEEE

Contents

Publications

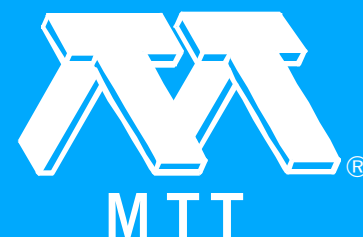
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Session 13 -- Microwave Ferrite Control Devices
- ❑ Design of Ferrite Differential Phase Shift Sections
- ❑ Premature Decline Limiting in X-Band YIG Filters
- ❑ Microwave YIG-Tuned Elements as Transducers for Monitoring of EHV AC and HVDC Transmission Systems
- ❑ Y Junction Circulator Analysis
- ❑ New Edge Guided Mode Devices
- ❑ Possibility of Double Circulation Frequency Operation of Stripline Y-Junction Circulator
- ❑ Session 14 -- Millimeter Wave Systems
- ❑ A Solid-State 94 GHz Doppler Radar
- ❑ Advanced Solid-State Components for Millimeter Wave Radars
- ❑ Wideband Electronically Tuned Millimeter-Wave IMPATT Oscillators
- ❑ Microstrip Varactor-Tuned Millimeter Wave IMPATT Diode Oscillators (1975 [MWSYM])



IEEE

Contents

Publications

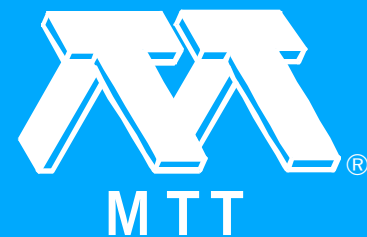
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Millimeter-Wave Power Amplifier and Combiner
- ❑ A Low Noise Broadband Ka-Band Waveguide Mixer
- ❑ Varactor Frequency Doublers and Triplers for the 200 to 300 GHz Range
- ❑ New Waveguide Structures for Millimeter-Wave Integrated Circuits (1975 [MWSYM])
- ❑ Session 15 -- Microwaves in Medicine
- ❑ Resonant Electromagnetic Power Deposition in Man and Animals
- ❑ Microwave Measurement of Respiration
- ❑ Complex Permittivity and Penetration Depth of Certain Biological Tissue Between 40 and 90 GHz
- ❑ Dielectric Measurements for the Design of a Phantom Eye
- ❑ Effect of Microwave Fields on Rabbit Vagus Nerves and Superior Cervical Ganglia
- ❑ Microwave Irradiation Design Using Dielectric Lenses



IEEE

Contents

Publications

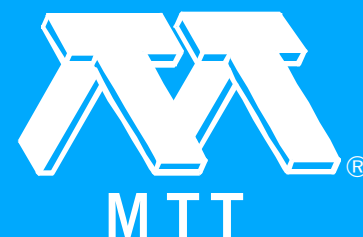
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ A Nonperturbing Liquid Crystal Fiberoptic Microwave Power Probe
- ☐ Fiberoptic Microprobes for Measurement of Electromagnetic Fields
- ☐ Session 16 -- Noise in Microwave Transmission and Applications of Gunn and IMPATT Diodes (Panel Session)
- ☐ Noise in Microwave Transmission Applications of Gunn and IMPATT Diodes (Panel Session)
- ☐ The System/Circuit Interface in IMPATT Diode Applications
- ☐ The System/Circuit Interface in Gunn Diode Applications
- ☐ On the Circuit-Device Interface in IMPATT-Diode Applications
- ☐ The Circuit/Device Interface in Gunn and IMPATT Diode Applications
- ☐ IMPATT and Gunn Diode Noise Diagnostics
- ☐ Theoretical Aspects of Gunn and IMPATT Diode Noise
- ☐ Session 17 -- Reduction and Measurement of Noise



IEEE

Contents

Publications

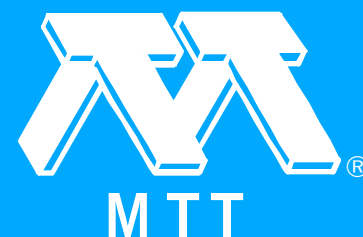
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Frontiers of Microwave Noise Measurements at NBS
- ❑ A Measure for the Stability of Solid State Noise Sources
- ❑ Anomalous Noise in Schottky Diode Mixers at Millimeter Wavelengths
- ❑ MIC Modulator with Electronically Variable Carrier Cancellation Circuit
- ❑ Feedback Effects on the Noise Performance of GaAs MESFETs
- ❑ Stability Considerations of Low-Noise Transistor Amplifiers with Simultaneous Noise and Power Match
- ❑ IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature (1975 [MWSYM])
- ❑ Session 18 -- Microwaves in Transportation and Navigation
- ❑ NAVSTAR Global Positioning System: A Satellite Based Microwave Navigation System
- ❑ Dual-Mode Automobile Collision Avoidance Radar



IEEE

Contents

Publications

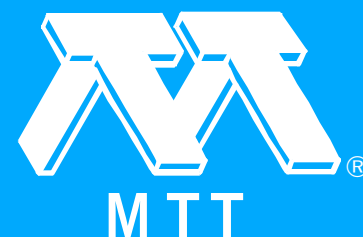
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Application of Intermediate Frequency Interferometry to Transport Vehicle Control Systems
- ❑ The Accurate Measurement of Range by the Use of Microwave Delay Line Techniques
- ❑ Microwave Technology in the Microwave Landing System
- ❑ Instrument Landing System Performance Prediction
- ❑ Session 19 -- Microwave Acoustics and Delay Lines
- ❑ Currently Practical Acoustic Surface Wave Devices
- ❑ Design, Fabrication and Testing of SAW Butterworth Filters
- ❑ Problems in the Realization of Flat Delay, Narrow-Band Surface Wave Filters at UHF and Microwave Frequencies
- ❑ Electrical Matching of Unidirectional Surface Wave Devices
- ❑ Influence a of Solid Elastic Properties on the Scattering of Rayleigh Wave by Normal Discontinuities
- ❑ Real Time Discrete Fourier Transforms Using a Programmable Diode-Convolver Module



Contents

Publications

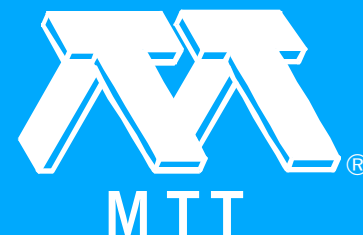
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Radiation Resistance of Microstrip Excited Magnetostatic Surface Waves](#)
- ❑ [A Magnetostatic Delay Line Oscillator](#)
- ❑ [Index of Authors \(1975 \[MWSYM\]\)](#)
- ❑ [1975 IEEE MTT-S International Microwave Symposium, Condensed Schedule of Events](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.



Papers by Issue



IEEE

Contents

Publications

Issues

1976 [MWSYM]

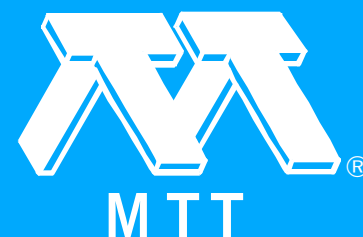
- ☐ [Front Cover \(1976 \[MWSYM\]\)](#)
- ☐ [Copyright \(1976 \[MWSYM\]\)](#)
- ☐ [Foreword \(1976 \[MWSYM\]\)](#)
- ☐ [Committees \(1976 \[MWSYM\]\)](#)
- ☐ [Awards \(1976 \[MWSYM\]\)](#)
- ☐ [Program \(1976 \[MWSYM\]\)](#)
- ☐ [Session 1 -- Optics](#)
- ☐ [Review of the Status of Optical Fiber Transmission and Integrated Optics](#)
- ☐ [Session 2 -- Integrated Optics and Fiber Optics](#)
- ☐ [A Broad Band GaAs Microstrip Modulator at 16 GHz for CO/sub 2/ Laser Radiation](#)
- ☐ [Signal Processing Using Guided-Wave Acoustooptic Bragg-Diffraction in LiNbO/sub 3/ Waveguides](#)
- ☐ [Theory for Electrooptical Grating Modulators](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Network Methods for Dielectric-Grating Applications
- ❑ An Ideal Refractive-Index-Distribution and Mode Filter for Band Broadening of Multimode Optical Fiber
- ❑ Propagation in Inhomogeneous Slab Waveguides
- ❑ Session 3 -- Solid-State Microwave Sources
- ❑ A High Power 50GHz DDR IMPATT Oscillator with Low Side Band Noise
- ❑ Time Varying IMPATT Impedance Measurements
- ❑ BARITT Devices for Self-Mixed Doppler Radar Applications
- ❑ Series Interconnection of Six TRAPATT Devices on a Diamond Substrate
- ❑ YIG-Tuned GaAs FET Oscillators
- ❑ Session 4 -- Passive Microwave Components
- ❑ A 4, 6, 20 and 30 GHz Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (1976 [MWSYM])



Contents

Publications

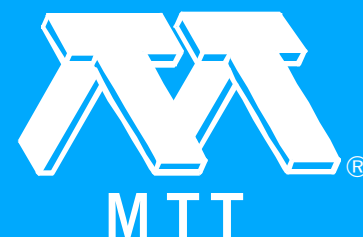
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ New High Performance 3.5 mm, Low Cost, Utility Coaxial Connector with Mode Free Operation Through 34 GHz
- ❑ On Some Integral Relationships for Commensurate Transmission-Line Networks
- ❑ A 2-Gap Waveguide Mount (Comments)
- ❑ Symmetrical 2N-Port Directional Couplers
- ❑ Session 5 -- Microwaves in Communication Systems
- ❑ Dual Polarization Antenna System Design and Performance
- ❑ Problems and Challenges in Satellite Communications Frequency Reuse - Antennas and Components
- ❑ Digital Telecommunications Radio Systems
- ❑ Implementation of a Military Digital Microwave System
- ❑ NASA Microwave Propagation and Interference Studies (Abstract)
- ❑ Communications Technology Satellite Systems, Space and Ground Segments
- ❑ Session 6A -- Low-Noise Receivers



Contents

Publications

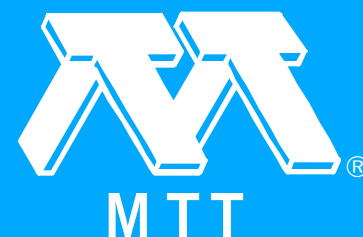
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Ultra Low Noise, Ku-Band Parametric Amplifier Assembly
- ❑ An Experimental Study of Image Termination Methods for Low Noise Mixers
- ❑ FET Mixers for Communication Satellite Transponders
- ❑ Cryogenically Cooled GaAs FET Amplifier with a 1.1-dB Noise Figure at 5.0 GHz
- ❑ Session 6B -- Solid-State Power Amplifiers
- ❑ A Quasi-Linear Approach to the Design of Microwave Transistor Power Amplifiers
- ❑ X-Band MIC GaAs FET Power Amplifier
- ❑ Process Technology and Modeling of a Low-Noise Silicon Bipolar Transistor with Sub-Micron Emitter Widths
- ❑ A 12-15 GHz High Gain Amplifier Design Using Submicron Gate GaAs Field Effect Transistors
- ❑ Session 7 -- Filters
- ❑ Design Formulas for Bandpass Channel Diplexers



IEEE

Contents

Publications

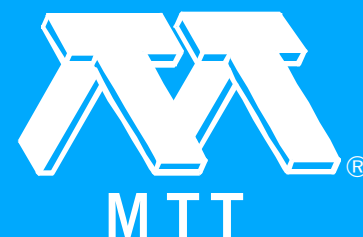
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Narrowband Contiguous Multiplexing Filters with Arbitrary Amplitude and Delay Response
- ☐ Practical Realization of Broadband Microwave Diplexers
- ☐ An Improved Low-Pass Harmonic Absorber
- ☐ Exact Design of Wideband Equal-Ripple Bandpass Filters with Non-Adjacent Resonator Couplings
- ☐ Synthesis of an Optimum Impedance Transformer
- ☐ Session 8 -- Panel Discussion: Millimeter Integrated Circuit Technology
- ☐ Millimeterwave Integrated Circuit Technologies (Panel Discussion)
- ☐ Session 9 -- Solid-State Microwave Devices
- ☐ Solid State Microwave Devices (Rump Session)
- ☐ Session 10 -- Microwave High-Power Techniques
- ☐ A 400 kW Long Pulse X-Band Planetary Radar
- ☐ Performance of a High-Power, 2.388-GHz Receiving Array in Wireless Power Transmission Over 1.54 km



IEEE

Contents

Publications

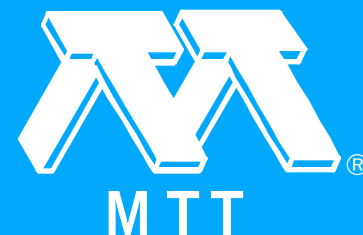
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Optimization of the Efficiency and Other Properties of the Rectenna Element
- ❑ High Power Monopulse Tracking Feed
- ❑ A 2-Kilowatt Average Power X-Band Receiver Protector for the Lincoln Laboratory SOSI Radar
- ❑ Characteristics and Effects of CW High Power Breakdown in Waveguide
- ❑ Fast, High Power, Octave Bandwidth, X-Band Waveguide Microwave Switch
- ❑ Session 11 -- Gigabit Logic
- ❑ GBIT/s Pulse Regeneration and Amplification with GaAs-MESFETs
- ❑ Recent Development or Transferred Electron Logic Devices in Japan
- ❑ Transferred Electron Logic Devices (TELDs) for Gigabit Rate Signal Processing (1976 [MWSYM])
- ❑ Multiplexing- and Demultiplexing-Techniques with Gunn Devices in the Gbit/s Range



Contents

Publications

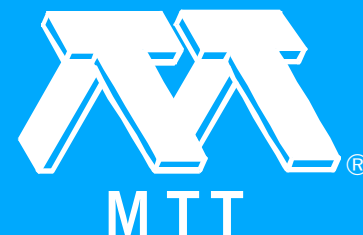
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [A Silicon Monolithic Technology for 1-2 GHz Analog Signal Processing](#)
- ❑ [Clocked Diode Pulse Amplifiers for Microwave Bit Rates](#)
- ❑ [Session 12 -- Multimeter and Microwave Integrated Circuits](#)
- ❑ [The Elliptical Dielectric Waveguide a Very Useful Model for Some Microwave and Millimeter Wave Integrated Circuits and Components](#)
- ❑ [Ferrite Planar Circuit in Microwave IC](#)
- ❑ [Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides](#)
- ❑ [Millimeter-Wave Downconverter with Subharmonic Pump](#)
- ❑ [Microwave Integrated Circuit Receivers at Millimetric Wavelengths](#)
- ❑ [Transceiver Module for an L-Band Adaptive Array Antenna](#)
- ❑ [Design Techniques for Bandpass Filters Using Edge-Coupled Microstrip Lines on Fused Silica](#)



[Contents](#)

[Publications](#)

[Issues](#)

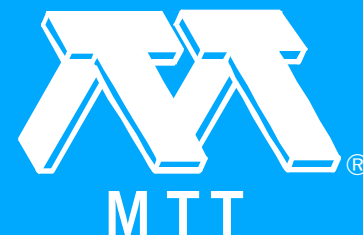
Click on title for a paper summary.



Papers by Issue

- ☐ An Accurate Design of Resonance Frequencies of Dielectric Resonators
- ☐ Coupling Between: A Microstrip Transmission Line and a Dielectric Resonator and Between Two Adjacent Dielectric Resonators for Application to Bandpass Filter
- ☐ Session 13A -- Computer-Aided Design and Measurement
- ☐ An Introduction to Simulation and Optimization
- ☐ Automated Third-Order Distortion Measurements
- ☐ Large Signal Device Characterization for Broadband Ka-Band IMPATT Amplifier Design
- ☐ Third Generation Automatic Microwave Measurements
- ☐ Session 13B -- Microwave Measurement and Techniques
- ☐ A New Load-Pull Characterization Method for Microwave Power Transistors
- ☐ A V-Band Network Analyzer/Reflection Test Unit
- ☐ An Improved Solid State Noise Source
- ☐ Automated Spectral Analysis of Microwave Oscillator Noise

Click on title for a paper summary.



IEEE

Contents

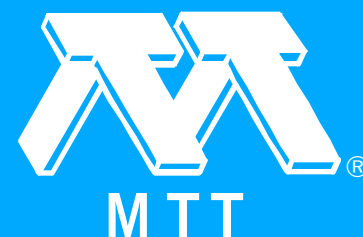
Publications

Issues



Papers by Issue

- ❑ Tetsing of a Multichannel Satellite Transponder Using Automatic Testing Equipment (ATE)
- ❑ Session 14 -- Millimeter and Submillimeter Wave Techniques
- ❑ Present and Future Capability of Millimeter-Wave Receivers (Abstract)
- ❑ Control of Manufacturing Distortions in WT4 Millimeter Waveguide Medium
- ❑ Surface Characteristics of Metals and Waveguide Attenuation at Millimeter-Wave Frequencies Between 25 and 160 GHz
- ❑ Low Noise Traveling-Wave Maser Receiver for Three Millimeter Wavelength
- ❑ Influence of Longitudinal Magnetic Field on the CW Submillweter Waves Output from HCN Gas Laser
- ❑ Session 15 -- Ferrite Components
- ❑ Edge Guided Waves Five Years Later



IEEE

Contents

Publications

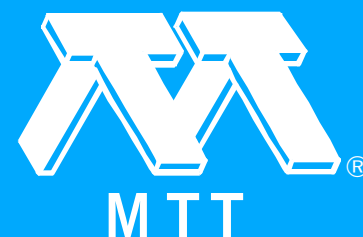
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ New Edge-Guided Mode Isolator Using Ferromagnetic Resonance Absorption (1976 [MWSYM])
- ☐ Field Distribution of a New Type of E.G. Mode Isolator
- ☐ The Edge Guided Mode on Ferrite Loaded Stripline
- ☐ A New Temperature Stabilized Waveguide Circulator
- ☐ Low Loss Broadband EHF Circulator
- ☐ UHF-Band Lumped-Element Circulator for Medium-Power Applications
- ☐ Microwave Permeability Tensor of Partially Magnetized Ferrites
- ☐ Frequency Selective High Power YIG Limiters
- ☐ Design and Performance of an Integrated Three Channel Tracking YIG Preselector
- ☐ Session 16 -- Surface-Acoustic-Wave Resonators
- ☐ The Physics and Equivalent Circuit of the Basic SAW Resonator



IEEE

Contents

Publications

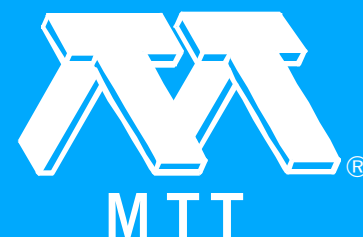
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Acoustic-Surface-Wave Resonators for Band-Pass Filter Applications
- ☐ Surface Acoustic Wave Resonator Filters
- ☐ Surface-Acoustic-Wave Device for Doppler Filtering of Radar Burst Waveforms
- ☐ SAW Transform Signal Processing
- ☐ The Surface Acoustic Wave Reflective Dot Array (RDA)
- ☐ Weighted Unidirectional Transducer SAW Filter at 328 MHz
- ☐ Periodic Frequency Response SAW Filters for a Tree Approach to Many-Tone Frequency Synthesis
- ☐ Session 17 -- General Joint Invited Session
- ☐ Future Microwave Markets in Telecommunications and Aviation
- ☐ Session 18 -- Acoustic Wave Devices and Techniques
- ☐ Scanning Acoustic Microscope (Abstract)
- ☐ Acoustic Surface Waveguides, with Similarities in Optics



Contents

Publications

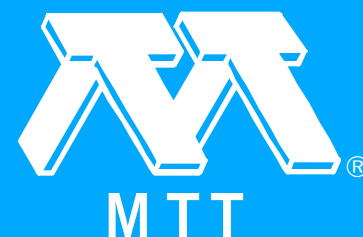
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Commercial Application of a Surface Wave Television IF Filter
- ☐ Session 19 -- Commercial Applications of Microwaves
- ☐ MLS--A Practical Application of Microwave Technology (1976 [MWSYM])
- ☐ A High-Power Solid-State C-Band Transmitter for MLS Applications
- ☐ Passive L-Band Radiometer for Remote Sensing of Earth Resources
- ☐ Cooperative Signal Processing Beacon Transponder for Airport Traffic Control
- ☐ Microwave Engineering Problems in the Microwave Oven
- ☐ Session 20 -- Phased-Array Components
- ☐ Variable Power Dividers in Satellite Systems
- ☐ Antenna Array for Limited Scan Applications
- ☐ Lithium Ferrite C-Band Latching Phase Shifters



Contents

Publications

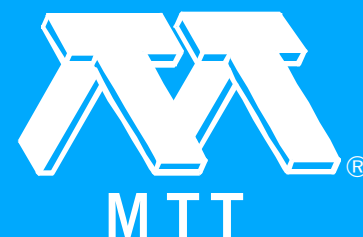
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Digital Phase Shifter Elements for a K/sub u/-Band Phased Array RADAR
- ❑ Session 21 -- Technology Forecasting
- ❑ Technology Forecasting and Assessment (1976 [MWSYM])
- ❑ Session 22 -- Microwave Activities in Government Laboratories
- ❑ Microwave Technology in the Department of Defense (Panel Discussion)
- ❑ Session 23 -- Review and State-of-the-Art, Biological Effects and Hazards of Microwave Radiation
- ❑ Review and State of the Art Biological Effects and Hazards of Microwave Radiation
- ❑ Session 24 -- Electromagnetic Theory
- ❑ Evanescent Waves
- ❑ Propagation in a Rectangular Waveguide Periodically Loaded with Resonant Irises (1976 [MWSYM])



IEEE

Contents

Publications

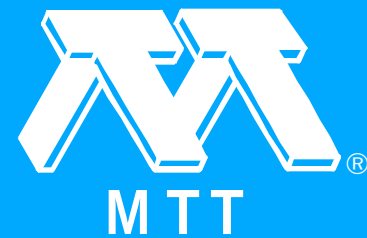
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Scattering by Periodic Metal Surfaces with Sinusoidal Height Profile - A New Theoretical Approach](#)
- ❑ [Theoretical Analysis of Open Ring Line](#)
- ❑ [Pulse Broadening in Multimode Optical Fibers with Large Delta n/n. Numerical Results](#)
- ❑ [Prototype Networks in Broadband Parametric Amplifier Synthesis](#)
- ❑ [Index of Authors \(1976 \[MWSYM\]\)](#)
- ❑ [Back Cover \(1976 \[MWSYM\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.

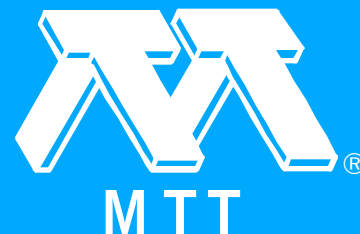


Papers by Issue

1977 [MWSYM]

- ☐ [Front Cover \(1977 \[MWSYM\]\)](#)
- ☐ [Copyright \(1977 \[MWSYM\]\)](#)
- ☐ [Foreword \(1977 \[MWSYM\]\)](#)
- ☐ [Committees \(1977 \[MWSYM\]\)](#)
- ☐ [Awards \(1977 \[MWSYM\]\)](#)
- ☐ [Program \(1977 \[MWSYM\]\)](#)
- ☐ [Session A1 -- Solid State Sources](#)
- ☐ [High Power W-Band Pulsed IMPATT Oscillators](#)
- ☐ [Mechanically Tuneable, Cavity-Stabilized, Millimeter-Wave IMPATT Oscillators](#)
- ☐ [Y-Band \(170-260 GHz\) Tunable CW IMPATT Diode Oscillators \(1977 \[MWSYM\]\)](#)
- ☐ [Ka-Band Solid State Power Amplifier](#)
- ☐ [Computer-Aided Time and Frequency Domain Measurements of TRAPATT Diode Oscillators](#)

Click on title for a paper summary.



IEEE

[Contents](#)

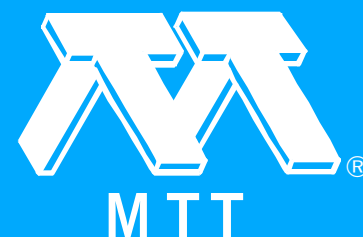
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ [Amplifier Applications of Millimeter Wave InP GUNN Devices](#)
- ❑ [A New Look at Noise in Transferred Electron Oscillators \(1977 \[MWSYM\]\)](#)
- ❑ [Session B1 -- Six Port Network Analysis](#)
- ❑ [The Six-Port Reflectometer: An Alternative Network Analyzer \(1977 \[MWSYM\]\)](#)
- ❑ [A Microwave Network Analyzer Using Two 6-Port Reflectometers](#)
- ❑ [A Six-Port Automatic Network Analyzer \(1977 \[MWSYM\]\)](#)
- ❑ [An Improved Circuit for Implementing the Six-Port Technique of Microwave Measurements \(1977 \[MWSYM\]\)](#)
- ❑ [An Application of the Six-Port Reflectometer to Precision Measurement of Microwave One-Port Parameters](#)
- ❑ [A Semi-Automated Sixport for Measuring Millimeter Wave Power and Complex Reflection Coefficient \(1977 \[MWSYM\]\)](#)
- ❑ [Session C1 -- Multifunction Microwave Modules](#)



[Contents](#)

[Publications](#)

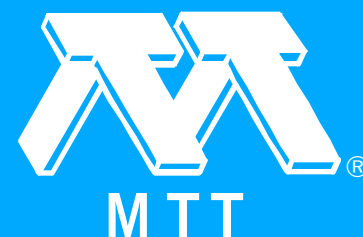
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Session D1 -- Optics and Submillimeter Waves
- ❑ Light Wave Communications (Invited Paper)
- ❑ Single Strand Optical Fibre Systems (Invited Paper)
- ❑ Review of Integrated Optics
- ❑ Relativistic Electron Beam Interactions for Generation of High Power at Microwave Frequencies
- ❑ CW Performance of Optically-Pumped Lasers in the Millimeter-Wave Spectral Region
- ❑ Development and Applications of Millimeter Wavelength, High Power Optically Pumped Lasers
- ❑ Session A2 -- Diode Frequency Converters
- ❑ Broadband Frequency Dividers Using Microwave Varactors
- ❑ Parametric Frequency Multiplication and Level Control in Broadband Microwave Signal Source
- ❑ Low Cost X-Band MIC BARITT Doppler Sensor (Abstract)
- ❑ K-Band BARITT Doppler Detectors



Contents

Publications

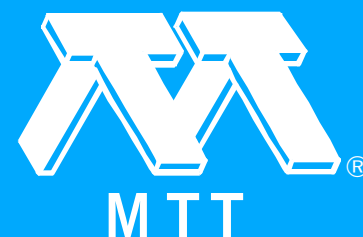
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ FM Distortion in Single and Cascaded Injection Locked Diode Oscillators
- ☐ A Simple Quasi-Optical Mixer for 100-120 GHz
- ☐ A Quasi-Optical Receiver Design
- ☐ Session B2 -- Microwave Measurements
- ☐ Microwave Deviation Linearity Test Method
- ☐ A Microwave Linearity Test Set
- ☐ Phase Noise Measurements in the Frequency Domain
- ☐ Super - TSD: A Generalization of the TSD Network Analyzer Calibration Procedure, Covering n-Port Measurements with Leakage
- ☐ Probe Measurements of Guide Wavelength in Rectangular Silicon Dielectric Waveguide
- ☐ Determination of Complex Dielectric and Magnetic Properties of Materials
- ☐ Measurement of Dielectric Properties with Superconducting Resonators: Theory and Practice



IEEE

Contents

Publications

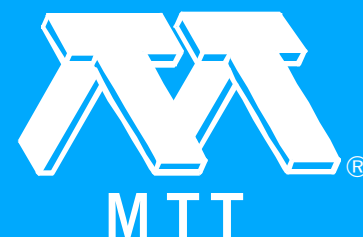
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Session C2 -- Computer Oriented Microwave Design and Practices
- ☐ Calculator-Based Synthesis Routine Speeds Microwave Amplifier Design
- ☐ Computer-Aided Design of Commensurate and Non-Commensurate Networks Using State-Space Techniques
- ☐ Microwave Circuit Design by Means of a Simple Simulator With an On-Line Minicomputer
- ☐ An Automated Receiver Test Concept
- ☐ Computer-Controlled Infrared Microscope for Thermal Analysis of Microwave Transistors
- ☐ Computer-Aided Tuning of Microwave Circuits
- ☐ A Time-Domain Technique for Characterizing Leaky Coaxial Cables
- ☐ Session D2 -- High Power
- ☐ Dielectric Waveguides for Underwater Transmission of High Microwave Power



IEEE

Contents

Publications

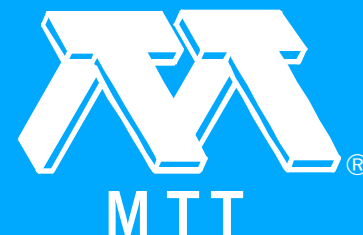
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ The Selection of High-Power Integrated Microwave Components for Military Satellite Communication Terminals
- ❑ Further Advances in High-Power Electronically Tuned Resonators
- ❑ A 1.2 Kw L-Band Solid State Power Amplifier for Space-Borne Synthetic Aperture Radars
- ❑ High Power Microwave P-I-N Diode Inductive Driving
- ❑ Graceful Degradation Properties of Matched N-Port Power Amplifier Combiners
- ❑ A Passive Method for Monitoring Non-Ionizing Radiation
- ❑ Session A3 -- Microwave Integrated Circuits
- ❑ A S-Band High Power Feedback Amplifier
- ❑ A Low Noise FET Amplifier in Coplanar Waveguide
- ❑ An MIC Push-Pull FET Amplifier
- ❑ A High Power MIC Passive Diode Receiver Protector with Integral STC Using Variable Basewidth Techniques
- ❑ A Low Noise MIC GaAsFET Amplifier for 4 GHz Radio



IEEE

Contents

Publications

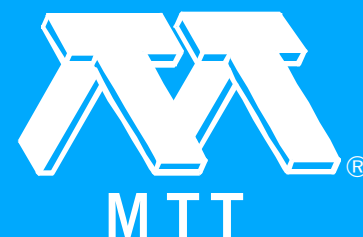
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Ku-Band Receiver Front-End Using MIC Technology
- ❑ Session B3 -- Digital Microwave Systems
- ❑ Digital Radio: Systems, Markets and Trends
- ❑ PSK and QPSK Modulators for Gigabit Data Rates
- ❑ Switching Performance of mm-Wave PIN Diodes for Ultra High Data Rates
- ❑ Applications of Advanced Technologies to Digital Microwave Systems
- ❑ Millimeter-Wave IMPATT Sources for Communication Applications
- ❑ Design of Direct Phase Modulators for High Speed Digital Radio Systems Using MIC Techniques
- ❑ Precision Subnanosecond Delay Measurements of High Speed Digital Integrated Circuits
- ❑ Session C3 -- Microwave & mm Solid State Circuit Development in Japan



Contents

Publications

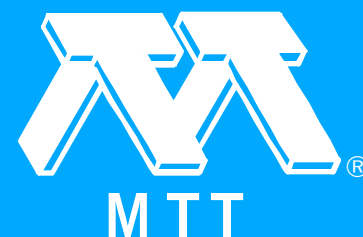
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ 4-W IMPATT Amplifiers for 6 - 8 GHz 1800CH FM Radio Systems
- ❑ High Power GaAs IMPATT Amplifiers (1977 [MWSYM])
- ❑ Injection Locking of an IMPATT Diode Oscillator by Using a Low-Frequency Signal Parametric Injection Locking
- ❑ Schottky-Barrier Diode Converters in the Short Millimeter Wavelengths Region
- ❑ A New Microwave Amplitude Limiter Using GaAs Field Effect Transistor
- ❑ A 7 GHz FM Transmitter Utilizing GaAs Power MESFETs
- ❑ 20 GHz Band GaAs-FET Waveguide-Type Amplifier
- ❑ Session D3 -- Applications to Cancer Treatment I
- ❑ Microwave Thermography as a Diagnostic Tool for the Detection of Cancer (Abstract)
- ❑ Hyperthermia Dose Definition
- ❑ Selective Heating of Cutaneous Human Tumors at 27.12 MHz (Abstract)



Contents

Publications

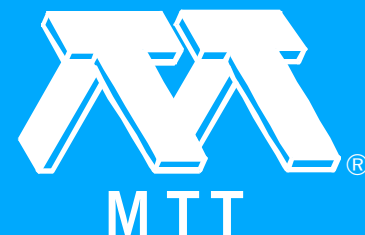
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Hyperthermia: Healing and Hazard in Tumor Bearing Rats](#)
- ❑ [Changes in Tumor Blood Flow Produced by Microwave Induced Hyperthermia \(Abstract\)](#)
- ❑ [Increase in X-Ray Sensitivity of Cancer After Exposure to 434 MHz Electromagnetic Radiation](#)
- ❑ [Session A4 -- FET Devices and Circuits](#)
- ❑ [X-Band--GaAs FET YIG-Tuned Oscillator](#)
- ❑ [Wide-Band Varactor-Tuned GaAs MESFET Oscillators at X- and Ku-Bands](#)
- ❑ [Design of GaAs MESFET Oscillator Using Large Signal S-Parameters \(1977 \[MWSYM\]\)](#)
- ❑ [A Dielectric Resonator Oscillator with 5 PPM Long Term Frequency Stability at 4 GHz](#)
- ❑ [A Half-Micron Gate Low Noise GaAs MESFET and Amplifiers](#)
- ❑ [High Power Microwave Static Induction Transistor](#)



[Contents](#)

[Publications](#)

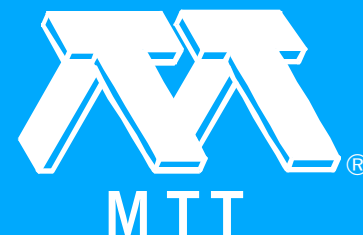
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [An Experimental Evaluation of X-Band GaAs FET Mixers Using Single and Dual-Gate Devices](#)
- ❑ [Session B4 -- Filters I](#)
- ❑ [Microwave Dielectric Resonator Filters Utilizing Ba/sub 2/Ti/sub 9/O/sub 20/ Ceramics](#)
- ❑ [New Application of Evanescent Mode Waveguide to Filter Design \(1977 \[MWSYM\]\)](#)
- ❑ [Multi-Octave Compline-Filter Multiplexer](#)
- ❑ [TEM Bandpass Filters Having Eighth-Wavelength Coupled Stubs](#)
- ❑ [The Design of Ladder Networks Containing Lumped and Distributed Elements](#)
- ❑ [On the Design of Matched Equalizers of Prescribed Gain Versus Frequency Profiles](#)
- ❑ [Exact Synthesis of Interstage Matching Networks for Broadband Microwave GaAs FET Amplifiers](#)
- ❑ [Session C4 -- Microwave Acoustics](#)



IEEE

[Contents](#)

[Publications](#)

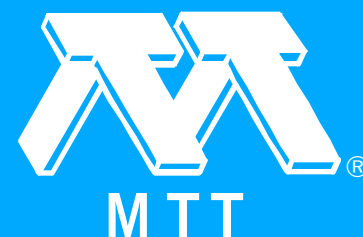
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Surface Acoustic Wave Slanted Correlators for Linear FM Pulse-Compressors
- ❑ A SAW Pulse Compression Filter Using the Reflective Dot Array
- ❑ Real Time Wideband Cepstrum Analysis Based on SAW Devices
- ❑ Synthesis of Acoustic-Surface-Wave-Resonator Filters Using any of Various Coupling Mechanisms
- ❑ Microwave Devices Based on Magnetostatic Wave Reflecting Arrays
- ❑ Actively Controlled SAW Multistrip Coupler
- ❑ X Band Bulk-Wave Delay Line Stabilized Oscillator
- ❑ Session D4 -- Applications to Cancer Treatment II
- ❑ Preliminary In-Vivo Probe Measurements of Electrical Properties of Tumors in Mice
- ❑ Non-Perturbing Microprobes for Measurement in Electromagnetic Fields



Contents

Publications

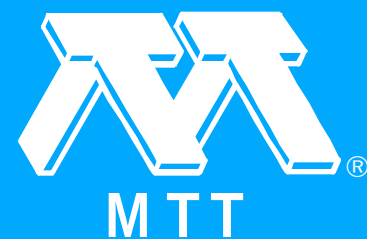
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Near Zone Microwave Exposure of a Biological Sphere
- ❑ Effect of Surface Cooling and Blood Flow on the Electromagnetic Heating of Tissue
- ❑ A Bolusing Technique for Batch Microwave Irradiation of Tumors in the Far Field
- ❑ A System for Developing Microwave Induced Hyperthermia in Small Animals (1977 [MWSYM])
- ❑ The Design and Performance of a Circularly Polarized Direct Contact Applicator for Microwave Diathermy
- ❑ Session A5 -- Microwave and Millimeter Wave Integrated Circuits
- ❑ A 3-dB Interdigitated Coupler on Fused Silica
- ❑ Wide-Band Frequency Discriminator with High Linearity
- ❑ Components for Microwave Integrated Circuits with Evanescent Mode Resonators (1977 [MWSYM])
- ❑ Calculation of Quasi-Planar Lines for mm-Wave Application
- ❑ Planar Multiport Millimeter Integrated Circuits



Contents

Publications

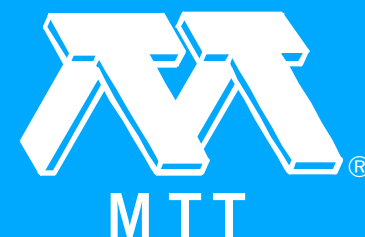
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Subharmonically Pumped Millimeter-Wave Mixers Built with Notch-Front and Beam-Lead Diodes
- ☐ Session B5 -- Filters II
- ☐ Low Loss Linear Phase Filters
- ☐ Dual Mode Canonical Waveguide Filters (1977 [MWSYM])
- ☐ An Exact Solution for a Six-Cavity Dual-Mode Elliptic Bandpass Filter
- ☐ All GFEC Dual Mode Quasi Elliptic Multiplexers for Satellite Transponders
- ☐ Tuning Procedure for Symmetric Coupled-Resonator Filters
- ☐ Short-Circuit Tuning Method for Singly Terminated Filters (1977 [MWSYM])
- ☐ Measurement Systems to Display $\text{Re}(z/\text{sub s. t./})$ of Singly Terminated Filters
- ☐ Loss Mechanisms in Coupled Cavity Filters
- ☐ Session C5 -- Satellite Communications Systems



[Contents](#)

[Publications](#)

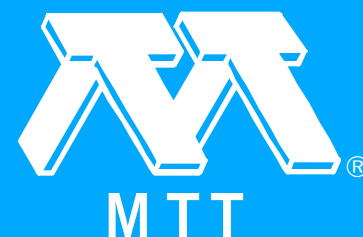
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ A TV Satellite Broadcast System for the Public Broadcasting Service
- ❑ Public Service Satellite Communications Opportunities
- ❑ The Centimeter Wave Beacons of the COMSTAR Domestic Communications Satellites
- ❑ A 12 GHz Low Cost Earth Terminal for Direct TV Reception from Broadcast Satellites (1977 [MWSYM])
- ❑ A Cost-Effective Modular Down Converter for S-Band WEFAX Reception
- ❑ Session D5 -- Waveguides and Transmission Lines
- ❑ Q Factors of Free and Shielded Cylindrical Dielectric Resonators
- ❑ Radiation from Triangular and Circular Resonators in Microstrip
- ❑ Theoretical Analysis of a Ridged-Waveguide Mounting Structure
- ❑ Analysis of Waveguide Junctions by Rank Reduction



Contents

Publications

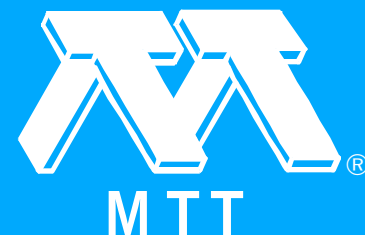
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Fields in Nonuniform Transmission Lines
- ❑ Propagating Modes Along a Thin Wire Located Near a Grounded Dielectric Slab (1977 [MWSYM])
- ❑ The Electromagnetic Fields and the Phase Constants of Dielectric Image Lines (1977 [MWSYM])
- ❑ Analysis of Dispersion in Arbitrarily Configured Dielectric-Loaded Transmission Structures
- ❑ Infrared Detection of Surface Charge and Current Distributions
- ❑ Session A6 -- Low Noise Components and Techniques
- ❑ Low Noise and Linear FET Amplifiers for Satellite Communications
- ❑ An Environmentalized Low-Noise Parametric Amplifier (1977 [MWSYM])
- ❑ Broadbanding an Electronically Switched Two-Channel Ka-Band Parametric Amplifier
- ❑ Low Noise Octave Bandwidth Waveguide Mixer



Contents

Publications

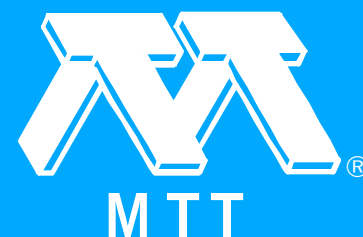
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Analysis of Noise in Room-Temperature Millimeter-Wave Mixers
- ☐ Image Conversion Effects in Diode Mixers
- ☐ Session B6 -- Passive Components
- ☐ Experimental Attenuation of Rectangular Waveguides at Millimeter-Wavelengths (1977 [MWSYM])
- ☐ High Directivity CTL-Couplers and a New Technique for the Measurement of CTL-Coupler Parameters (1977 [MWSYM])
- ☐ A Broadband Planar N-Way Combiner/Divider
- ☐ New N-Way Hybrid Power Dividers (1977 [MWSYM])
- ☐ A New Odd Number N-Way Power Combiner/Divider
- ☐ Session C6 -- Ferrites
- ☐ Canonical Representation and Figure of Merit of Circulator
- ☐ Diplexer and Broadbanding Operations of Stripline Y-Junction Circulators
- ☐ The Modal Spectrum of Ferrite-Loaded Striplines



IEEE

Contents

Publications

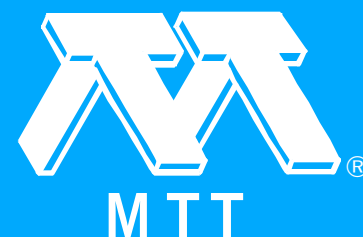
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Longitudinally Magnetized Ferrite Phase Shifters Using a Reduced Height Rectangular Waveguide
- ❑ Band Stop Filter Using LPE-YIG Films
- ❑ A High Power X-Band Frequency Selective Passive YIG Limiter
- ❑ Microwave Applications of Thin Magnetic Resistive Sheets
- ❑ Session D6 -- Antennas and Components
- ❑ Leaky-Wave Antenna and Band-Reject Filter for Millimeter-Wave Integrated Circuits
- ❑ Millimetre-Wave Insular Guide Frequency Scanned Array
- ❑ 2 GHz Feed for Horn-Reflector Antenna Utilizing Evanescent Mode Filter
- ❑ Propagation and Radiation Behaviour of Dielectric Coated E-Plane Sectoral Horn
- ❑ Reduction of Rain-Crosspolarization by its Dependence on Polarization Directions
- ❑ Index of Authors (1977 [MWSYM])



Contents

Publications

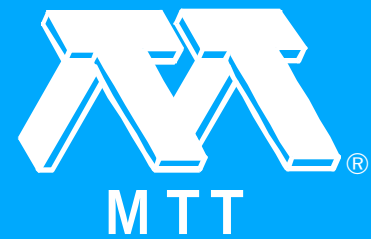
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Exhibition Guide \(1977 \[MWSYM\]\)](#)
- ❑ [Back Cover \(1977 \[MWSYM\]\)](#)



IEEE

[Contents](#)

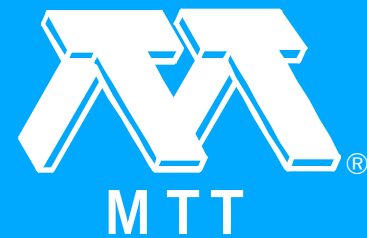
[Publications](#)

[Issues](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

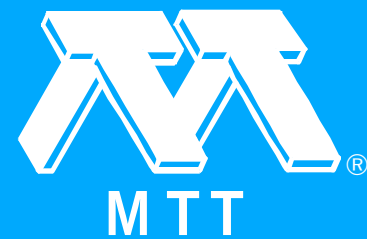
Publications

Issues

A B C D E F G H I
J K L M N O P Q R
S T U V W X Y Z
0 1 2 3 4
5 6 7 8 9

Colored letters and/or numbers are active links to the index.

Paper Index



IEEE

Contents

Publications

Issues

1

- ☐ 150 GHz Band IMPATT Oscillators, Frequency Converters and Doublers
- ☐ 1975 IEEE MTT-S International Microwave Symposium, Condensed Schedule of Events
- ☐ 1976 MTT Awards (Dec. 1977 [T-MTT])

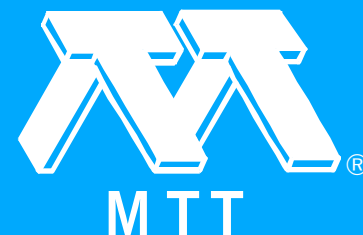
2

- ☐ 2 GHz Feed for Horn-Reflector Antenna Utilizing Evanescent Mode Filter
- ☐ 2-18-GHz Dispersion Measurements on 10-100-Omega Microstrip Lines on Sapphire
- ☐ 20 GHz Band GaAs-FET Waveguide-Type Amplifier
- ☐ 200-GHz 50-mW CW Oscillation with Silicon SDR IMPATT (Short Papers)
- ☐ 20G-400M Digital Radio-Relay System
- ☐ 22-GHz Measurements of Dielectric Constants and Loss Tangents of Castable Dielectrics at Room and Cryogenic Temperatures (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

3

- ❑ [30-GHz-Band Periodic Branching Filter Using a Traveling-Wave Resonator for Satellite Applications](#)

4

- ❑ [4 GHz 8x8 Switch Matrix for SDMA System](#)
- ❑ [4-W IMPATT Amplifiers for 6 - 8 GHz 1800CH FM Radio Systems](#)
- ❑ [400-Mb/s QPSK Repeater for 20-GHz Digital Radio-Relay System](#)

8

- ❑ [80-GHz-Band Low-Loss Ring-Type Channel Diplexer Using a Semicircular Electric Mode](#)

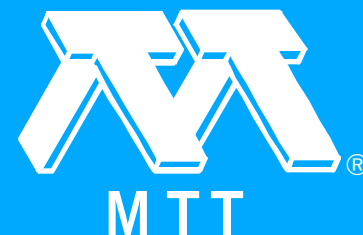
A

- ❑ [A 1.2 Kw L-Band Solid State Power Amplifier for Space-Borne Synthetic Aperture Radars](#)
- ❑ [A 12 GHz Low Cost Earth Terminal for Direct TV Reception from Broadcast Satellites \(1977 \[MWSYM\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

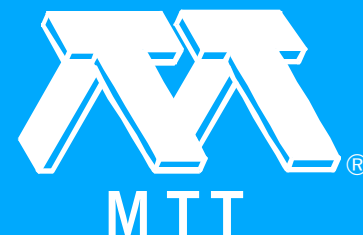
Issues

- ❑ A 12-15 GHz High Gain Amplifier Design Using Submicron Gate GaAs Field Effect Transistors
- ❑ A 12-GHz Low-Cost Earth Terminal for Direct TV Reception from Broadcast Satellites (Dec. 1977 [T-MTT])
- ❑ A 2-Gap Waveguide Mount (Comments)
- ❑ A 2-Kilowatt Average Power X-Band Receiver Protector for the Lincoln Laboratory SOSI Radar
- ❑ A 230-GHz Radiometer System Employing a Second-Harmonic Mixer (Short Papers)
- ❑ A 3-dB Interdigitated Coupler on Fused Silica
- ❑ A 3.5 Watt High Efficiency Frequency Quadrupler for X-Band Applications
- ❑ A 4, 6, 20 and 30 GHz Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (1976 [MWSYM])
- ❑ A 4-, 6-, 20-, and 30-GHz-Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (Dec. 1976 [T-MTT])
- ❑ A 400 kW Long Pulse X-Band Planetary Radar

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

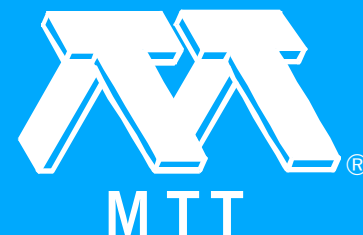
Issues

- ❑ A 6-GHz Four-Stage GaAs MESFET Power Amplifier (Short Papers)
- ❑ A 60-W CW Solid-State Oscillator at C Band (Letters)
- ❑ A 7 GHz FM Transmitter Utilizing GaAs Power MESFETs
- ❑ A Bolusing Technique for Batch Microwave Irradiation of Tumors in the Far Field
- ❑ A Broad Band GaAs Microstrip Modulator at 16 GHz for CO/sub 2/ Laser Radiation
- ❑ A Broad-Band 40--60-GHz Balanced Mixer (Letters)
- ❑ A Broad-Band Frequency Divider Using Microwave Varactors
- ❑ A Broadband Planar N-Way Combiner/Divider
- ❑ A Chebyshev Approximation Method for Microstrip Problems
- ❑ A Class of Waveguide Filters for Over-Moded Applications (Correction)
- ❑ A Coaxial to Microstrip Transition (Short Papers)
- ❑ A Compact 60-GHz Transmitter--Receiver

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

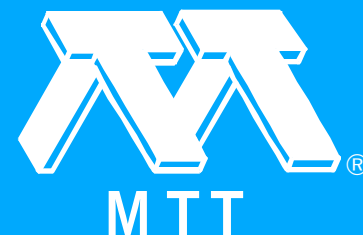
[Issues](#)

- ❑ [A Complete Computer Program for the Synthesis of Matching Networks for Microwave Amplifiers](#)
- ❑ [A Computer Program for the Direct Calibration of Two-Port Reflectometers for Automated Microwave Measurements \(Short Papers\)](#)
- ❑ [A Coplanar Waveguide with Thick Metal-Coating \(Short Papers\)](#)
- ❑ [A Cost-Effective Modular Down Converter for S-Band WEFAX Reception](#)
- ❑ [A Cost-Effective Modular Downconverter for S-Band WEFAX Reception \(Short Papers\)](#)
- ❑ [A Coupled-Line Model for Dispersion in Parallel-Coupled Microstrips \(Short Papers\)](#)
- ❑ [A Cryogenically Cooled Two-Channel Paramp Radiometer for 47 GHz](#)
- ❑ [A Dielectric Resonator Oscillator with 5 PPM Long Term Frequency Stability at 4 GHz](#)
- ❑ [A Directional Filter Diplexer Using Optical Techniques for Millimeter to Submillimeter Wavelengths](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

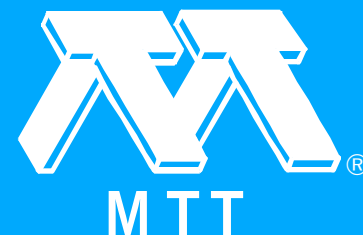
Issues

- ❑ A Discriminator-Stabilized Microstrip Oscillator (Short Papers)
- ❑ A Dual Mode Tuning Circuit for Microwave Transistor Oscillators
- ❑ A Dynamic Calibration Method for Biphase Phase-Shift-Keyed Modulators
- ❑ A Frequency-Independent Large-Signal Equivalent Circuit for a BARITT Diode and Its Application to an Amplifier (Short Papers)
- ❑ A Gaussian-Beam Launcher for Microwave Exposure Studies (Short Papers)
- ❑ A Generalization of the TSD Network-Analyzer Calibration Procedure, Covering n-Port Scattering-Parameter Measurements, Affected by Leakage Errors
- ❑ A Half-Micron Gate Low Noise GaAs MESFET and Amplifiers
- ❑ A High Power 50GHz DDR IMPATT Oscillator with Low Side Band Noise

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

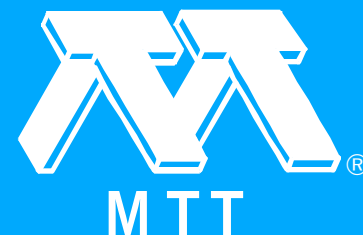
Issues

- ❑ A High Power MIC Passive Diode Receiver Protector with Integral STC Using Variable Basewidth Techniques
- ❑ A High Power Waveguide IMPATT Amplifier
- ❑ A High Power X-Band Frequency Selective Passive YIG Limiter
- ❑ A High-Capacity Digital Communication System Using TE/sub 01/ Transmission in Circular Waveguide
- ❑ A High-Power Solid-State C-Band Transmitter for MIS Applications
- ❑ A Large-Signal Theory for Broad-Band Frequency Converters Using Abrupt Junction Varactor Diodes
- ❑ A Legendre Approximation Method for the Circular Microstrip Disk Problem
- ❑ A Low Noise Broadband Ka-Band Waveguide Mixer
- ❑ A Low Noise FET Amplifier in Coplanar Waveguide
- ❑ A Low Noise MIC GaAsFET Amplifier for 4 GHz Radio
- ❑ A Low-Cost Multiple-Channel 12-GHz Receiver for Satellite Television Broadcasting

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

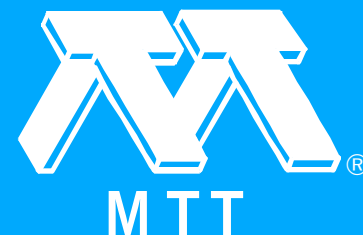
Issues

- ☐ [A Low-Noise 47-GHz Mixer Using a Permanent Josephson Junction](#)
- ☐ [A Low-Noise Millimeter MIC Mixer \(Short Papers\)](#)
- ☐ [A Lower Limit on the Interaction Between Symmetrical Odd-Mode Fringing Capacitances \(Letters\)](#)
- ☐ [A Magnetostatic Delay Line Oscillator](#)
- ☐ [A Measure for the Stability of Solid State Noise Sources](#)
- ☐ [A Method for Broad-Band Matching of Microstrip Differential Phase Shifters](#)
- ☐ [A Method for Calculating the Frequency-Dependent Properties of Microstrip Discontinuities](#)
- ☐ [A Method for Measuring the Refractive Index Profile of Thin-Film Waveguides \(Letters\)](#)
- ☐ [A Method for the Calculation of the Radiation-Pattern and Mode-Conversion Properties of a Solid-State Heterojunction Laser](#)
- ☐ [A Microstrip and Stripline Crossover Structure \(Letters\)](#)
- ☐ [A Microwave Applicator for In Vivo Rapid Inactivation of Enzymes in the Central Nervous System \(Short Papers\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

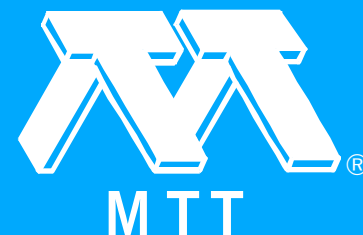
Issues

- ❑ A Microwave Irradiation Chamber for Scientific Studies on Agricultural Products (Short Papers)
- ❑ A Microwave Linearity Test Set
- ❑ A Microwave Network Analyzer Using Two 6-Port Reflectometers
- ❑ A Millimeter-Wave Directional Filter Cavity
- ❑ A Millimeter-Wave Reflection-Beam Isolator (Short Papers)
- ❑ A Multiple-Animal Array for Equal Power Density Microwave Irradiation (Short Papers)
- ❑ A Network Analyzer Incorporating Two Six-Port Reflectometers
- ❑ A New "Phased-Type" Image Enhanced Mixer
- ❑ A New 34-GHz 3.5-mm Low-Cost Utility Coaxial Connector Featuring Low Leakage, Low Standing-Wave Ratio, and Long Life (Short Papers)
- ❑ A New Approximation for the Capacitance of a Rectangular-Coaxial-Strip Transmission Line (Short Papers)
- ❑ A New Band-Splitting Filter for Guided-Millimeter-Wave Transmission Systems

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

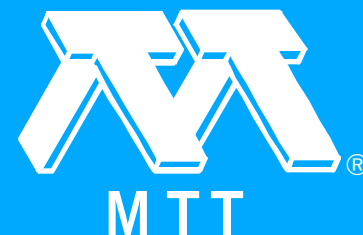
Issues

- ❑ [A New Class of Nonreciprocal Components Using Slot Line \(Short Papers\)](#)
- ❑ [A New Edge-Mode Isolator in the Very High Frequency Range](#)
- ❑ [A New Edge-Mode Isolator in the Very High Frequency Range \(Comments\)](#)
- ❑ [A New Fast and Accurate Algorithm for the Computation of Microstrip Capacitances](#)
- ❑ [A New Form of Ferrite Device for Millimeter-Wave Integrated Circuits \(Short Papers\)](#)
- ❑ [A New Impedance-Matched Wide-Band Balun and Magic Tee](#)
- ❑ [A New Integrated Waveguide-Microstrip Transition \(Short Papers\)](#)
- ❑ [A New Load-Pull Characterization Method for Microwave Power Transistors](#)
- ❑ [A New Look at Noise in Transferred Electron Oscillators \(1977 \[MWSYM\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

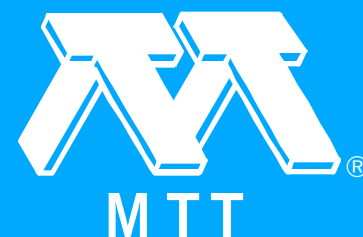
- ❑ [A New Look at Noise in Transferred Electron Oscillators \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [A New Microwave Amplitude Limiter Using GaAs Field Effect Transistor](#)
- ❑ [A New Mixer Design for 140-220 GHz \(Short Papers\)](#)
- ❑ [A New N-Way Power Divider/Combiner Suitable for High-Power Applications](#)
- ❑ [A New Odd Number N-Way Power Combiner/Divider](#)
- ❑ [A New Temperature Stabilized Waveguide Circulator](#)
- ❑ [A New Type of Isolator Using the Edge-Guided Mode \(Letters\)](#)
- ❑ [A Nonlinear Analysis of Schottky-Barrier Diode Upconverters](#)
- ❑ [A Nonperturbing Liquid Crystal Fiberoptic Microwave Power Probe](#)
- ❑ [A Note on Green's Function for Microstrip \(Short Papers\)](#)
- ❑ [A Note on the Finite-Element Solution of Exterior-Field Problems \(Short Papers\)](#)

Click on title for a paper summary.



Paper Index

- ❑ [A Passive Electrodeless Method for Determining the Interior Field of Biological Materials](#)
- ❑ [A Passive Method for Monitoring Non-Ionizing Radiation](#)
- ❑ [A Perturbation Method for the Analysis of Wave Propagation in Inhomogeneous Dielectric Waveguides with Perturbed Media](#)
- ❑ [A Power Silicon Microwave MOS Transistor](#)
- ❑ [A Probe for Measuring Temperature in Radio-Frequency-Heated Material \(Short Papers\)](#)
- ❑ [A Quasi-Linear Approach to the Design of Microwave Transistor Power Amplifiers](#)
- ❑ [A Quasi-Linear Approach to the Design of Microwave Transistor Power Amplifiers \(Short Papers\)](#)
- ❑ [A Quasi-Optical Receiver Design](#)
- ❑ [A S-Band High Power Feedback Amplifier](#)
- ❑ [A SAW Pulse Compression Filter Using the Reflective Dot Array](#)
- ❑ [A Scattering Variable Approach to the Volterra Analysis of Nonlinear Systems](#)



IEEE

[Contents](#)

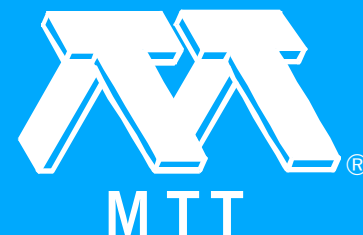
[Publications](#)

[Issues](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

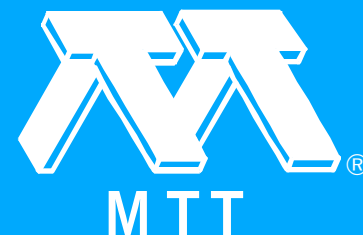
Issues

- ❑ A Semi-Automated Sixport for Measuring Millimeter Wave Power and Complex Reflection Coefficient (1977 [MWSYM])
- ❑ A Semi-Transparent Mirror-Type Directional Coupler for Optical Fiber Applications (Letters)
- ❑ A Semiautomated Six Port for Measuring Millimeter-Wave Power and Complex Reflection Coefficient
- ❑ A Silicon Monolithic Technology for 1-2 GHz Analog Signal Processing
- ❑ A Simple Quasi-Optical Mixer for 100-120 GHz
- ❑ A Six-Port Automatic Network Analyzer (1977 [MWSYM])
- ❑ A Six-Port Automatic Network Analyzer (Dec. 1977 [T-MTT])
- ❑ A Solid-State 94 GHz Doppler Radar
- ❑ A Stabilized MIC Oscillator Using a Germanium Avalanche Diode (Short Papers)
- ❑ A Statistical Measure for the Stability of Solid State Noise Sources
- ❑ A Study of Nonlinearities and Intermodulation Characteristics of 3-Port Distributed Circulators

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

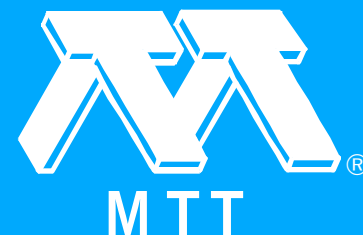
Issues

- ❑ A System for Developing Microwave Induced Hyperthermia in Small Animals (1977 [MWSYM])
- ❑ A Technique for Determining the Local Oscillator Waveforms in a Microwave Mixer (Short Papers)
- ❑ A Theoretical Study of Light Beams Guided Along Tapered Lenslike Media, and Their Applications
- ❑ A Time-Domain Technique for Characterizing Leaky Coaxial Cables
- ❑ A Transferred-Electron Frequency Memorizer
- ❑ A Transferred-Electron Frequency Memorizer (Short Papers)
- ❑ A Transformer Cascade, Optimally Matched to a Conductance Shunted by a Stub, Exhibiting Reflection Coefficient Zeros (Letters)
- ❑ A Traveling-Wave Maser Amplifier for 85-90 GHz Using a Slot-Fed Image-Guide Slow-Wave Circuit
- ❑ A Tunable Bandpass Ring Filter for Rectangular Dielectric Waveguide Integrated Circuits (Short Papers)

Click on title for a paper summary.



Paper Index



Contents

Publications

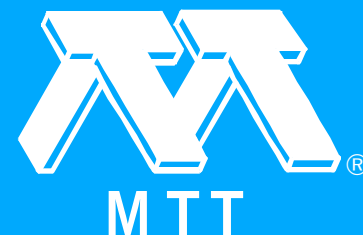
Issues

- ❑ [A TV Satellite Broadcast System for the Public Broadcasting Service](#)
- ❑ [A Two- or Three-Dimensional Green's Function which can be Applied to Hyperfrequency Microelectronic Transmission Lines \(Letters\)](#)
- ❑ [A Unified Variational Solution to Microstrip Array Problems](#)
- ❑ [A V-Band Communication Transmitter and Receiver System Using Dielectric Waveguide Integrated Circuits](#)
- ❑ [A V-Band Network Analyzer/Reflection Test Unit](#)
- ❑ [A Variable Directional Coupler Using InSb Thin Films \(Short Papers\)](#)
- ❑ [A Versatile Millimeter-Wave Imaging System](#)
- ❑ [A Waveguide Applicator for Sheet Materials \(Letters\)](#)
- ❑ [A Wide-Band Parametric Amplifier with Triple-Tuned Signal Circuit and Single-Tuned Idler Circuit \(Letters\)](#)
- ❑ [A Wide-Band Rotating Coupler for VHF Use \(Short Papers\)](#)
- ❑ [Absolute Load Detection with Microwave Gunn Oscillators \(Short Papers\)](#)
- ❑ [Accurate Resonant Frequencies of Dielectric Resonators](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

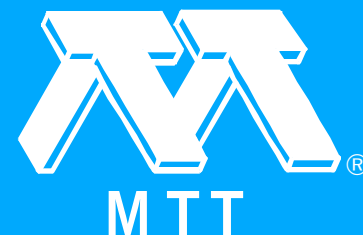
Issues

- ☐ Acoustic Surface Waveguides and Comparisons with Optical Waveguides
- ☐ Acoustic Surface Waveguides, with Similarities in Optics
- ☐ Acoustic-Surface-Wave Resonators for Band-Pass Filter Applications
- ☐ Active Solid State Microwave Device Performance
- ☐ Actively Controlled SAW Multistrip Coupler
- ☐ Additional Information on the Noise-Temperature Behavior of F8T5 Lamps (Letters)
- ☐ Advanced Loss-Reduction Techniques in Millimeter Waveguide Instruments
- ☐ Advanced Solid-State Components for Millimeter Wave Radars
- ☐ All GFEC Dual Mode Quasi Elliptic Multiplexers for Satellite Transponders
- ☐ Amplifier Applications of Millimeter Wave InP GUNN Devices
- ☐ An Accurate Design of Resonance Frequencies of Dielectric Resonators

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

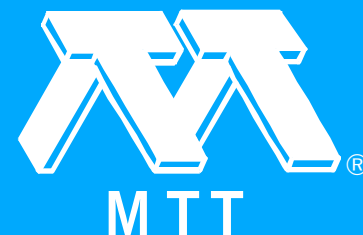
Issues

- ❑ [An Accurate Determination of the Characteristic Impedance of the Coaxial System Consisting of a Square Concentric with a Circle \(Letters\)](#)
- ❑ [An All-Harmonic Coupling-Band Hybrid \(Letters\)](#)
- ❑ [An Alternate Derivation and Procedure for Cristal's Transformation for Transmission-Line Networks \(Letters\)](#)
- ❑ [An Alternate Derivation of Lewin's Formula \(Letters\)](#)
- ❑ [An Analytical Comparison of Two Simple High-Q Gunn Oscillators \(Short Papers\)](#)
- ❑ [An Annotated Bibliography of Microwave Circulators and Isolators: 1968-1975](#)
- ❑ [An Application of Conformal Mapping to the Determination of the Characteristic Impedance of a Class of Coaxial Systems \(Letters\)](#)
- ❑ [An Application of the Six-Port Reflectometer to Precision Measurement of Microwave One-Port Parameters](#)
- ❑ [An Automated Receiver Test Concept](#)
- ❑ [An Efficient Microstrip Upconverter for K/sub a/-Band](#)

Click on title for a paper summary.



Paper Index



[Contents](#)

[Publications](#)

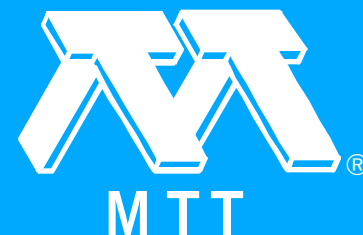
[Issues](#)

- ❑ [An Environmentalized Low-Noise Parametric Amplifier \(1977 \[MWSYM\]\)](#)
- ❑ [An Environmentalized Low-Noise Parametric Amplifier \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [An Exact Solution for a Six-Cavity Dual-Mode Elliptic Bandpass Filter](#)
- ❑ [An Experimental Evaluation of X-Band GaAs FET Mixers Using Single and Dual-Gate Devices](#)
- ❑ [An Experimental Study of Image Termination Methods for Low Noise Mixers](#)
- ❑ [An Ideal Refractive-Index-Distribution and Mode Filter for Band Broadening of Multimode Optical Fiber](#)
- ❑ [An Improved Circuit for Implementing the Six-Port Technique of Microwave Measurements \(1977 \[MWSYM\]\)](#)
- ❑ [An Improved Circuit for Implementing the Six-Port Technique of Microwave Measurements \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [An Improved Low-Pass Harmonic Absorber](#)
- ❑ [An Improved Microstrip-to-Microslot Transition \(Letters\)](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

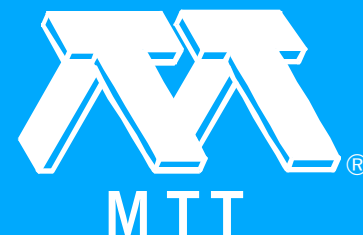
[Issues](#)

- ☐ [An Improved Solid State Noise Source](#)
- ☐ [An Improved Solid-State Noise Source \(Short Papers\)](#)
- ☐ [An Integrated-Circuit Balanced Mixer, Image and Sum Enhanced](#)
- ☐ [An Introduction to Integrated Optics](#)
- ☐ [An Introduction to Simulation and Optimization](#)
- ☐ [An MIC Push-Pull FET Amplifier](#)
- ☐ [An S-Band Radiometer Design with High Absolute Precision \(Comments\)](#)
- ☐ [Analysis and Design of a Low-Noise X-Band MIC Mixer 1-GHz IF Amplifier](#)
- ☐ [Analysis and Design of a Millimeter-Wave Bandpass Filter with a Stopband in the Specified Higher Frequencies](#)
- ☐ [Analysis of a Waveguide Hybrid Junction by Rank Reduction](#)
- ☐ [Analysis of a Waveguide Mounting Configuration for Electronically Tuned Transferred-Electron-Device Oscillators and its Circuit Application](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

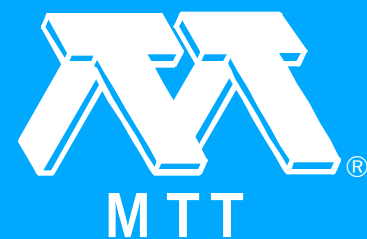
[Issues](#)

- ❑ [Analysis of an Inhomogeneously Loaded Rectangular Waveguide with Dielectric and Metallic Losses](#)
- ❑ [Analysis of Coupled Slots and Coplanar Strips on Dielectric Substrate](#)
- ❑ [Analysis of DC Blocks Using Coupled Lines \(Letters\)](#)
- ❑ [Analysis of Dispersion in Arbitrarily Configured Dielectric-Loaded Transmission Structures](#)
- ❑ [Analysis of Distributed-Lumped Strip Transmission Lines](#)
- ❑ [Analysis of Frequency-Conversion Techniques in Measurements of Microwave Transistor Noise Temperatures](#)
- ❑ [Analysis of Guided Waves Along the Cladded Optical Fiber: Parabolic-Index Core and Homogeneous Cladding](#)
- ❑ [Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations](#)
- ❑ [Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations \(Correction\)](#)
- ❑ [Analysis of Microwave Network Circuits by Time and Frequency-Domain Comparisons](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

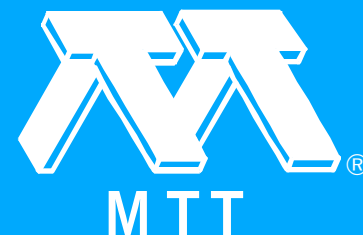
Issues

- ☐ Analysis of Noise in Room-Temperature Millimeter-Wave Mixers
- ☐ Analysis of Optical Waveguide Consisting of a Square-Law Lenslike Medium and its Analogies to Circular TE/sub 01/ waveguide
- ☐ Analysis of Straight Tapered Microstrip Transmission Lines---ASTMIC (Computer Program Descriptions)
- ☐ Analysis of the Transient Temperature Distribution in a Stripline with Triple-Layer Dielectric (Short Papers)
- ☐ Analysis of Wave Propagation in Optical Fibers Having Core with alpha-Power Refractive-Index Distribution and Uniform Cladding
- ☐ Analysis of Waveguide Junctions by Rank Reduction
- ☐ Analysis of Waveguide Post Configurations: Part I--Gap Immittance Matrices
- ☐ Analysis of Waveguide Post Configurations: Part II--Dual-Gap Cases
- ☐ Analytic Constraints on Electromagnetic Field Computations
- ☐ Analytical IC Metal-Line Capacitance Formulas (Correction)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

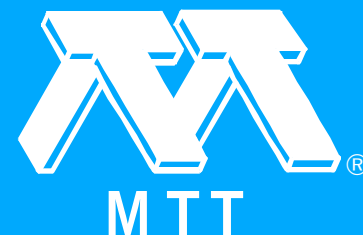
Issues

- ❑ Analytical IC Metal-Line Capacitance Formulas (Short Papers)
- ❑ Annals of the IEEE (Advertisement) (Apr. 1976 [T-MTT])
- ❑ Annals of the IEEE (Advertisement) (Dec. 1975 [T-MTT])
- ❑ Annals of the IEEE (Advertisement) (Nov. 1976 [T-MTT])
- ❑ Annotated Literature Survey of Microwave Ferrite Control Components and Materials for 1968-1974
- ❑ Anomalous Noise in Schottky Diode Mixers at Millimeter Wavelengths
- ❑ Antenna Array for Limited Scan Applications
- ❑ Aperture Coupling Between Microstrip and Resonant Cavities
- ❑ Application of a Property of the Airy Function to Fiber Optics (Short Papers)
- ❑ Application of Gratings in a Dielectric Waveguide for Leaky-Wave Antennas and Band-Reject Filters (Short Papers)
- ❑ Application of Intermediate Frequency Interferometry to Transport Vehicle Control Systems

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

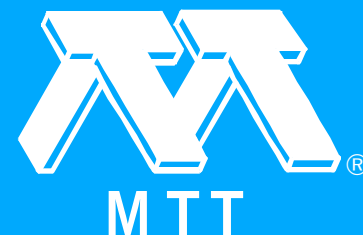
[Issues](#)

- ❑ [Application of MIC Formulas to a Class of Integrated-Optics Modulator Analyses: A Simple Transformation \(Short Papers\)](#)
- ❑ [Application of Stimulated Electromagnetic Shock Radiation to the Generation of Intense Submillimeter Waves](#)
- ❑ [Application of Submillimeter Spectroscopy to Magnetic Excitations](#)
- ❑ [Application of the Beam Mode Expansion to the Analysis of Noise Reduction Structure \(Short Papers\)](#)
- ❑ [Applications of Advanced Technologies to Digital Microwave Systems](#)
- ❑ [Approximate Determination of the Characteristic Impedance of the Coaxial System Consisting of a Regular Polygon Concentric with a Circle \(Letters\)](#)
- ❑ [Approximation for the Symmetrical Parallel-Strip Transmission Line \(Comments\)](#)
- ❑ [Approximations for the Symmetrical Parallel-Strip Transmission Line \(Letters\)](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

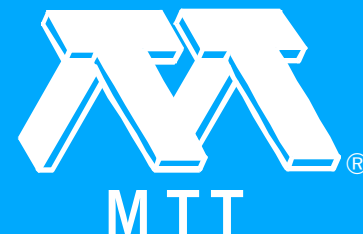
[Issues](#)

- ☐ [Asymmetric Coupled Transmission Lines in an Inhomogeneous Medium](#)
- ☐ [Asymmetric Coupled Transmission Lines in an Inhomogeneous Medium \(Comments\)](#)
- ☐ [Asymmetric Even-Mode Fringing Capacitance \(Short Papers\)](#)
- ☐ [Asymmetric Odd-Mode Fringing Capacitances \(Letters\)](#)
- ☐ [Automated Calibration of Directional-Coupler-Bolometer-Mount Assemblies \(1975 \[MWSYM\]\)](#)
- ☐ [Automated Calibration of Directional-Coupler-Bolometer-Mount Assemblies \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Automated Spectral Analysis of Microwave Oscillator Noise](#)
- ☐ [Automated Third-Order Distortion Measurements](#)
- ☐ [Avalanche Diode Noise Sources at Short Centimeter and Millimeter Wavelengths \(Short Papers\)](#)
- ☐ [Awards \(1975 \[MWSYM\]\)](#)
- ☐ [Awards \(1976 \[MWSYM\]\)](#)
- ☐ [Awards \(1977 \[MWSYM\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

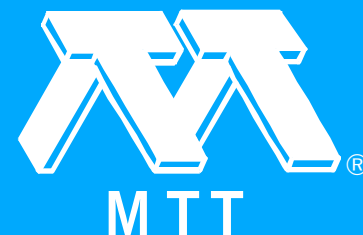
B

- [❑ Back Cover \(1976 \[MWSYM\]\)](#)
- [❑ Back Cover \(1977 \[MWSYM\]\)](#)
- [❑ Back Cover \(Apr. 1975 \[T-MTT\]\)](#)
- [❑ Back Cover \(Apr. 1976 \[T-MTT\]\)](#)
- [❑ Back Cover \(Apr. 1977 \[T-MTT\]\)](#)
- [❑ Back Cover \(Aug. 1975 \[T-MTT\]\)](#)
- [❑ Back Cover \(Aug. 1976 \[T-MTT\]\)](#)
- [❑ Back Cover \(Aug. 1977 \[T-MTT\]\)](#)
- [❑ Back Cover \(Dec. 1975 \[T-MTT\]\)](#)
- [❑ Back Cover \(Dec. 1976 \[T-MTT\]\)](#)
- [❑ Back Cover \(Dec. 1977 \[T-MTT\]\)](#)
- [❑ Back Cover \(Feb. 1975 \[T-MTT\]\)](#)
- [❑ Back Cover \(Feb. 1976 \[T-MTT\]\)](#)
- [❑ Back Cover \(Feb. 1977 \[T-MTT\]\)](#)
- [❑ Back Cover \(Jan. 1975 \[T-MTT\]\)](#)
- [❑ Back Cover \(Jan. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

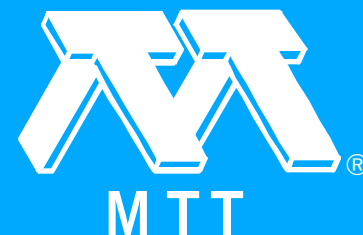
Issues

- ☐ Back Cover (Jan. 1977 [T-MTT])
- ☐ Back Cover (Jul. 1975 [T-MTT])
- ☐ Back Cover (Jul. 1976 [T-MTT])
- ☐ Back Cover (Jul. 1977 [T-MTT])
- ☐ Back Cover (Jun. 1975 [T-MTT])
- ☐ Back Cover (Jun. 1976 [T-MTT])
- ☐ Back Cover (Jun. 1977 [T-MTT])
- ☐ Back Cover (Mar. 1975 [T-MTT])
- ☐ Back Cover (Mar. 1976 [T-MTT])
- ☐ Back Cover (Mar. 1977 [T-MTT])
- ☐ Back Cover (May 1975 [T-MTT])
- ☐ Back Cover (May 1976 [T-MTT])
- ☐ Back Cover (May 1977 [T-MTT])
- ☐ Back Cover (Nov. 1975 [T-MTT])
- ☐ Back Cover (Nov. 1976 [T-MTT])
- ☐ Back Cover (Nov. 1977 [T-MTT])
- ☐ Back Cover (Oct. 1975 [T-MTT])
- ☐ Back Cover (Oct. 1976 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

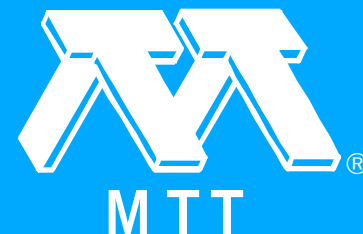
Issues

- ☐ Back Cover (Oct. 1977 [T-MTT])
- ☐ Back Cover (Sep. 1975 [T-MTT])
- ☐ Back Cover (Sep. 1976 [T-MTT])
- ☐ Back Cover (Sep. 1977 [T-MTT])
- ☐ Band Stop Filter Using LPE-YIG Films
- ☐ BARITT Devices for Self-Mixed Doppler Radar Applications
- ☐ Basic Parameters of Nonsymmetrical Coplanar Line
- ☐ Behavior of the Magnetostatic Wave in a Periodically Corrugated YIG Slab (Short Papers)
- ☐ Behavioral Suppression by 383-MHz Radiation (Short Papers)
- ☐ Bi-Polar IC's for Microwave Signal Processing
- ☐ Bias Frequency Modulation of GaAs Millimeter-Wave Diode Oscillators (Short Papers)
- ☐ Bias-Tuning and Modulation Characteristics of Transferred-Electron Oscillators
- ☐ Bidirectionality in Gyrotropic Waveguides (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ☐ Broad-Band 180° Phase Shift Section in X Band (Short Papers)
- ☐ Broad-Band Medium-Power Amplification in the 2-12.4-GHz Range with GaAs MESFET's
- ☐ Broad-Band Operation of Stripline Y Circulators
- ☐ Broad-Band Varactor-Tuned IMPATT-Diode Oscillator (Short Papers)
- ☐ Broadband Frequency Dividers Using Microwave Varactors
- ☐ Broadbanding an Electronically Switched Two-Channel Ka-Band Parametric Amplifier
- ☐ Broadside-Coupled Strips in a Layered Dielectric Medium (Correction)

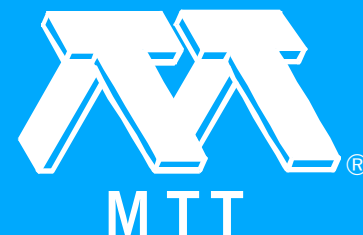
C

- ☐ C-Band Solid State TWT Replacement
- ☐ Calculation of Microstrip Discontinuity Inductances
- ☐ Calculation of Quasi-Planar Lines for mm-Wave Application

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

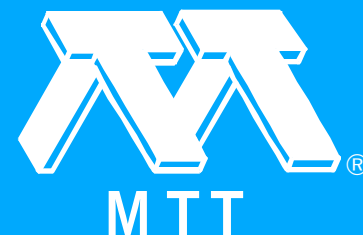
[Issues](#)

- ❑ [Calculations of Antenna Temperature, Horizontal Path Attenuation, and Zenith Attenuation Due to Water Vapor in the Frequency Band 150-700 GHz](#)
- ❑ [Calculator-Based Synthesis Routine Speeds Microwave Amplifier Design](#)
- ❑ [Call for Papers - Special Issue on Microwaves in Medicine \(Mar. 1977 \[T-MTT\]\)](#)
- ❑ [Canonical Representation and Figure of Merit of Circulator](#)
- ❑ [Capacitance of a Circular Disk for Applications in Microwave Integrated Circuits \(Short Papers\)](#)
- ❑ [Central Metal Post in Stripline Circulators \(Short Papers\)](#)
- ❑ [Changes in Tumor Blood Flow Produced by Microwave Induced Hyperthermia \(Abstract\)](#)
- ❑ [Characteristic Impedance and Field Patterns of the Shielded Microstrip on a Ferrite Substrate \(Short Papers\)](#)
- ❑ [Characteristics and Applications of Coupled Microstrip Lines](#)
- ❑ [Characteristics and Effects of CW High Power Breakdown in Waveguide](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

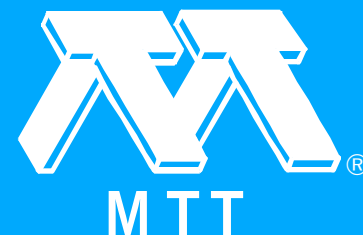
Issues

- ❑ Characteristics of Unsymmetrical Broadside-Coupled Strips in an Inhomogeneous Dielectric Medium
- ❑ Characterization of Magnetic Materials in the Millimeter-Wave Range (60-90 GHz) (Short Papers)
- ❑ Characterization of Microwave Oscillator and Amplifier Circuits Using an IMPATT Diode Biased Below Breakdown (Comments and Authors' Reply)
- ❑ CIA (Circulator Analysis) (Computer Program Descriptions)
- ❑ Circuit Characterization of V-Band IMPATT Oscillators and Amplifiers
- ❑ Circular Arc Polygonal Type TE_{0n} Mode Filter
- ❑ Circular TE/sub 0n/ Mode Filters for Guided Millimeter-Wave Transmission (Jan. 1976 [T-MTT])
- ❑ Circular Waveguide with Sinusoidally Perturbed Walls
- ❑ Clocked Diode Pulse Amplifiers for Microwave Bit Rates
- ❑ Comments from the Editor (Mar. 1975 [T-MTT])
- ❑ Commercial Application of a Surface Wave Television IF Filter

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

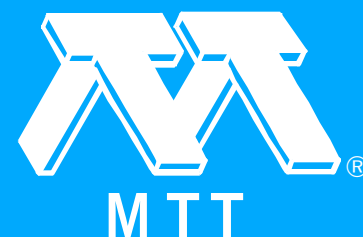
[Issues](#)

- ☐ Commercial Glow Discharge Tubes As Detectors of X-Band Radiation (Short Papers)
- ☐ Committees (1975 [MWSYM])
- ☐ Committees (1976 [MWSYM])
- ☐ Committees (1977 [MWSYM])
- ☐ Communications Technology Satellite Systems, Space and Ground Segments
- ☐ Comparison Method of Measurement Q of Microwave Resonators (Short Papers)
- ☐ Comparison of Methods for Sensitivity Determination of Point-Contact Diodes at Submillimeter Wavelength
- ☐ Complex Permittivity and Penetration Depth of Certain Biological Tissue Between 40 and 90 GHz
- ☐ Complex Permittivity and Penetration Depth of Muscle and Fat Tissues Between 40 and 90 GHz (Letters)
- ☐ Complex Permittivity of GaAs and CdTe at Microwave Frequencies
- ☐ Components for Microwave Integrated Circuits with Evanescent Mode Resonators (1977 [MWSYM])

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

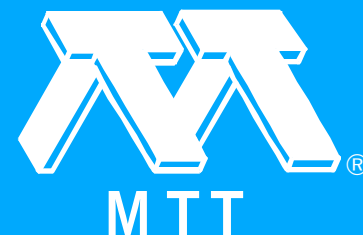
- ❑ Components for Microwave Integrated Circuits with Evanescent-Mode Resonators (Dec. 1977 [T-MTT])
- ❑ Computation of Coplanar-Type Strip-Line Characteristics by Relaxation Method and its Application to Microwave Circuits
- ❑ Computation of Propagation Constants for the Fundamental and Higher Order Modes in Microstrip (Short Papers)
- ❑ Computation of the Electromagnetic Fields and Induced Temperatures Within a Model of the Microwave-Irradiated Human Eye
- ❑ Computation of the Hecken Impedance Function (Letters)
- ❑ Computer Analysis of Gradually Tapered Waveguide with Arbitrary Cross Sections (Short Papers)
- ❑ Computer Analysis of Short-Boundary Planar Circuits
- ❑ Computer-Aided Design of Commensurate and Non-Commensurate Networks Using State-Space Techniques
- ❑ Computer-Aided Synthesis of Planar Circuits
- ❑ Computer-Aided Synthesis of the Optimum Refractive-Index Profile for a Multimode Fiber

Click on title for a paper summary.



Paper Index

- ❑ [Computer-Aided Time and Frequency Domain Measurements of TRAPATT Diode Oscillators](#)
- ❑ [Computer-Aided Tuning of Microwave Circuits](#)
- ❑ [Computer-Controlled Infrared Microscope for Thermal Analysis of Microwave Transistors](#)
- ❑ [Conditions of Strongest Electromagnetic Power Deposition in Man and Animals](#)
- ❑ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)
- ❑ [Contributors \(Apr. 1976 \[T-MTT\]\)](#)
- ❑ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ❑ [Contributors \(Aug. 1975 \[T-MTT\]\)](#)
- ❑ [Contributors \(Aug. 1976 \[T-MTT\]\)](#)
- ❑ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)
- ❑ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ❑ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)
- ❑ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [Contributors \(Feb. 1975 \[T-MTT\]\)](#)
- ❑ [Contributors \(Feb. 1976 \[T-MTT\]\)](#)



IEEE

[Contents](#)

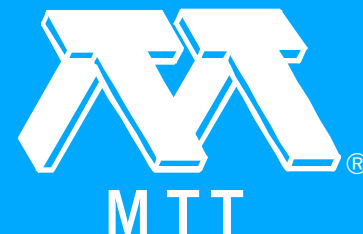
[Publications](#)

[Issues](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

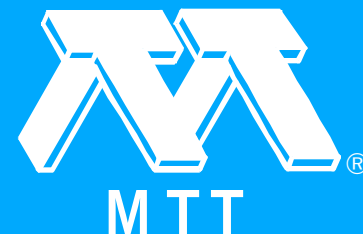
Issues

- ❑ Contributors (Feb. 1977 [T-MTT])
- ❑ Contributors (Jan. 1975 [T-MTT])
- ❑ Contributors (Jan. 1976 [T-MTT])
- ❑ Contributors (Jan. 1977 [T-MTT])
- ❑ Contributors (Jul. 1975 [T-MTT])
- ❑ Contributors (Jul. 1976 [T-MTT])
- ❑ Contributors (Jul. 1977 [T-MTT])
- ❑ Contributors (Jun. 1975 [T-MTT])
- ❑ Contributors (Jun. 1976 [T-MTT])
- ❑ Contributors (Mar. 1975 [T-MTT])
- ❑ Contributors (Mar. 1976 [T-MTT])
- ❑ Contributors (Mar. 1977 [T-MTT])
- ❑ Contributors (May 1975 [T-MTT])
- ❑ Contributors (May 1976 [T-MTT])
- ❑ Contributors (May 1977 [T-MTT])
- ❑ Contributors (Nov. 1975 [T-MTT])
- ❑ Contributors (Nov. 1976 [T-MTT])
- ❑ Contributors (Nov. 1977 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

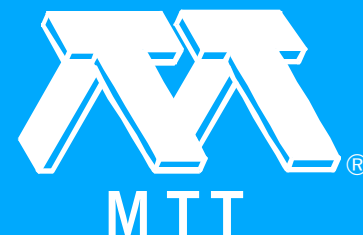
[Issues](#)

- ☐ Contributors (Oct. 1975 [T-MTT])
- ☐ Contributors (Oct. 1976 [T-MTT])
- ☐ Contributors (Oct. 1977 [T-MTT])
- ☐ Contributors (Sep. 1975 [T-MTT])
- ☐ Contributors (Sep. 1976 [T-MTT])
- ☐ Contributors (Sep. 1977 [T-MTT])
- ☐ Control of Manufacturing Distortions in WT4 Millimeter Waveguide Medium
- ☐ Conversion Loss Limitations on Schottky-Barrier Mixers (Short Papers)
- ☐ Cooperative Signal Processing Beacon Transponder for Airport Traffic Control
- ☐ Copyright (1975 [MWSYM])
- ☐ Copyright (1976 [MWSYM])
- ☐ Copyright (1977 [MWSYM])
- ☐ Coupled Transmission Lines
- ☐ Coupled Transmission Lines (Correction)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

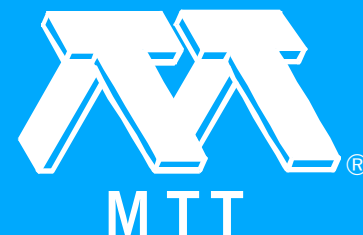
Issues

- ❑ Coupling Between Guided Surface Waves, Lateral Waves, and the Radiation Fields by Rough Surfaces--Full-Wave Solutions
- ❑ Coupling Between Narrow Transverse Inductive Strips in Waveguide
- ❑ Coupling Between: A Microstrip Transmission Line and a Dielectric Resonator and Between Two Adjacent Dielectric Resonators for Application to Bandpass Filter
- ❑ Coupling from Multimode to Single-Mode Linear Waveguides Using Horn-Shaped Structures
- ❑ Coupling of Circuit Structures to Magnetostatic Modes of Ferromagnetic Resonators
- ❑ Cryogenically Cooled GaAs FET Amplifier with a 1.1-dB Noise Figure at 5.0 GHz
- ❑ Cryogenically Cooled GaAs FET Amplifier with a Noise Temperature Under 70 K at 5.0 GHz (Short Papers)
- ❑ Currently Practical Acoustic Surface Wave Devices
- ❑ CW Performance of Optically-Pumped Lasers in the Millimeter-Wave Spectral Region

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

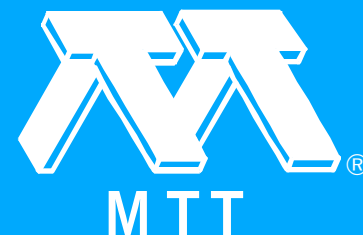
D

- ❑ Depolarization Measurements on the ATS-6 20 GHz Downlink: A Description of the VPI&SU Experiment and Some Initial Results (1975 [MWSYM])
- ❑ Depolarization Measurements on the ATS-6 20-GHz Downlink: A Description of the VPI & SU Experiment and Some Initial Results (Short Papers)
- ❑ Design and Performance Analysis of an Octave Bandwidth Waveguide Mixer
- ❑ Design and Performance of a 60-90-GHz Broad-Band Mixer (Short Papers)
- ❑ Design and Performance of a Broadband MIC Low Noise K-Band Balanced Mixer, Polar Discriminator and Related Components
- ❑ Design and Performance of an Integrated Three Channel Tracking YIG Preselector
- ❑ Design and Performance of X-Band Oscillators with GaAs Schottky-Gate Field-Effect Transistors

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

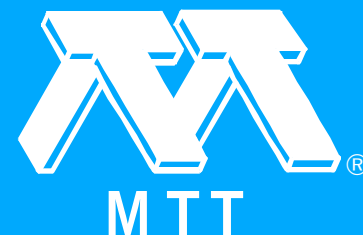
Issues

- ☐ Design Data for Radial-Waveguide Circulators Using Partial-Height Ferrite Resonators
- ☐ Design Equations for an Interdigitated Directional Coupler (Comments)
- ☐ Design Equations for an Interdigitated Directional Coupler (Short Papers)
- ☐ Design Formulas for Bandpass Channel Diplexers
- ☐ Design of Coupled Microstrip Lines (Letters)
- ☐ Design of Direct Phase Modulators for High Speed Digital Radio Systems Using MIC Techniques
- ☐ Design of Ferrite Differential Phase Shift Sections
- ☐ Design of GaAs MESFET Oscillator Using Large Signal S-Parameters (1977 [MWSYM])
- ☐ Design of GaAs MESFET Oscillator Using Large-Signal S-Parameters (Dec. 1977 [T-MTT])
- ☐ Design of Printed Resonant Antennas for Monolithic-Diode Detectors
- ☐ Design of Stable, Very Low Noise, Cavity-Stabilized IMPATT Oscillators for C Band

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

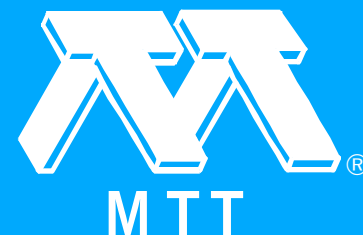
Issues

- ❑ Design Techniques for Bandpass Filters Using Edge-Coupled Microstrip Lines on Fused Silica
- ❑ Design, Fabrication and Testing of SAW Butterworth Filters
- ❑ Design, Fabrication, and Evaluation of BARITT Devices for Doppler System Applications
- ❑ Design, Implementation, and Performance Analysis of a Broad-Band V-Band Network Analyzer (Short Papers)
- ❑ Determination of Complex Dielectric and Magnetic Properties of Materials
- ❑ Development and Applications of Millimeter Wavelength, High Power Optically Pumped Lasers
- ❑ Dielectric Loss in Microstrip Lines (Short Papers)
- ❑ Dielectric Measurements for the Design of a Phantom Eye
- ❑ Dielectric Measurements in the Submillimeter Region and a Suggested Interpretation of the Poley Absorption
- ❑ Dielectric Measurements on Polymeric Materials by Using Superconducting Microwave Resonators
- ❑ Dielectric Rod Antennas for Millimeter-Wave Integrated Circuits (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

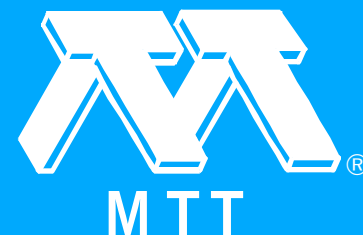
Issues

- ☐ Dielectric Waveguide Microwave Integrated Circuits--An Overview
- ☐ Dielectric Waveguides for Underwater Transmission of High Microwave Power
- ☐ Different Representations of Dyadic Green's Functions for a Rectangular Cavity
- ☐ Different Representations of Dyadic Green's Functions for a Rectangular Cavity (Correction)
- ☐ Differential Phase Shift at Microwave Frequencies Using Planar Ferrites (Short Papers)
- ☐ Digital Phase Shifter Elements for a K/sub u/-Band Phased Array RADAR
- ☐ Digital Radio: Systems, Markets and Trends
- ☐ Digital Telecommunications Radio Systems
- ☐ Dimensions of Microstrip Coupled Lines and Interdigital Structures (Short Papers)
- ☐ Diode Circuits for Pulse Regeneration and Multiplexing at Ultrahigh Bit Rates
- ☐ Diode Structures for a Millimeter Wave Phase Shifter

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

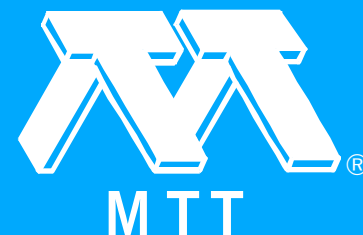
[Issues](#)

- ❑ [Diplexer and Broadbanding Operations of Stripline Y-Junction Circulators](#)
- ❑ [Direct Design Formulas for Asymmetric Bandpass Channel Diplexers](#)
- ❑ [Discussion of "The Resonant Frequency and Tuning Characteristics of a Narrow-Gap Reentrant Cylindrical Cavity" \(Letters\)](#)
- ❑ [Discussion of a 2-Gap Waveguide Mount \(Short Papers\)](#)
- ❑ [Dispersion Characteristics for Arbitrarily Configured Transmission Media \(Short Papers\)](#)
- ❑ [Dispersion Characteristics of the Dipolar Modes in a Waveguide Partially Filled with a Magnetized Ferrite Column](#)
- ❑ [Dispersion in Shielded Planar Transmission Lines on Two-Layer Composite Substrate](#)
- ❑ [Dispersion of Nonlinear Elements as a Source of Electromagnetic Shock Structure \(Letters\)](#)
- ❑ [Dispersive Fourier Transform Spectrometry with Variable-Thickness Variable-Temperature Liquid Cells](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

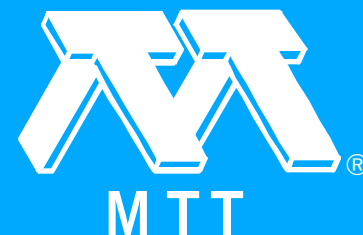
Issues

- ❑ Dissipation Loss Effects in Isolated and Coupled Transmission Lines
- ❑ Distributed Capacitance of a Thin-Film Electrooptic Light Modulator (Letters)
- ❑ Double Circulation Frequency Operation of Stripline Y-Junction Circulators
- ❑ Double-Layered Slot Line for Millimeter-Wave Integrated Circuits
- ❑ Dual Mode Canonical Waveguide Filters (1977 [MWSYM])
- ❑ Dual Polarization Antenna System Design and Performance
- ❑ Dual-Mode Automobile Collision Avoidance Radar
- ❑ Dual-Mode Canonical Waveguide Filters (Dec. 1977 [T-MTT])
- ❑ Dynamic Microwave Frequency Division Characteristics of Coplanar Transferred-Electron Devices in a Resistive Circuit (Letters)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

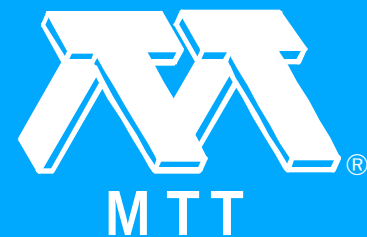
E

- ☐ E-Type Modes in Cylindrical Dielectric Waveguides with Periodic Boundary Perturbations (Short Papers)
- ☐ Edge Guided Waves Five Years Later
- ☐ Editor's Note (Mar. 1975 [T-MTT])
- ☐ Editor's Overview (Dec. 1975 [T-MTT])
- ☐ Editor's Overview (Dec. 1976 [T-MTT])
- ☐ Editor's Overview (Dec. 1977 [T-MTT])
- ☐ Editorial (Jan. 1975 [T-MTT])
- ☐ Effect of 2450-MHz Radiation on the Rabbit Eye
- ☐ Effect of Diode Parameters on Reflection-Type Phase Shifters (Short Papers)
- ☐ Effect of Discontinuities on the Group Delay of a Microwave Transmission Line (Short Papers)
- ☐ Effect of Microwave Fields on Rabbit Vagus Nerves and Superior Cervical Ganglia
- ☐ Effect of Surface Cooling and Blood Flow on the Electromagnetic Heating of Tissue

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

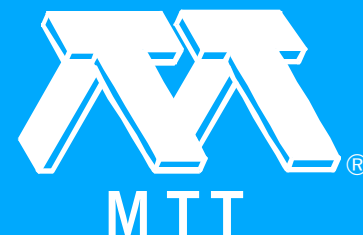
- ❑ Effect of Temperature on Device Admittance of GaAs and Si IMPATT Diodes
- ❑ Effect of the Magnetic Perturbation on Magnetostatic Surface-Wave Propagation
- ❑ Effect of Thin-Film Bi/sub 2/O/sub 3/ Overlay on the Quality Factor of a Microstrip Resonator (Short Papers)
- ❑ Effects of Depletion-Layer Modulation on Spurious Oscillations in IMPATT Diodes
- ❑ Effects of the Surroundings on Electromagnetic-Power Absorption in Layered-Tissue Media (Short Papers)
- ❑ Efficient Calculation of Exact Group Delay Sensitivities
- ❑ Efficient Calculation of Exact Group Delay Sensitivities (Correction)
- ❑ Efficient Minimax Design of Networks without Using Derivatives
- ❑ Efficient Minimax Design of Networks without Using Derivatives (Correction)
- ❑ Electric-Field Distribution Along Finite Length Lossy Dielectric Slabs in Waveguide

Click on title for a paper summary.



Paper Index

- ❑ [Electrical Matching of Unidirectional Surface Wave Devices](#)
- ❑ [Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue \(Correction\)](#)
- ❑ [Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue \(Short Papers\)](#)
- ❑ [Electromagnetic Power Absorption in Anisotropic Tissue Media \(Short Papers\)](#)
- ❑ [Electromagnetic Theory of the Loosely Braided Coaxial Cable: Part I](#)
- ❑ [Electronically-Tunable, Low Noise K/sub \$\alpha\$ -Band Paramp-Downconverter Satellite Communications Receiver](#)
- ❑ [Energy Analysis for the Amplification Phenomena of Magnetostatic Surface Waves in a YIG-Semiconductor Coupled System](#)
- ❑ [Enhancement of Surface-Acoustic-Wave Piezoelectric Coupling in Three-Layer Substrates \(Short Papers\)](#)
- ❑ [Equivalent Circuit Capacitance of Microstrip Step Change in Width](#)



[Contents](#)

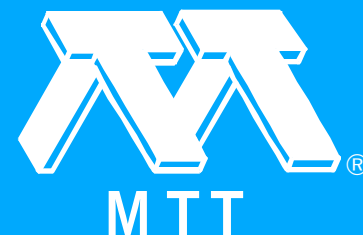
[Publications](#)

[Issues](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

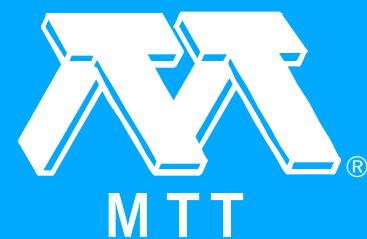
[Issues](#)

- ❑ [Equivalent Circuit of a Narrow Axial Strip in Waveguide \(Short Papers\)](#)
- ❑ [Equivalent Circuit of the Schottky-Barrier Field-Effect Transistor at Microwave Frequencies \(Short Papers\)](#)
- ❑ [Equivalent Circuit Parameters of Microstrip Step Change in Width and Cross Junctions \(Short Papers\)](#)
- ❑ [Equivalent Circuits and Characteristics of Inhomogeneous Nonsymmetrical Coupled-Line Two-Port Circuits \(Short Papers\)](#)
- ❑ [Equivalent Series Inductivity of a Narrow Transverse Slit in Microstrip](#)
- ❑ [Error in Impedance Measurement When the Signal is Introduced Across the Slotted-Line Probe \(Comments and Author's Reply\)](#)
- ❑ [Error Minimization in Network Analyzer Measurement of Varactor Quality \(Short Papers\)](#)
- ❑ [Evaluation of Linearity by Transformation of the Amplitude Characteristic](#)
- ❑ [Evaluation of MTT Transactions \(1976\)\(Letters\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

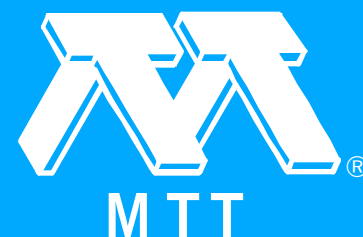
- ☐ Evaluation of the Equivalent Circuit Parameters of Microstrip Discontinuities through Perturbation of a Resonant Ring (Short Papers)
- ☐ Evanescent Waves
- ☐ Even- and Odd-Mode Waves for Nonsymmetrical Coupled Lines in Nonhomogeneous Media
- ☐ Exact Analysis of Rectangular Waveguides Inhomogeneously Filled with a Transversely Magnetized Semiconductor
- ☐ Exact Design of Wideband Equal-Ripple Bandpass Filters with Non-Adjacent Resonator Couplings
- ☐ Exact Synthesis of Interstage Matching Networks for Broadband Microwave GaAs FET Amplifiers
- ☐ Excess Conduction Losses at Millimeter Wavelengths
- ☐ Exhibition Guide (1977 [MWSYM])
- ☐ Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies
- ☐ Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies (Comments)

Click on title for a paper summary.



Paper Index

- ❑ Experimental Attenuation of Rectangular Waveguides at Millimeter-Wavelengths (1977 [MWSYM])
- ❑ Experimental Development of Simulated Biomaterials for Dosimetry Studies of Hazardous Microwave Radiation (Short Papers)
- ❑ Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front
- ❑ Experimental Measurement of Microstrip Transistor-Package Parasitic Reactances
- ❑ Experimental Studies of the Losses and Radiations Due to Bends in the Goubau Line
- ❑ Explicit Design Formulas for Waveguide Single-Sided Filters
- ❑ Expressions for Wavelength and Impedance of a Slotline (Letters)
- ❑ Extending the Realizable Bandwidth of Edge-Coupled Stripline Filters



IEEE

Contents

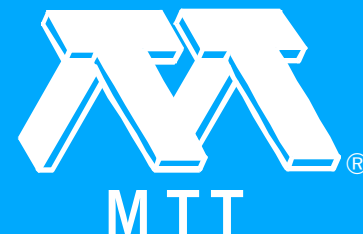
Publications

Issues

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

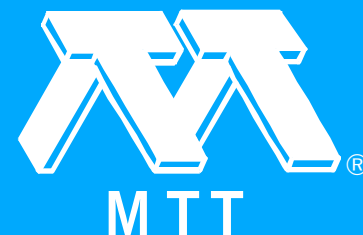
F

- ☐ Fast, High Power, Octave Bandwidth, X-Band Waveguide Microwave Switch
- ☐ Feedback Effects in the GaAs MESFET Model (Letters)
- ☐ Feedback Effects on the Noise Performance of GaAs MESFETs
- ☐ Ferrite Planar Circuit in Microwave IC
- ☐ Ferrite Planar Circuits in Microwave Integrated Circuits
- ☐ FET Mixers for Communication Satellite Transponders
- ☐ Fiber and Diffused Waveguide Structures for Distributed-Feedback Lasers (Short Papers)
- ☐ Fiberoptic Microprobes for Measurement of Electromagnetic Fields
- ☐ Field and Power Density Distributions of the Dipolar Modes in a Partially Filled Cylindrical Plasma Waveguide (Short Papers)
- ☐ Field Distribution of a New Type of E.G. Mode Isolator

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

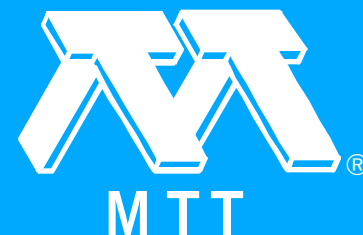
Issues

- ☐ Field Propagation in an Open-Beam Waveguide (Short Papers)
- ☐ Fields in Nonuniform Transmission Lines
- ☐ Filters with Single Transmission Zeros at Real or Imaginary Frequencies
- ☐ FLOPT2--A Program for Least pth Optimization with Extrapolation to Minimax Solutions (Computer Program Descriptions)
- ☐ FM Distortion in Single and Cascaded Injection Locked Diode Oscillators
- ☐ Foreword (1975 [MWSYM])
- ☐ Foreword (1976 [MWSYM])
- ☐ Foreword (1977 [MWSYM])
- ☐ Foreword (Apr. 1975 [T-MTT])
- ☐ Foreword (Apr. 1977 [T-MTT])
- ☐ Foreword (Jun. 1976 [T-MTT])
- ☐ Foreword (Nov. 1976 [T-MTT])
- ☐ Foreword - Part I (Jun. 1977 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

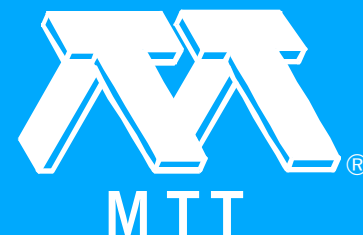
Issues

- ☐ Foreword - Part II (Jun. 1977 [T-MTT])
- ☐ Frequency Multiplication by a P-I-N Diode when Driven into Avalanche Breakdown
- ☐ Frequency Selective High Power YIG Limiters
- ☐ Fringing-Field Effects in Edge-Guided Wave Devices
- ☐ Front Cover (1975 [MWSYM])
- ☐ Front Cover (1976 [MWSYM])
- ☐ Front Cover (1977 [MWSYM])
- ☐ Front Cover (Apr. 1975 [T-MTT])
- ☐ Front Cover (Apr. 1976 [T-MTT])
- ☐ Front Cover (Apr. 1977 [T-MTT])
- ☐ Front Cover (Aug. 1975 [T-MTT])
- ☐ Front Cover (Aug. 1976 [T-MTT])
- ☐ Front Cover (Aug. 1977 [T-MTT])
- ☐ Front Cover (Dec. 1975 [T-MTT])
- ☐ Front Cover (Dec. 1976 [T-MTT])
- ☐ Front Cover (Dec. 1977 [T-MTT])
- ☐ Front Cover (Feb. 1975 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

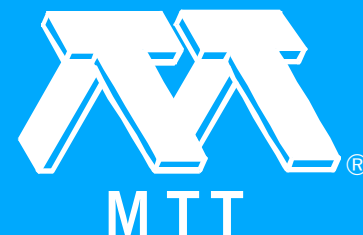
Issues

- ☐ Front Cover (Feb. 1976 [T-MTT])
- ☐ Front Cover (Feb. 1977 [T-MTT])
- ☐ Front Cover (Jan. 1975 [T-MTT])
- ☐ Front Cover (Jan. 1976 [T-MTT])
- ☐ Front Cover (Jan. 1977 [T-MTT])
- ☐ Front Cover (Jul. 1975 [T-MTT])
- ☐ Front Cover (Jul. 1976 [T-MTT])
- ☐ Front Cover (Jul. 1977 [T-MTT])
- ☐ Front Cover (Jun. 1975 [T-MTT])
- ☐ Front Cover (Jun. 1976 [T-MTT])
- ☐ Front Cover (Jun. 1977 [T-MTT])
- ☐ Front Cover (Mar. 1975 [T-MTT])
- ☐ Front Cover (Mar. 1976 [T-MTT])
- ☐ Front Cover (Mar. 1977 [T-MTT])
- ☐ Front Cover (May 1975 [T-MTT])
- ☐ Front Cover (May 1976 [T-MTT])
- ☐ Front Cover (May 1977 [T-MTT])
- ☐ Front Cover (Nov. 1975 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

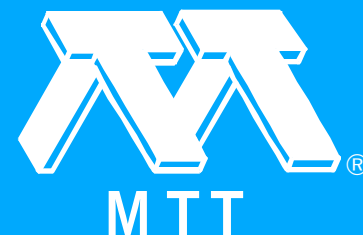
Issues

- ☐ Front Cover (Nov. 1976 [T-MTT])
- ☐ Front Cover (Nov. 1977 [T-MTT])
- ☐ Front Cover (Oct. 1975 [T-MTT])
- ☐ Front Cover (Oct. 1976 [T-MTT])
- ☐ Front Cover (Oct. 1977 [T-MTT])
- ☐ Front Cover (Sep. 1975 [T-MTT])
- ☐ Front Cover (Sep. 1976 [T-MTT])
- ☐ Front Cover (Sep. 1977 [T-MTT])
- ☐ Frontiers of Microwave Noise Measurements at NBS
- ☐ Full-Band Low-Loss Continuous Tracking Circulation in K Band (Short Papers)
- ☐ Fundamental Limits on Conversion Loss of Double Sideband Resistive Mixers
- ☐ Fundamental- and Harmonic-Frequency Circuit-Model Analysis of Interdigital Transducers with Arbitrary Metallization Ratios and Polarity Sequences
- ☐ Further Advances in High-Power Electronically Tuned Resonators

Click on title for a paper summary.



Paper Index



[Contents](#)

[Publications](#)

[Issues](#)

- ☐ [Further Studies on the Microwave Auditory Effect](#)
- ☐ [Future Microwave Markets in Telecommunications and Aviation](#)

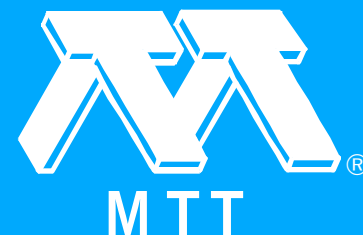
G

- ☐ [GaAs and GaAlAs Devices for Integrated Optics](#)
- ☐ [GaAs MESFET Regenerator for Phase-Shift Keying Signals at the Carrier Frequency](#)
- ☐ [GaAs MESFET Small-Signal X-Band Amplifiers](#)
- ☐ [Gain-Bandwidth Limitations and Synthesis of Single-Stub Bandpass Transmission-Line Structures](#)
- ☐ [GBIT/s Pulse Regeneration and Amplification with GaAs-MESFETs](#)
- ☐ [General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part I: Full-Height Ferrite Configuration](#)
- ☐ [General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part II: Two-Disk Ferrite Configuration](#)
- ☐ [General Form of Green's Function for Multilayer Microstrip Line with Rectangular Side Walls \(Letters\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

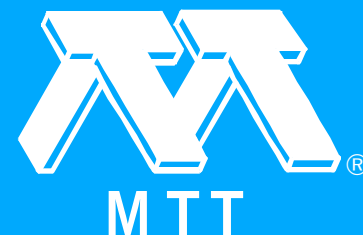
Issues

- ❑ General Noise Analysis for Bias- and RF-Voltage-Dependent Transferred-Electron Devices (Short Papers)
- ❑ General TE/sub 011/-Mode Waveguide Bandpass Filters
- ❑ Generalized Analysis of Parallel Two-Post Mounting Structures in Waveguide
- ❑ Generalized TE/sub 011/ Mode Waveguide Bandpass Filters
- ❑ Generation of Millimeter-Wave Signals of High Spectral Purity
- ❑ Graceful Degradation Properties of Matched N-Port Power Amplifier Combiners
- ❑ Green's Function in a Region with Inhomogeneous, Isotropic Dielectric Media (Short Papers)
- ❑ Guidance of 100-GHz Beams by Cylindrical Mirrors
- ❑ Guided Waves on a Flattened Sheath Helix (Letters)
- ❑ Gunn-Effect Amplifiers for Microwave Communication Systems in X, Ku, and Ka Bands

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

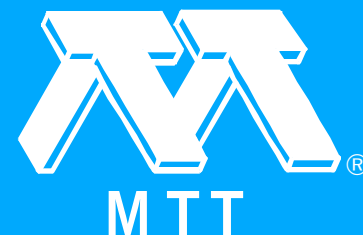
H

- ☐ [Hall Field and Magnetoresistance Effects in Rectangular Waveguide Completely Filled with Semiconductor \(Short Papers\)](#)
- ☐ [Harmonic Mixing with an Antiparallel Diode Pair \(Aug. 1975 \[T-MTT\]\)](#)
- ☐ [Harmonic Tuning Effects of TRAPATT Oscillators](#)
- ☐ [Harmonically Pumped Stripline Down-Converter](#)
- ☐ [Helical Coupler from Rectangular-to-Circular Waveguide](#)
- ☐ [Heterostructure Injection Lasers](#)
- ☐ [High Data-Rate Solid-State Millimeter-Wave Transmitter Module](#)
- ☐ [High Directivity CTL-Couplers and a New Technique for the Measurement of CTL-Coupler Parameters \(1977 \[MWSYM\]\)](#)
- ☐ [High Directivity CTL-Couplers and a New Technique for the Measurement of CTL-Coupler Parameters \(Dec. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

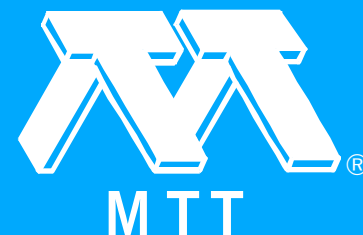
Issues

- ☐ High Directivity Microstrip Couplers Using Dielectric Overlays
- ☐ High Order Modes in a Spherical Fabry-Perot Resonator
- ☐ High Power GaAs IMPATT Amplifier (Dec. 1977 [T-MTT])
- ☐ High Power GaAs IMPATT Amplifiers (1977 [MWSYM])
- ☐ High Power Microwave P-I-N Diode Inductive Driving
- ☐ High Power Microwave Static Induction Transistor
- ☐ High Power Monopulse Tracking Feed
- ☐ High Power Pulsed UHF and L-Band $p\text{-}n\text{-}n^+\text{-}n^+$ Silicon TRAPATT Diode Oscillators
- ☐ High Power W-Band Pulsed IMPATT Oscillators
- ☐ High-Azimuthal-Index Resonances in Ferrite MIC Disk Resonators
- ☐ High-Efficiency Frequency Multiplication with GaAs Avalanche Diodes (Short Papers)
- ☐ High-Efficiency Millimeter-Wave Bolometer Mount
- ☐ High-Order Triangular Finite Elements for Electromagnetic Waves in Anisotropic Media

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

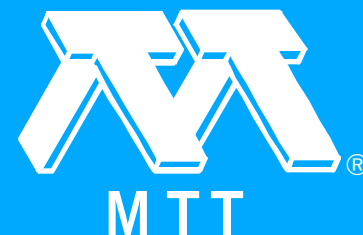
- ❑ High-Power 50-GHz Double-Drift-Region IMPATT Oscillators with Improved Bias Circuits for Eliminating Low-Frequency Instabilities
- ❑ High-Power C-Band Multiple-IMPATT-Diode Amplifiers
- ❑ High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers
- ❑ High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers (Correction)
- ❑ High-Quality Image Reconstruction from Double Microwave Holograms (Short Papers)
- ❑ Highly Reliable High-Power 86-GHz Components and Transmitter--Receiver Modules
- ❑ Hyperthermia Dose Definition
- ❑ Hyperthermia: Healing and Hazard in Tumor Bearing Rats

-
- ❑ IEEE Membership (Advertisement) (Apr. 1977 [T-MTT])
 - ❑ IEEE Membership (Advertisement) (Feb. 1977 [T-MTT])
 - ❑ IEEE Membership (Advertisement) (Jan. 1977 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

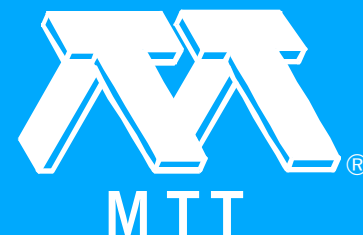
Issues

- ☐ IEEE Membership (Advertisement) (Jul. 1977 [T-MTT])
- ☐ IEEE Membership (Advertisement) (Mar. 1977 [T-MTT])
- ☐ IEEE Membership (Advertisement) (May 1977 [T-MTT])
- ☐ IEEE Press Books Coupon (Dec. 1976 [T-MTT])
- ☐ IEEE Press Books Coupon (Jul. 1976 [T-MTT])
- ☐ IEEE Press Books Coupon (Oct. 1976 [T-MTT])
- ☐ Image Conversion Effects in Diode Mixers
- ☐ Imaging RADAR Potentials for Earth Resources
- ☐ IMPATT and Gunn Diode Noise Diagnostics
- ☐ IMPATT Diode Circuit Design for Parametric Stability
- ☐ IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature (1975 [MWSYM])
- ☐ IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature (Dec. 1975 [T-MTT])
- ☐ Implementation of a Military Digital Microwave System
- ☐ Improved Accuracy for Commensurate-Line Synthesis (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

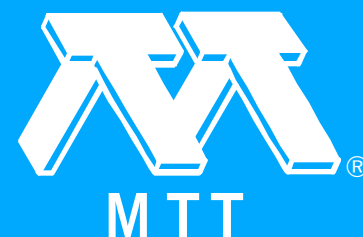
- ❑ [Improved Microwave Repeaters for Hungarian All-Solid-State Communications Systems](#)
- ❑ [In-Line Signal Circuit for Broad-Band Parametric Amplifiers](#)
- ❑ [Increase in X-Ray Sensitivity of Cancer After Exposure to 434 MHz Electromagnetic Radiation](#)
- ❑ [Index of Authors \(1975 \[MWSYM\]\)](#)
- ❑ [Index of Authors \(1976 \[MWSYM\]\)](#)
- ❑ [Index of Authors \(1977 \[MWSYM\]\)](#)
- ❑ [Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-23, 1975](#)
- ❑ [Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-24, 1976](#)
- ❑ [Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-25, 1977](#)
- ❑ [Inductance of Nonstraight Conductors Close to a Ground Return Plane \(Short Papers\)](#)
- ❑ [Influence a of Solid Elastic Properties on the Scattering of Rayleigh Wave by Normal Discontinuities](#)

Click on title for a paper summary.



Paper Index

- ❑ Influence of Longitudinal Magnetic Field on the CW Submillimeter Waves Output from HCN Gas Laser
- ❑ Influence of Spatial Dispersion of the Shield Transfer Impedance of a Braided Coaxial Cable (Letters)
- ❑ Infrared Detection of Surface Charge and Current Distributions
- ❑ Injection Locking of an IMPATT Diode Oscillator by Using a Low-Frequency Signal Parametric Injection Locking
- ❑ InP Gunn-Effect Devices for Millimeter-Wave Amplifiers and Oscillators
- ❑ Input Impedance of Coaxial Line to Circular Waveguide Feed
- ❑ Insertion Loss of 3-Port Circulator with One Port Terminated in Variable Short Circuit (Short Papers)
- ❑ Instrument Landing System Performance Prediction
- ❑ Integrated Approach to Microwave Design (1975 [MWSYM])
- ❑ Integrated Approach to Microwave Design (Sep. 1976 [T-MTT])



[Contents](#)

[Publications](#)

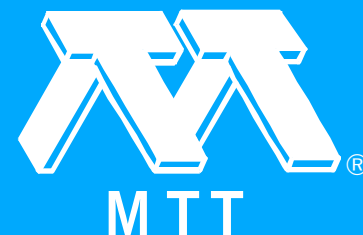
[Issues](#)

Click on title for a paper summary.



Paper Index

- ❑ Integrated Diode Phase Shifters and Performance in a 502-Element X-Band Array
- ❑ Integrated Diode Phase-Shifter Elements for an X-Band Phased-Array Antenna (Short Papers)
- ❑ Integrated Optics at 10.6- μm Wavelength
- ❑ Integrated TRAPATT Diode Arrays (Short Papers)
- ❑ Interaction of Signals in Ferromagnetic Microwave Limiters
- ❑ Interdependence of Gain and Idler Conversion Loss in Parametric Amplifiers (Letters)
- ❑ Intermodulation Distortion Analysis of Reflection-Type IMPATT Amplifiers Using Volterra Series Representation
- ❑ Intermodulation Distortion and Gain Compression in Varactor Frequency Converters (Short Papers)
- ❑ Internal Dynamics and Microwave Properties of X-Band Transferred-Electron Devices
- ❑ Internal EM Field and Absorbed Power Density in Human Torsos Induced by 1-500-MHz EM Waves
- ❑ International Microwave Symposium (Dec. 1975 [T-MTT])



Contents

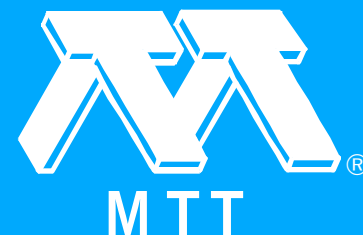
Publications

Issues

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

☐ Inverted Strip Dielectric Waveguide for Millimeter-Wave Integrated Circuits

☐ Iterative Solutions of Waveguide Discontinuity Problems

J

☐ Join IEEE (Advertisement) (Dec. 1975 [T-MTT])

☐ Join IEEE (Advertisement) (Dec. 1976 [T-MTT])

☐ Join IEEE (Advertisement) (Nov. 1975 [T-MTT])

☐ Join IEEE (Advertisement) (Nov. 1976 [T-MTT])

K

☐ K-Band BARITT Doppler Detectors

☐ K-Band Traveling-Wave Maser Using Ruby

☐ Ka-Band Solid State Power Amplifier

☐ Ku-Band Receiver Front-End Using MIC Technology

L

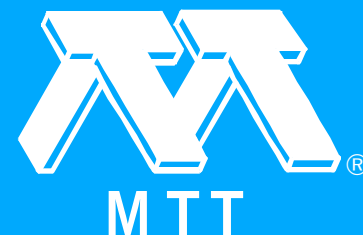
☐ Large Signal Device Characterization for Broadband Ka-Band IMPATT Amplifier Design

☐ Laser Fiber Coupling with a Hyperbolic Lens (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

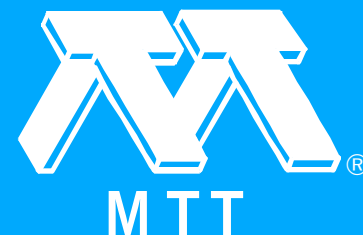
[Issues](#)

- ❑ [Leaky-Wave Antenna and Band-Reject Filter for Millimeter-Wave Integrated Circuits](#)
- ❑ [Light Transmittance and Microwave Attenuation of a Gold-Film Coating on a Plastic Substrate \(Short Papers\)](#)
- ❑ [Light Wave Communications \(Invited Paper\)](#)
- ❑ [Linear Power Responses of an Optical Fiber](#)
- ❑ [Linearity Improvement of Microwave FM Oscillators by Harmonic Tuning](#)
- ❑ [Lithium Ferrite C-Band Latching Phase Shifters](#)
- ❑ [Local-Oscillator Noise Cancellation in the Subharmonically Pumped Down-Converter \(Short Papers\)](#)
- ❑ [Long-Wavelength Analysis of Plane Wave Irradiation of a Prolate Spheroid Model of Man](#)
- ❑ [Long-Wavelength Analysis of Plane Wave Irradiation of an Ellipsoidal Model of Man](#)
- ❑ [Long-Wavelength Electromagnetic Power Absorption in Ellipsoidal Model of Man and Animals](#)
- ❑ [Long-Wavelength Electromagnetic Power Absorption in Prolate Spheroidal Models of Man and Animals](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

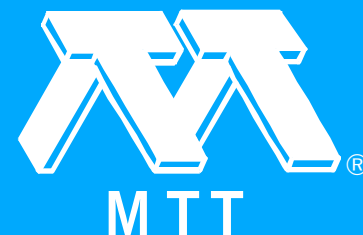
[Issues](#)

- ☐ Longitudinally Magnetized Ferrite Phase Shifters Using a Reduced Height Rectangular Waveguide
- ☐ Loss Considerations for Microstrip Resonators (Short Papers)
- ☐ Loss Mechanisms in Coupled Cavity Filters
- ☐ Low Cost X-Band MIC BARITT Doppler Sensor (Abstract)
- ☐ Low Loss Broadband EHF Circulator
- ☐ Low Loss Linear Phase Filters
- ☐ Low Noise and Linear FET Amplifiers for Satellite Communications
- ☐ Low Noise Microwave and Millimeter Wave Integrated Circuit Mixers
- ☐ Low Noise Octave Bandwidth Waveguide Mixer
- ☐ Low Noise Traveling-Wave Maser Receiver for Three Millimeter Wavelength
- ☐ Low-Loss Bandpass Filters at 80 GHz Using Cylindrical TE/sub 111/ -Mode Cavities
- ☐ Low-Loss Broad-Band EHF Circulator (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ☐ Low-Noise and Linear FET Amplifiers for Satellite Communications
- ☐ Low-Noise Design of Microwave Transistor Amplifiers (Short Papers)
- ☐ Low-Noise Millimeter-Wave Receivers
- ☐ Low-Noise Receiver Design Trends Using State-of-the-Art Building Blocks
- ☐ Low-Noise Room-Temperature and Cryogenic Mixers for 80-120 GHz

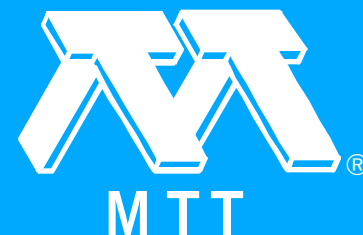
M

- ☐ Measured Odd- and Even-Mode Dispersion of Coupled Microstrip Lines (Short Papers)
- ☐ Measurement of Dielectric Properties with Superconducting Resonators: Theory and Practice
- ☐ Measurement of Guide Wavelength in Rectangular Dielectric Waveguide
- ☐ Measurement of Microwave Loss Tangent by Means of Microwave Resonator Bridge (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

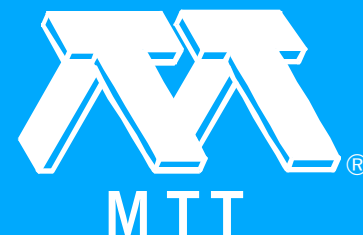
Issues

- ☐ Measurement of Surface Resistance in Oversized Circular Waveguide at Millimeter Wavelengths (Short Papers)
- ☐ Measurement of the Electromagnetic-Field Components in a Rectangular Drift Tube-Loaded Cavity Using Various Perturbing Objects (Short Papers)
- ☐ Measurement of the Equivalent Circuit Parameters of Discontinuities in a Resonant Microstrip Ring
- ☐ Measurement Systems to Display $\text{Re}(z/\text{sub s. t.})$ of Singly Terminated Filters
- ☐ Measurements of 1.8--2.7-GHz Microwave Attenuation in the Human Torso
- ☐ Measurements of Intercavity Couplings (Letters)
- ☐ Measurements of Intercavity Couplings (Short Papers)
- ☐ Measuring Dielectric Constant of Substrates for Microstrip Applications (Letters)
- ☐ Mechanically Tuneable, Cavity-Stabilized, Millimeter-Wave IMPATT Oscillators
- ☐ Mechanisms for Coherent Scattering of Electromagnetic Waves from Relativistic Electron Beams

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

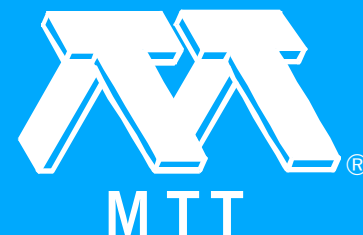
Issues

- ☐ MIC Coupler with Improved Directivity Using Thin-Film Bi/sub 2/O/sub 3/ Overlay (Letters)
- ☐ MIC Modulator with Electronically Variable Carrier Cancellation Circuit
- ☐ Microstrip Discontinuity Capacitances for Right-Angle Bends, T Junctions, and Crossings (Correction)
- ☐ Microstrip Excitation of Magnetostatic Surface Waves: Theory and Experiment
- ☐ Microstrip Varactor-Tuned Millimeter Wave IMPATT Diode Oscillators (1975 [MWSYM])
- ☐ Microstrip Varactor-Tuned Millimeter-Wave IMPATT Diode Oscillators (Dec. 1975 [T-MTT])
- ☐ Microstrip Varactor-Tuned Millimeter-Wave Transmitter (Letters)
- ☐ Microwave Applications of Thin Magnetic Resistive Sheets
- ☐ Microwave Bandpass Filters Containing Dielectric Resonators with Improved Temperature Stability and Spurious Response

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

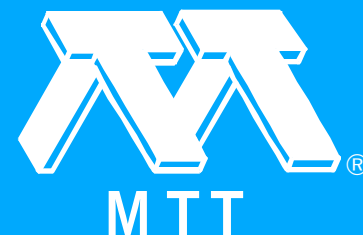
[Issues](#)

- ☐ [Microwave Circuit Design by Means of a Simple Simulator With an On-Line Minicomputer](#)
- ☐ [Microwave Deviation Linearity Test Method](#)
- ☐ [Microwave Devices Based on Magnetostatic Wave Reflecting Arrays](#)
- ☐ [Microwave Dielectric Resonator Filters Utilizing Ba/sub 2/Ti/sub 9/O/sub 20/ Ceramics](#)
- ☐ [Microwave Effect on Rabbit Superior Cervical Ganglion \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [Microwave Engineering Problems in the Microwave Oven](#)
- ☐ [Microwave Field-Effect Transistors--1976](#)
- ☐ [Microwave Filters with Single Attenuation Poles at Real or Imaginary Frequencies](#)
- ☐ [Microwave Generation Using Sheet Relativistic Electron Beams](#)
- ☐ [Microwave Integrated Circuit Receivers at Millimetric Wavelengths](#)
- ☐ [Microwave Irradiation Design Using Dielectric Lenses](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

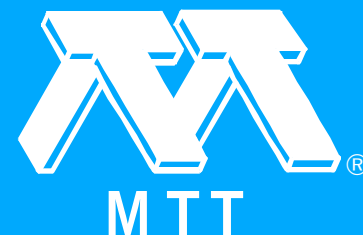
[Issues](#)

- ☐ [Microwave Irradiation Design Using Dielectric Lenses \(Short Papers\)](#)
- ☐ [Microwave Measurement of Respiration](#)
- ☐ [Microwave Measurement of the Temperature Coefficient of Permittivity for Sapphire and Alumina \(Short Papers\)](#)
- ☐ [Microwave MESFET Mixer](#)
- ☐ [Microwave Octave-Band GaAs FET Amplifiers](#)
- ☐ [Microwave Permeability Tensor of Partially Magnetized Ferrites](#)
- ☐ [Microwave Power GaAs FET Amplifiers](#)
- ☐ [Microwave Propagation in Rectangular Waveguide Containing a Semiconductor Subject to a Transverse Magnetic Field \(Short Papers\)](#)
- ☐ [Microwave Properties of Lithium Ferrites \(Short Papers\)](#)
- ☐ [Microwave QPSK Demodulation Techniques at the Receiver Front End](#)
- ☐ [Microwave Scattering from the Ocean Surface](#)
- ☐ [Microwave Scattering from the Ocean Surface \(Short Papers\)](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

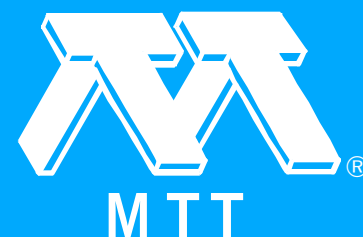
[Issues](#)

- ❑ [Microwave Technology in the Department of Defense \(Panel Discussion\)](#)
- ❑ [Microwave Technology in the Microwave Landing System](#)
- ❑ [Microwave Thermography as a Diagnostic Tool for the Detection of Cancer \(Abstract\)](#)
- ❑ [Microwave YIG-Tuned Elements as Transducers for Monitoring of EHV AC and HVDC Transmission Systems](#)
- ❑ [Microwave-Power Absorption by Rectangular-Shaped Conductive Dielectric Samples in Stripline \(Letters\)](#)
- ❑ [Millimeter IMPATT Sources for the 130-170-GHz Range](#)
- ❑ [Millimeter-Wave Downconverter with Subharmonic Pump](#)
- ❑ [Millimeter-Wave IMPATT Power Amplifier/Combiner](#)
- ❑ [Millimeter-Wave IMPATT Sources for Communication Applications](#)
- ❑ [Millimeter-Wave Power Amplifier and Combiner](#)
- ❑ [Millimeter-Wave Receivers with Subharmonic Pump](#)
- ❑ [Millimeter-Wave Semiconductor Devices](#)
- ❑ [Millimeter-Wave Thin-Film Downconverter](#)

Click on title for a paper summary.



Paper Index



[Contents](#)

[Publications](#)

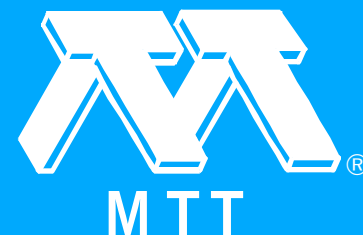
[Issues](#)

- ☐ Millimeterwave Integrated Circuit Technologies (Panel Discussion)
- ☐ Millimetre-Wave Insular Guide Frequency Scanned Array
- ☐ Minimax Optimization by Algorithms Employing Modified Lagrangians (Short Papers)
- ☐ Minimum-Phase Behavior of Random Media
- ☐ MINOPT--An Optimization Program Based on Recent Minimax Results (Computer Program Descriptions)
- ☐ MLS--A Practical Application of Microwave Technology (1976 [MWSYM])
- ☐ MLS--A Practical Application of Microwave Technology (Dec. 1976 [T-MTT])
- ☐ Modal Analysis of Coupling Problems in Optical Fibers
- ☐ Modal Characteristics of Crossed Rectangular Waveguides
- ☐ Modal Theory of Spatially Periodic Media
- ☐ Mode Classification of a Triangular Ferrite Post for Y-Circulator Operation (Short Papers)
- ☐ Model for Some Nonthermal Effects of Radio and Microwave Fields on Biological Membranes

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

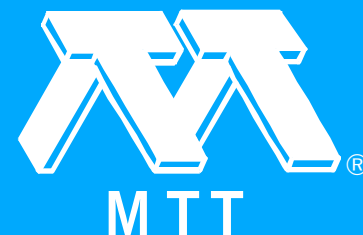
[Issues](#)

- ☐ Modeling and Computer Simulation of a Microwave-to-DC Energy Conversion Element (1975 [MWSYM])
- ☐ Modeling and Computer Simulation of a Microwave-to-DC Energy Conversion Element (Dec. 1975 [T-MTT])
- ☐ Modeling Rectangular Waveguide Junctions by the Eigenfunction Method
- ☐ Modes and Cutoff Frequencies of Crossed Rectangular Waveguides
- ☐ Molecular Transfer Characteristics of Air Between 40 and 140 GHz
- ☐ MTT Awards for 1974
- ☐ MTT Awards for 1975
- ☐ Multi-Octave Combine-Filter Multiplexer
- ☐ Multi-Section Inhomogeneous Coupled-Line Filters with Large Mode-Velocity Ratios
- ☐ Multiband Low-Noise Receivers for a Very Large Array
- ☐ Multiple Branch-Guide Directional Coupler Using TE/sub 01/-Mode Semicircular Waveguide (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ❑ Multiplexing and Demultiplexing Techniques with Gunn Devices in the Gigabit-Per-Second Range
- ❑ Multiplexing- and Demultiplexing-Techniques with Gunn Devices in the Gbit/s Range

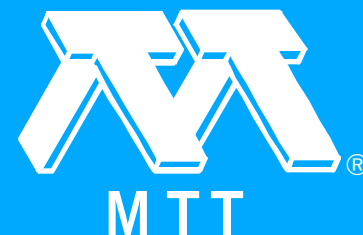
N

- ❑ Narrowband Contiguous Multiplexing Filters with Arbitrary Amplitude and Delay Response
- ❑ NASA Microwave Propagation and Interference Studies (Abstract)
- ❑ NAVSTAR Global Positioning System: A Satellite Based Microwave Navigation System
- ❑ Near Zone Microwave Exposure of a Biological Sphere
- ❑ Network Methods for Dielectric-Grating Applications
- ❑ Network Modelling of Interacting Capacitive Irises and Steps in Waveguide
- ❑ New Application of Evanescent Mode Wave-Guide to Filter Design (Dec. 1977 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

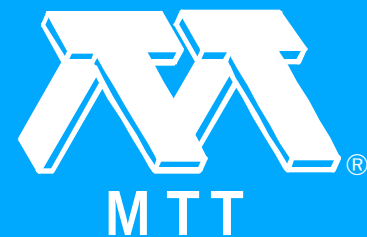
[Issues](#)

- ❑ [New Application of Evanescent Mode Waveguide to Filter Design \(1977 \[MWSYM\]\)](#)
- ❑ [New Developments with Integrated Fin-Line and Related Printed Millimeter Circuits](#)
- ❑ [New Edge Guided Mode Devices](#)
- ❑ [New Edge-Guided Mode Isolator Using Ferromagnetic Resonance Absorption \(1976 \[MWSYM\]\)](#)
- ❑ [New Edge-Guided Mode Isolator Using Ferromagnetic Resonance Absorption \(Feb. 1977 \[T-MTT\]\)](#)
- ❑ [New Editorial Policy \(Announcement\) \(May 1977 \[T-MTT\]\)](#)
- ❑ [New from the IEEE Press, Turning Points in American Electrical History \(Advertisement\) \(Jul. 1977 \[T-MTT\]\)](#)
- ❑ [New from the IEEE Press, Turning Points in American Electrical History \(Advertisement\) \(May 1977 \[T-MTT\]\)](#)
- ❑ [New High Performance 3.5 mm, Low Cost, Utility Coaxial Connector with Mode Free Operation Through 34 GHz](#)
- ❑ [New Method for Computing the Resonant Frequencies of Dielectric Resonators \(Short Papers\)](#)

Click on title for a paper summary.



Paper Index



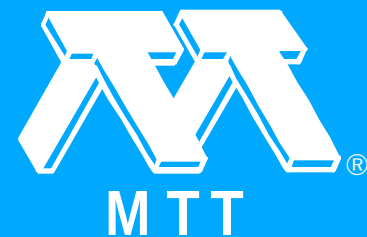
[Contents](#)
[Publications](#)
[Issues](#)

- ☐ [New Modes of Operation for Avalanche Diodes: Frequency Multiplication and Upconversion](#)
- ☐ [New N-Way Hybrid Power Dividers \(1977 \[MWSYM\]\)](#)
- ☐ [New N-Way Hybrid Power Dividers \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [New Results in the Least pth Approach to Minimax Design](#)
- ☐ [New Waveguide Structures for Millimeter-Wave and Optical Integrated Circuits \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [New Waveguide Structures for Millimeter-Wave Integrated Circuits \(1975 \[MWSYM\]\)](#)
- ☐ [Noise Calibration Repeatability of an Airborne Third-Generation Radiometer \(Letters\)](#)
- ☐ [Noise in Microwave Transmission Applications of Gunn and IMPATT Diodes \(Panel Session\)](#)
- ☐ [Non Destructive Resonant Technique for the Measurement of Complex Permittivity -- Theoretical Analysis and Experimental Results](#)
- ☐ [Non-Perturbing Microprobes for Measurement in Electromagnetic Fields](#)

Click on title for a paper summary.



Paper Index



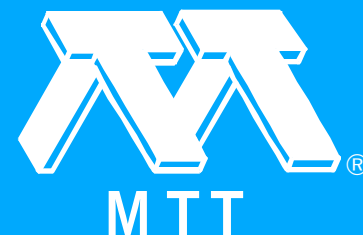
[Contents](#)
[Publications](#)
[Issues](#)

- ☐ Nondegenerate Surface-Wave Mode Coupling Between Dielectric Waveguides
- ☐ Nondestructive Measurement of Complex Permittivity for Dielectric Slabs (Short Papers)
- ☐ Nonlinear and Intermodulation Characteristics of Millimeter-Wave IMPATT Amplifiers
- ☐ Nonreciprocal Delay Line for Use in S Band Tubes
- ☐ Nonreciprocal Magneto optic Waveguides
- ☐ NOVA (Network Optimization Via Adjoint) (Computer Program Descriptions)
- ☐ Numerical Analysis of Eigenvalue Solution of Disk Resonator (Short Papers)
- ☐ Numerical Analysis of the Rectangular Dielectric Waveguide and its Modifications
- ☐ Numerical Solution of Coupling Between Two Collinear Parallel-Plate Waveguides
- ☐ Numerical Solution of Steady-State Electromagnetic Scattering Problems Using the Time-Dependent Maxwell's Equations

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

- ❑ Numerical Solution of the Coupled-Power Equation in Step-Index Optical Fibers

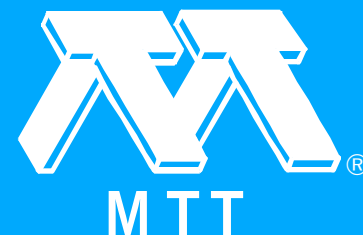
O

- ❑ Observation and Application of High-Order Azimuthal Modes in a Fabry-Perot Resonator (Short Papers)
- ❑ Octave Bandwidth High Speed Limiter with Uniform Suppression Characteristics
- ❑ On a Direct Use of Edge Condition in Modal Analysis (Short Papers)
- ❑ On an Automatic System for Simultaneous Measurement of Amplitude and Phase of Millimeter-Wave Fields (Short Papers)
- ❑ On Microwave-Induced Hearing Sensation
- ❑ On Some Integral Relationships for Commensurate Transmission-Line Networks
- ❑ On Some Integral Relationships for Commensurate Transmission-Line Networks (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

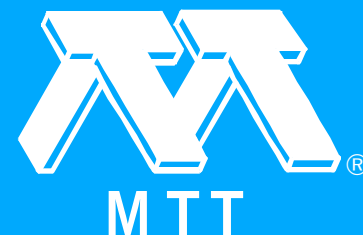
Issues

- ❑ [On the Accuracy of the Beam-Wave Theory of the Open Resonator \(Letters\)](#)
- ❑ [On the Analysis of Symmetrical Three-Line Microstrip Circuits](#)
- ❑ [On the Circuit-Device Interface in IMPATT-Diode Applications](#)
- ❑ [On the Design of Dielectric Loaded Waveguides](#)
- ❑ [On the Design of Dielectric Loaded Waveguides \(Comments\)](#)
- ❑ [On the Design of Matched Equalizers of Prescribed Gain Versus Frequency Profiles](#)
- ❑ [On the Expansion of Axial Field Components in Terms of Normal Modes in Perturbed Waveguides \(Letters\)](#)
- ❑ [On the Field Energy and Power of Waveguides and Cavities Synthesized with Nonseparable Solutions of Helmholtz Wave Equation](#)
- ❑ [On the Latching of Ferrite Microwave Devices \(Short Papers\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

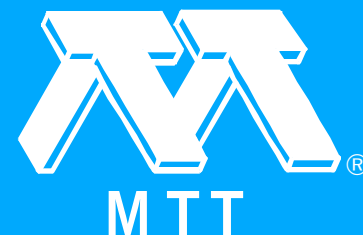
Issues

- ❑ On the Performance of the Least Squares Method for Waveguide Junctions and Discontinuities (Short Papers)
- ❑ On the Question of Computation of the Dyadic Green's Function at the Source Region in Waveguides and Cavities (Short Papers)
- ❑ On the Resonances of a Dielectric Resonator of Very High Permittivity
- ❑ On the Synthesis of Waveguides and Cavities Realized with Nonseparable Solutions of Helmholtz Wave Equation (Short Papers)
- ❑ On the Theory and Application of the Dielectric Post Resonator (Short Papers)
- ❑ On the Theory of Coupling Between Finite Dielectric Resonators (Short Papers)
- ❑ Optical Fibers with Coupled Dispersive Modes
- ❑ Optical Waveguide Modulators
- ❑ Optimization of Microwave Networks (Short Papers)
- ❑ Optimization of the Efficiency and Other Properties of the Rectenna Element

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ☐ Optimization of the Matching Network for a Hybrid Coupler Phase Shifter
- ☐ Optimum Modulator Design for a High-Sensitivity Homodyne System--Binary Modulation Method
- ☐ Oscillation Characteristics of Millimeter-Wave IMPATT Diodes Mounted in Low-Impedance Waveguide Mounts (Short Papers)
- ☐ Overseas Abstracts (Jul. 1975 [T-MTT])
- ☐ Overseas Abstracts (Oct. 1976 [T-MTT])
- ☐ Overseas Abstracts (Oct. 1977 [T-MTT])

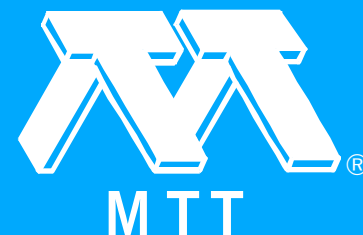
P

-
- ☐ Page Charges (Announcement) (Jun. 1976 [T-MTT])
 - ☐ Parametric Frequency Multiplication and Level Control in Broadband Microwave Signal Source
 - ☐ Passive L-Band Radiometer for Remote Sensing of Earth Resources
 - ☐ Passive Microwave Sensing of the Earth

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

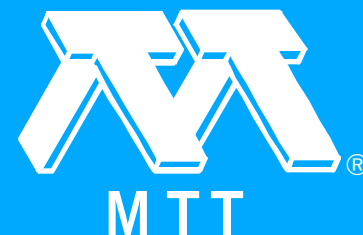
Issues

- ❑ Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides
- ❑ Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides (Short Papers)
- ❑ Performance Characteristics of 4-Port Stripline Circulators (Short Papers)
- ❑ Performance Characteristics of an Automated Broad-Band Bolometer Unit Calibration System
- ❑ Performance of a High-Power, 2.388-GHz Receiving Array in Wireless Power Transmission Over 1.54 km
- ❑ Performance of Dual-Gate GaAs MESFET's as Gain-Controlled Low-Noise Amplifiers and High-Speed Modulators
- ❑ Performance of GaAs MESFET Mixers at X Band
- ❑ Performance of GaAs MESFET's at Low Temperatures (Short Papers)
- ❑ Periodic Frequency Response SAW Filters for a Tree Approach to Many-Tone Frequency Synthesis

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

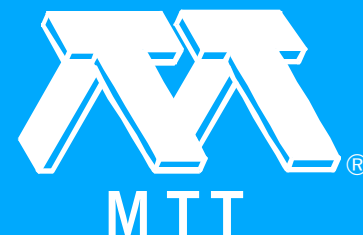
Issues

- ☐ Perturbation Theory Generalized to Arbitrary (p,l) Modes in a Fabry-Perot Resonator (Letters)
- ☐ Phase Noise Measurements in the Frequency Domain
- ☐ Picosecond Pulse Sequential Waveform Generation
- ☐ Picosecond-Pulse Sequential Waveform Generation (Short Papers)
- ☐ Planar Multiport Millimeter Integrated Circuits
- ☐ Planar Network Analysis Programs-- PNAP1 and PNAP2 (Computer Program Descriptions)
- ☐ Possibility of Double Circulation Frequency Operation of Stripline Y-Junction Circulator
- ☐ Posttuning Drift of a Transferred-Electron-Device Voltage-Controlled Oscillator (Short Papers)
- ☐ Power Amplification of Microwave FM Communication Signals Using a Phase-Locked Voltage-Tuned Oscillator
- ☐ Power Deposition in a Spherical Model of Man Exposed to 1-20 MHz Electromagnetic Fields (Correction)
- ☐ Power GaAs MESFET with a High Drain-Source Breakdown Voltage

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

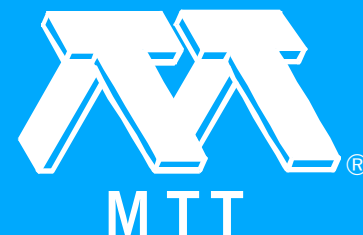
[Issues](#)

- ☐ Power Generation and Efficiency in GaAs Traveling-Wave Amplifiers (Short Papers)
- ☐ Power Transfer of a Parallel Optical Fiber Directional Coupler (Letters)
- ☐ Practical Realization of Broadband Microwave Diplexers
- ☐ Precise Calibration of Plane-Wave Microwave Power Density Using Power Equation Techniques
- ☐ Precise Dielectric Measurements of Low-Loss Materials at Millimeter and Submillimeter Wavelengths
- ☐ Precision Subnanosecond Delay Measurements of High Speed Digital Integrated Circuits
- ☐ Preliminary In-Vivo Probe Measurements of Electrical Properties of Tumors in Mice
- ☐ Premature Decline Limiting in X-Band YIG Filters
- ☐ Present and Future Capability of Millimeter-Wave Receivers (Abstract)
- ☐ President's Message--A Quarter Century of Progress
- ☐ Probe Measurements of Guide Wavelength in Rectangular Silicon Dielectric Waveguide

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

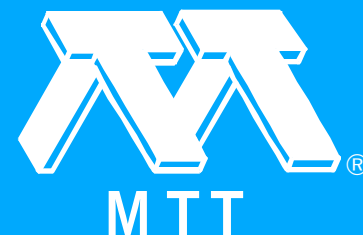
Issues

- ☐ Problems and Challenges in Satellite Communications
Frequency Reuse - Antennas and Components
- ☐ Problems in the Realization of Flat Delay, Narrow-Band
Surface Wave Filters at UHF and Microwave Frequencies
- ☐ Process Technology and Modeling of a Low-Noise Silicon
Bipolar Transistor with Sub-Micron Emitter Widths
- ☐ Program (1975 [MWSYM])
- ☐ Program (1976 [MWSYM])
- ☐ Program (1977 [MWSYM])
- ☐ Propagating Modes Along a Thin Wire Located Above a
Grounded Dielectric Slab (Dec. 1977 [T-MTT])
- ☐ Propagating Modes Along a Thin Wire Located Near a
Grounded Dielectric Slab (1977 [MWSYM])
- ☐ Propagation Along a Braided Coaxial Cable in a Circular
Tunnel
- ☐ Propagation Along a Braided Coaxial Cable Located Close
to a Tunnel Wall (Short Papers)
- ☐ Propagation and Radiation Behaviour of Dielectric Coated E-
Plane Sectoral Horn

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

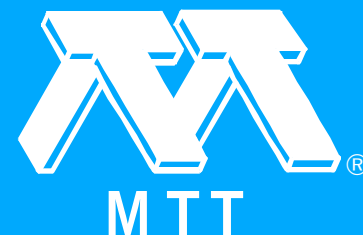
[Issues](#)

- ❑ [Propagation Effects in Optical Fibers](#)
- ❑ [Propagation in a Rectangular Waveguide Periodically Loaded with Resonant Irises \(1976 \[MWSYM\]\)](#)
- ❑ [Propagation in Circular Waveguide Loaded with an Azimuthally Magnetized Ferrite Tube \(Short Papers\)](#)
- ❑ [Propagation In Dielectric-Lined Square Waveguides](#)
- ❑ [Propagation in Inhomogeneous Slab Waveguides](#)
- ❑ [Propagation in Rectangular Waveguides with Arbitrary Internal and External Media](#)
- ❑ [Propagation Losses of Guided Modes in an Optical Graded-Index Slab Waveguide with Metal Cladding](#)
- ❑ [Propagation of Cladded Inhomogeneous Dielectric Waveguides](#)
- ❑ [Propagation of Light Beam through Lens-Like Media with Complex Permittivity](#)
- ❑ [Propagation, Attenuation, and Dispersion Characteristics of Inhomogeneous Dielectric Slab Waveguides](#)
- ❑ [Prototype Characteristics for a Class of Dual-Mode Filters \(Short Papers\)](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

- ☐ [Prototype Networks in Broadband Parametric Amplifier Synthesis](#)
- ☐ [PSK and QPSK Modulators for Gigabit Data Rates](#)
- ☐ [Public Service Satellite Communications Opportunities](#)
- ☐ [Pulse Broadening in Multimode Optical Fibers with Large \$\Delta n/n\$. Numerical Results](#)
- ☐ [Pulse Propagation in Multimode Fibers with Frequency-Dependent Coupling](#)

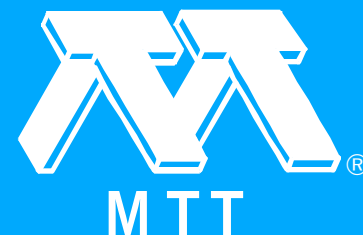
Q

- ☐ [Q Factors of Free and Shielded Cylindrical Dielectric Resonators](#)
- ☐ [Quasi-Guided Modes and Related Radiation Losses in Optical Dielectric Waveguides with External Higher Index Surroundings](#)
- ☐ [Quasi-Static Characteristics of Microstrip on an Anisotropic Sapphire Substrate](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

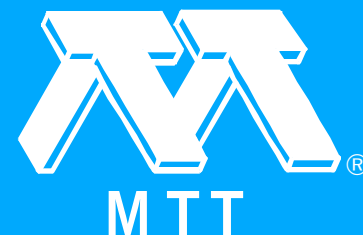
R

- ☐ [Radiation Fields of a Tapered Film and a Novel Film-to-Fiber Coupler](#)
- ☐ [Radiation from Bends in Dielectric Rod Transmission Lines](#)
- ☐ [Radiation from Curved Dielectric Slabs and Fibers \(Comments\)](#)
- ☐ [Radiation from Curved Dielectric Slabs and Fibers \(Correction\)](#)
- ☐ [Radiation from Triangular and Circular Resonators in Microstrip](#)
- ☐ [Radiation Losses of Planar Circuit Resonators and the R/Q Parameter \(Short Papers\)](#)
- ☐ [Radiation Resistance of Microstrip Excited Magnetostatic Surface Waves](#)
- ☐ [Random Discrete Imperfections in Millimeter Waveguide Systems](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

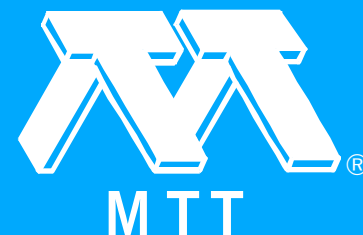
Issues

- ❑ Randomly Imperfect Waveguides for Millimeter and Submillimeter Wavelengths for Long-Distance Transmission Applications
- ❑ Rank Reduction of Ill-Conditioned Matrices in Waveguide Junction Problems
- ❑ Rate Effects in Isolated Turtle Hearts Induced by Microwave Irradiation
- ❑ Rays, Beams, and Modes Pertaining to the Excitation of Dielectric Waveguides
- ❑ Real Time Discrete Fourier Transforms Using a Programmable Diode-Convolver Module
- ❑ Real Time Wideband Cepstrum Analysis Based on SAW Devices
- ❑ Real-Time Fourier Analysis of Spread Spectrum Signals Using Surface-Wave-Implemented Chirp-Z Transformation (Short Papers)
- ❑ Realization of Elliptic Function Bandstop Filters by Means of a Resonated Prototype

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

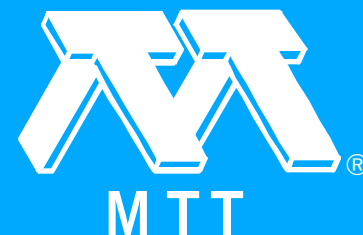
Issues

- ☐ Rebuttal of "Dispersion of Nonlinear Elements as a Source of Electromagnetic Shock Structure" (Letters)
- ☐ Receiving Part of Satellite Borne Millimeter Wave Transponder
- ☐ Recent Advances in Binary-Programmed Electronically-Tunable Bandpass Filters of the "Flauto" Type
- ☐ Recent Development or Transferred Electron Logic Devices in Japan
- ☐ Reciprocity Theorem for a Region with Inhomogeneous Bianisotropic Media and Surface Impedance (Short Papers)
- ☐ Reduction of Rain-Crosspolarization by its Dependence on Polarization Directions
- ☐ Reflection at a Curved Dielectric Interface -- Electromagnetic Tunneling
- ☐ Reflection Coefficient of Unequal Displaced Rectangular Waveguides (Letters)
- ☐ Reflection Problems in a Ferrite Stripline
- ☐ Reflectivity of Common Materials in the Submillimeter Region

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

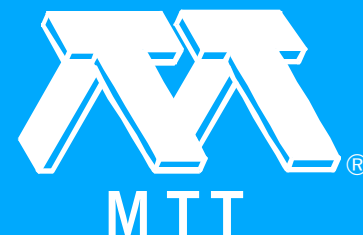
Issues

- ☐ Relativistic Electron Beam Interactions for Generation of High Power at Microwave Frequencies
- ☐ Relativistic Electron-Beam-Generated Coherent Submillimeter Wavelength Cerenkov Radiation
- ☐ Reliability Study of GaAs MESFET's
- ☐ Resonance Electromagnetic Absorption by Nonspherical Dielectric Objects
- ☐ Resonance Measurement of Even and Odd Mode Propagation Constants in Coupled Microstrips
- ☐ Resonance Measurement of Single- and Coupled-Microstrip Propagation Constants
- ☐ Resonant Cavities Used as Frequency Selective Phase Shifters
- ☐ Resonant Electromagnetic Power Deposition in Man and Animals
- ☐ Resonant Frequency and Q of an Open-Ended Rectangular Cavity
- ☐ Resonant Frequency of a $TE_{01\delta}$ Dielectric Resonator

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ☐ Results, Potentials, and Limitations of Josephson-Mixer Receivers at Millimeter and Long Submillimeter Wavelengths
- ☐ Review and State of the Art Biological Effects and Hazards of Microwave Radiation
- ☐ Review of Integrated Optics
- ☐ Review of the Status of Optical Fiber Transmission and Integrated Optics
- ☐ RF Burnout of Mixer Diodes as Induced Under Controlled Laboratory Conditions and Correlation to Simulated System Performance
- ☐ RF Cavity Irradiation Dosimetry (Short Papers)

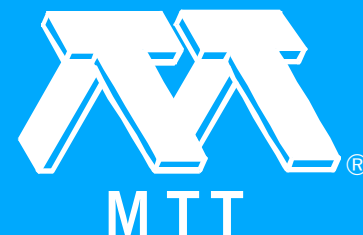
S

- ☐ Satellite Altimetry Applications (1975 [MWSYM])
- ☐ Satellite Altimetry Applications (Dec. 1975 [T-MTT])
- ☐ SAW Transform Signal Processing
- ☐ Scanning Acoustic Microscope (Abstract)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

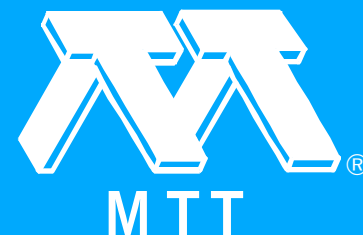
Issues

- ☐ Scattering by Periodic Metal Surfaces with Sinusoidal Height Profile - A New Theoretical Approach
- ☐ Scattering Matrices of Junction Circulator with Chebyshev Characteristics
- ☐ Scattering of Microwaves by Dielectric Materials Used in Laboratory Animal Restrainers
- ☐ Scattering of Surface Waves at a Dielectric Discontinuity on a Planar Waveguide
- ☐ Scattering of Surface Waves at a Dielectric Discontinuity on a Planar Waveguide (Comments)
- ☐ Scattering of Surface Waves by Metallic Obstacles on the Dielectric-Image Line
- ☐ Schottky-Barrier Diode Converters in the Short Millimeter Wavelengths Region
- ☐ Schottky-Barrier Diodes for Submillimeter Heterodyne Detection
- ☐ Schottky-Diode Realization for Low-Noise Mixing at Millimeter Wavelengths

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

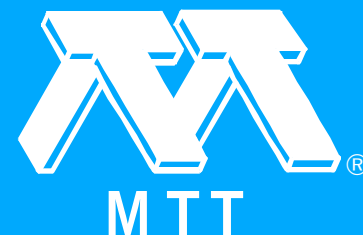
[Issues](#)

- ☐ [Selective Heating of Cutaneous Human Tumors at 27.12 MHz \(Abstract\)](#)
- ☐ [Series Interconnection of Six TRAPATT Devices on a Diamond Substrate](#)
- ☐ [Session 1 -- Microwaves in Earth Sensing](#)
- ☐ [Session 1 -- Optics](#)
- ☐ [Session 10 -- Microwave Diode Control Devices](#)
- ☐ [Session 10 -- Microwave High-Power Techniques](#)
- ☐ [Session 11 -- Computer Aided Microwave Practices](#)
- ☐ [Session 11 -- Gigabit Logic](#)
- ☐ [Session 12 -- Millimeter Wave Communications in Japan \(Invited Session\)](#)
- ☐ [Session 12 -- Multimeter and Microwave Integrated Circuits](#)
- ☐ [Session 13 -- Microwave Ferrite Control Devices](#)
- ☐ [Session 13A -- Computer-Aided Design and Measurement](#)
- ☐ [Session 13B -- Microwave Measurement and Techniques](#)
- ☐ [Session 14 -- Millimeter and Submillimeter Wave Techniques](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

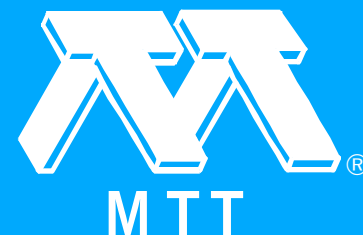
[Issues](#)

- ☐ Session 14 -- Millimeter Wave Systems
- ☐ Session 15 -- Ferrite Components
- ☐ Session 15 -- Microwaves in Medicine
- ☐ Session 16 -- Noise in Microwave Transmission and Applications of Gunn and IMPATT Diodes (Panel Session)
- ☐ Session 16 -- Surface-Acoustic-Wave Resonators
- ☐ Session 17 -- General Joint Invited Session
- ☐ Session 17 -- Reduction and Measurement of Noise
- ☐ Session 18 -- Acoustic Wave Devices and Techniques
- ☐ Session 18 -- Microwaves in Transportation and Navigation
- ☐ Session 19 -- Commercial Applications of Microwaves
- ☐ Session 19 -- Microwave Acoustics and Delay Lines
- ☐ Session 2 -- Integrated Optics and Fiber Optics
- ☐ Session 2 -- Microwaves in Communication
- ☐ Session 20 -- Phased-Array Components
- ☐ Session 21 -- Technology Forecasting
- ☐ Session 22 -- Microwave Activities in Government Laboratories

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

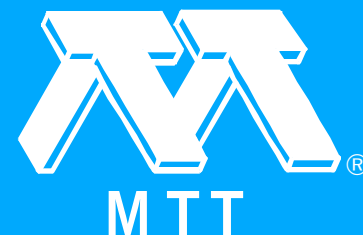
[Issues](#)

- ☐ Session 23 -- Review and State-of-the-Art, Biological Effects and Hazards of Microwave Radiation
- ☐ Session 24 -- Electromagnetic Theory
- ☐ Session 3 -- Microwave Filters and Components I
- ☐ Session 3 -- Solid-State Microwave Sources
- ☐ Session 4 -- Microwave Generation and Amplification
- ☐ Session 4 -- Passive Microwave Components
- ☐ Session 5 -- Microwave Measurements
- ☐ Session 5 -- Microwaves in Communication Systems
- ☐ Session 6 -- Microwave Filters and Components II
- ☐ Session 6A -- Low-Noise Receivers
- ☐ Session 6B -- Solid-State Power Amplifiers
- ☐ Session 7 -- Filters
- ☐ Session 7 -- Professional Action (Panel Session)
- ☐ Session 8 -- Microwave Integrated Circuits
- ☐ Session 8 -- Panel Discussion: Millimeter Integrated Circuit Technology
- ☐ Session 9 -- Solid-State Microwave Devices

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

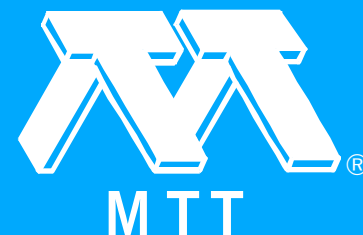
[Issues](#)

- ☐ [Session 9 -- Technology Forecasting and Assessment](#)
- ☐ [Session A1 -- Solid State Sources](#)
- ☐ [Session A2 -- Diode Frequency Converters](#)
- ☐ [Session A3 -- Microwave Integrated Circuits](#)
- ☐ [Session A4 -- FET Devices and Circuits](#)
- ☐ [Session A5 -- Microwave and Millimeter Wave Integrated Circuits](#)
- ☐ [Session A6 -- Low Noise Components and Techniques](#)
- ☐ [Session B1 -- Six Port Network Analysis](#)
- ☐ [Session B2 -- Microwave Measurements](#)
- ☐ [Session B3 -- Digital Microwave Systems](#)
- ☐ [Session B4 -- Filters I](#)
- ☐ [Session B5 -- Filters II](#)
- ☐ [Session B6 -- Passive Components](#)
- ☐ [Session C1 -- Multifunction Microwave Modules](#)
- ☐ [Session C2 -- Computer Oriented Microwave Design and Practices](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

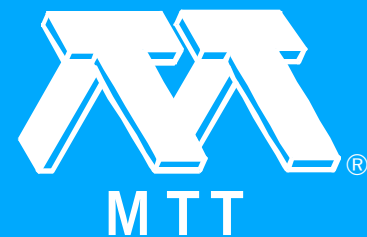
[Issues](#)

- ☐ Session C3 -- Microwave & mm Solid State Circuit Development in Japan
- ☐ Session C4 -- Microwave Acoustics
- ☐ Session C5 -- Satellite Communications Systems
- ☐ Session C6 -- Ferrites
- ☐ Session D1 -- Optics and Submillimeter Waves
- ☐ Session D2 -- High Power
- ☐ Session D3 -- Applications to Cancer Treatment I
- ☐ Session D4 -- Applications to Cancer Treatment II
- ☐ Session D5 -- Waveguides and Transmission Lines
- ☐ Session D6 -- Antennas and Components
- ☐ Short-Circuit Tuning Method for Singly Terminated Filters (1977 [MWSYM])
- ☐ Short-Circuit Tuning Method for Singly Terminated Filters (Dec. 1977 [T-MTT])
- ☐ Shuttle Pulse Measurement of Mode Coupling and Conversion (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

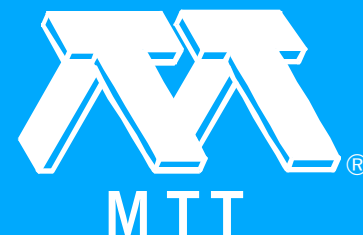
Issues

- ❑ Signal Processing Using Guided-Wave Acoustooptic Bragg-Diffraction in LiNbO₃ Waveguides
- ❑ Single Hybrid Tee Frequency Discriminator (Letters)
- ❑ Single Strand Optical Fibre Systems (Invited Paper)
- ❑ Single-Mode Pulse Dispersion in Optical Waveguides
- ❑ Slant Dielectric Interface Discontinuity in a Waveguide (Short Papers)
- ❑ Slotted Line Measurements for Propagation Constant in Lossy Waveguide (Short Papers)
- ❑ Slow-Wave Propagation Along Variable Schottky-Contact Microstrip Line
- ❑ Solid State Microwave Devices (Rump Session)
- ❑ Solution of Large, Sparse Systems in Design and Analysis
- ❑ Solutions of the Vector Wave Equation for Inhomogeneous Dielectric Cylinders--Scattering in Waveguide
- ❑ Solving the Approximation Problem for Narrowband Bandpass Filters with Equal-Ripple Passband Response and Arbitrary Phase Response
- ❑ Some Aspects of GaAs MESFET Reliability

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

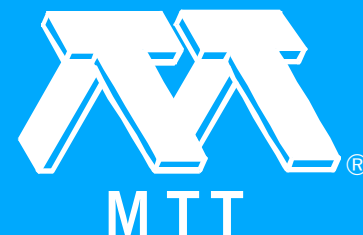
[Issues](#)

- ❑ [Some Aspects of Microwave Development in a Developing Country](#)
- ❑ [Some Effects of Field Perturbation Upon Cavity-Resonance and Dispersion Measurements on MIC Dielectrics](#)
- ❑ [Spectral Domain Solution of Arbitrary Coplanar Transmission Line with Multilayer Substrate \(Short Papers\)](#)
- ❑ [Spectral-Domain Calculation of Microstrip Characteristic Impedance](#)
- ❑ [Stability Considerations of Low-Noise Transistor Amplifiers with Simultaneous Noise and Power Match](#)
- ❑ [Statistical Coupled Equations in Lossless Optical Fibers](#)
- ❑ [Studies in Overhead Wire--Goubau Line Above Ground](#)
- ❑ [Subharmonically Pumped Millimeter-Wave Mixers Built with Notch-Front and Beam-Lead Diodes](#)
- ❑ [Submicrometer Self-Aligned GaAs MESFET \(Short Papers\)](#)
- ❑ [Submicron Single-Gate and Dual-Gate GaAs MESFET's with Improved Low Noise and High Gain Performance](#)
- ❑ [Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

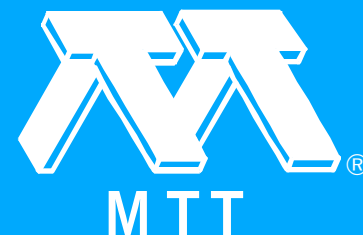
Issues

- ❑ Submillimeter-Wave Detection with Submicron-Size Schottky-Barrier Diodes
- ❑ Submillimeter-Wave Production by Upshifted Reflection from a Moving Ionization Front
- ❑ Super - TSD: A Generalization of the TSD Network Analyzer Calibration Procedure, Covering n-Port Measurements with Leakage
- ❑ Suppression of Higher Order Modes in Waveguide-Junction Circulators Using Coupled Open Dielectric Resonators (Letters)
- ❑ Surface Acoustic Wave Resonator Filters
- ❑ Surface Acoustic Wave Slanted Correlators for Linear FM Pulse-Compressors
- ❑ Surface Characteristics of Metals and Waveguide Attenuation at Millimeter-Wave Frequencies Between 25 and 160 GHz
- ❑ Surface Electromagnetic Modes of a Ferrite Slab (Correction)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

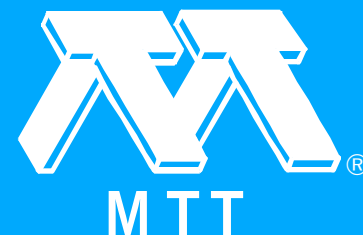
Issues

- ❑ Surface-Acoustic-Wave Device for Doppler Filtering of Radar Burst Waveforms
- ❑ Switching Performance of mm-Wave PIN Diodes for Ultra High Data Rates
- ❑ Symmetrical 2N-Port Directional Couplers
- ❑ Symmetrical Four-Port Edge-Guided Wave Circulators
- ❑ Symmetry Experiments with Four-Mesa IMPATT Diodes (Letters)
- ❑ Symmetry-Induced Modal Characteristics of Uniform Waveguides -- I: Summary of Results
- ❑ Symmetry-Induced Modal Characteristics of Uniform Waveguides -- II: Theory
- ❑ Synthesis of Acoustic-Surface-Wave-Resonator Filters Using any of Various Coupling Mechanisms
- ❑ Synthesis of an Optimum Impedance Transformer
- ❑ Synthesis of Certain Transmission Lines Employed in Microwave Integrated Circuits (Letters)
- ❑ Synthesis of Interstage Networks of Prescribed Gain Versus Frequency Slopes

Click on title for a paper summary.



Paper Index



Contents
Publications
Issues

- ☐ Synthesis of Two Classes of Acoustic Surface-Wave Filter Tap Weights
- ☐ System Implications of Large Radiometric Array Antennas

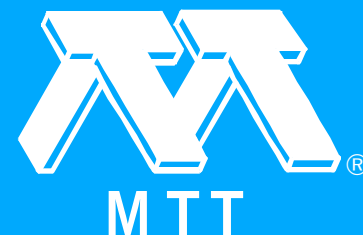
T

- ☐ Table of Contents (Dec. 1975 [T-MTT])
- ☐ Table of Contents (Dec. 1976 [T-MTT])
- ☐ Table of Contents (Dec. 1977 [T-MTT])
- ☐ Tapered Asymmetric Microstrip Magic Tee
- ☐ Tapered Asymmetric Microstrip Magic Tee (Short Papers)
- ☐ Tapered Optical Directional Coupler
- ☐ Tapped-Line Coupled Transmission Lines with Applications to Interdigital and Compline Filters (Dec. 1975 [T-MTT])
- ☐ Tapped-Line Coupled-Transmission-Lines with Applications to Compline and Interdigital Filters (1975 [MWSYM])
- ☐ Technology Forecasting and Assessment (1975 [MWSYM])
- ☐ Technology Forecasting and Assessment (1976 [MWSYM])
- ☐ TEM Bandpass Filters Having Eighth-Wavelength Coupled Stubs

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

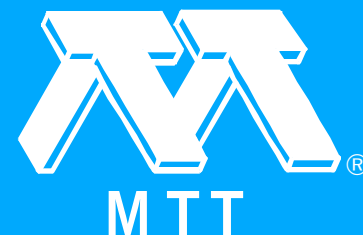
Issues

- ❑ TEM Pseudoelliptic-Function Bandstop Filters Using Noncommensurate Lines
- ❑ Temperature Compensation of TE/sub 011/-Mode Circular Cavities (Short Papers)
- ❑ Temperature-Stabilized 1.7-GHz Broad-Band Lumped-Element Circulator
- ❑ Temperature-Stabilized 1.7-GHz Broad-Band Lumped-Element Circulator (Correction)
- ❑ Template Methods for Efficient Microwave Filter Design
- ❑ Tetsing of a Multichannel Satellite Transponder Using Automatic Testing Equipment (ATE)
- ❑ The 1975 S-MTT National Lectureship
- ❑ The 1976 International Microwave Symposium (Dec. 1976 [T-MTT])
- ❑ The 1976 S-MTT National Lectureship
- ❑ The 1977 Microwave Symposium (Dec. 1977 [T-MTT])
- ❑ The Accurate Measurement of Range by the Use of Microwave Delay Line Techniques

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

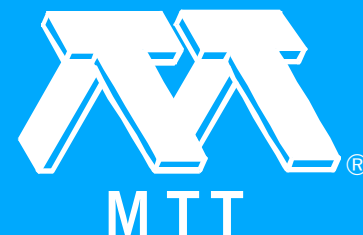
- ❑ The Accurate Measurement of Range by the Use of Microwave Delay Line Techniques (Short Papers)
- ❑ The Aerospace Low-Noise Millimeter-Wave Spectral Line Receiver (Short Papers)
- ❑ The Capacitances and Surface Charge Distributions of a Shielded Unbalanced Pair (Short Papers)
- ❑ The Capacitances and Surface-Charge Distributions of a Shielded Balanced Pair
- ❑ The Centimeter Wave Beacons of the COMSTAR Domestic Communications Satellites
- ❑ The Challenge of Astronomy to Millimeter-Wave Technology
- ❑ The Characteristic Impedance of Rectangular Coaxial Line with Ratio 2:1 of Outer-to-Inner Conductor Side Length (Letters)
- ❑ The Circuit/Device Interface in Gunn and IMPATT Diode Applications
- ❑ The Coupling of a Single-Ridge Waveguide to a Fabry-Perot Resonator (Short Papers)

Click on title for a paper summary.



Paper Index

- ❑ The Design and Performance of a Circularly Polarized Direct Contact Applicator for Microwave Diathermy
- ❑ The Design and Performance of Three-Line Microstrip Couplers
- ❑ The Design of a Class of Microwave Filters Using Lumped and Distributed Elements
- ❑ The Design of Coupled Microstrip Lines
- ❑ The Design of Ladder Networks Containing Lumped and Distributed Elements
- ❑ The Double-Swept-Frequency Locating Reflectometer (Short Papers)
- ❑ The Edge Guided Mode on Ferrite Loaded Stripline
- ❑ The Edge-Guided-Wave Circulator (Short Papers)
- ❑ The Electric-Dipole Resonances of Ring Resonators of Very High Permittivity (Short Papers)
- ❑ The Electromagnetic Fields and the Phase Constants of Dielectric Image Lines (1977 [MWSYM])
- ❑ The Electron Cyclotron Maser--An Historical Survey



IEEE

Contents

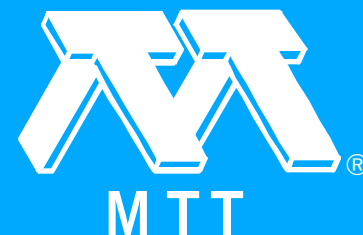
Publications

Issues

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

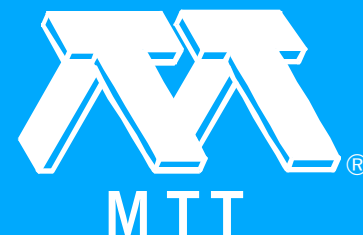
[Issues](#)

- ☐ The Elliptical Dielectric Waveguide a Very Useful Model for Some Microwave and Millimeter Wave Integrated Circuits and Components
- ☐ The Equivalent Circuit of Some Microstrip Discontinuities
- ☐ The Evolution of Automated Microwave Measurements
- ☐ The Excitation of Dielectric Resonators of Very High Permittivity
- ☐ The Fabrication of Dielectric Image Lines Using Casting Resins and the Properties of the Lines in the Millimeter-Wave Range (Short Papers)
- ☐ The GaAs MESFET as a Pulse Regenerator in the Gigabit per Second Range (Letters)
- ☐ The Gyrotron
- ☐ The High-Power X-Band Planetary Radar at Goldstone: Design, Development, and Early Results
- ☐ The Josephson Self-Oscillator Mixer as a Submillimeter and Far-Infrared Detector
- ☐ The Linear and Self-Consistent Nonlinear Theory of the Electron Cyclotron Maser Instability

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

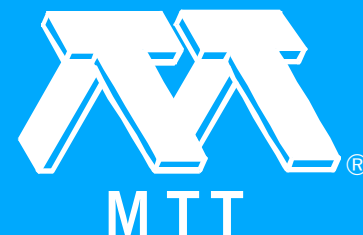
Issues

- ❑ The Locus of Points of Constant VSWR When Renormalized to a Different Characteristic Impedance (Letters)
- ❑ The Measurement of Noise in Microwave Transmitters
- ❑ The Measurement of the Equivalent Admittance of 3-Port Circulators Via an Automated Measurement System (Short Papers)
- ❑ The Measurement of the Surface Resistivity of Evaporated Gold at 890 GHz
- ❑ The Method of Series Expansion in the Frequency Domain Applied to Multidielectric Transmission Lines (Short Papers)
- ❑ The Microstrip Double-Ring Resonator (Short Papers)
- ❑ The Modal Spectrum of Ferrite-Loaded Striplines
- ❑ The New Pensions Law and How You Might Benefit from it
- ❑ The New Similarity Rules Applied to Argon Microwave Noise Sources
- ❑ The Numerical Solution of Some Important Transmission-Line Problems (Correction)

Click on title for a paper summary.



Paper Index



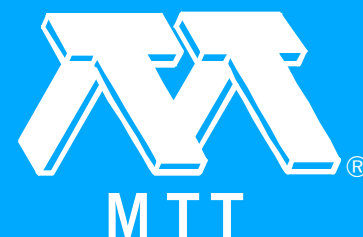
[Contents](#)
[Publications](#)
[Issues](#)

- ❑ [The Operation of S-Band TRAPATT Oscillators with Tuning at Multiple Harmonic Frequencies \(Short Papers\)](#)
- ❑ [The Phase Shift Through Symmetrical 3-Port Circulators \(Short Papers\)](#)
- ❑ [The Physics and Equivalent Circuit of the Basic SAW Resonator](#)
- ❑ [The Piezoelectric-Magnetoelastic Wave Propagation through the Conducting Plate in a Composite Medium \(Short Papers\)](#)
- ❑ [The Progress of Integrated Optics in Japan](#)
- ❑ [The Radiation of Electromagnetic Power by Microstrip Configurations](#)
- ❑ [The Relation of Teratogenesis in Tenebrio Molitor to the Incidence of Low-Level Microwaves \(Short Papers\)](#)
- ❑ [The Relations Between Scalar Modes in a Lenslike Medium and Vector Modes in a Self-Focusing Optical Fiber \(Short Papers\)](#)
- ❑ [The Resonant Frequency and Tuning Characteristics of a Narrow-Gap Reentrant Cylindrical Cavity](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

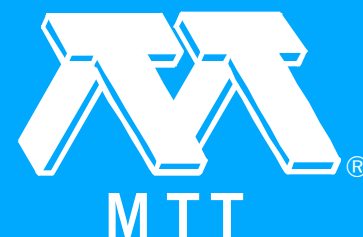
- ❑ The Resonant Frequency of a Narrow-Gap Cylindrical Cavity (Letters)
- ❑ The Ridged-Waveguide-Cavity Gunn Oscillator for Wide-Band Tuning (Short Papers)
- ❑ The Segmentation Method--An Approach to the Analysis of Microwave Planar Circuits (Short Papers)
- ❑ The Selection of High-Power Integrated Microwave Components for Military Satellite Communication Terminals
- ❑ The Six-Port Reflectometer: An Alternative Network Analyzer (1977 [MWSYM])
- ❑ The Six-Port Reflectometer: An Alternative Network Analyzer (Dec. 1977 [T-MTT])
- ❑ The Solution of Electromagnetic Eigenvalue Problems by Least Squares Boundary Residuals (Short Papers)
- ❑ The Super-Schottky Diode
- ❑ The Surface Acoustic Wave Reflective Dot Array (RDA)
- ❑ The Synthesis of Quarter-Wave Transformers, Low-Pass and Half-Wave Filters in the Sine Plane (Letters)
- ❑ The System/Circuit Interface in Gunn Diode Applications

Click on title for a paper summary.



Paper Index

- ❑ [The System/Circuit Interface in IMPATT Diode Applications](#)
- ❑ [The ZEPLS Program for Solving Characteristic Equations of Electromagnetic Structures \(Computer Program Descriptions\)](#)
- ❑ [Theoretical Analysis of a Ridged-Waveguide Mounting Structure](#)
- ❑ [Theoretical Analysis of a Ridged-Waveguide Mounting Structure \(Short Papers\)](#)
- ❑ [Theoretical Analysis of Acoustic Signal Generation in Materials Irradiated with Microwave Energy](#)
- ❑ [Theoretical Analysis of Open Ring Line](#)
- ❑ [Theoretical Aspects of Gunn and IMPATT Diode Noise](#)
- ❑ [Theory and Applications of Coupled Optical Waveguides Involving Anisotropic or Gyrotropic Materials](#)
- ❑ [Theory for Electrooptical Grating Modulators](#)
- ❑ [Theory of an Efficient Electronic Phase Shifter Employing a Multilayer Dielectric-Waveguide Structure](#)
- ❑ [Theory of Noise and Transfer Properties of IMPATT Diode Amplifiers](#)



[Contents](#)

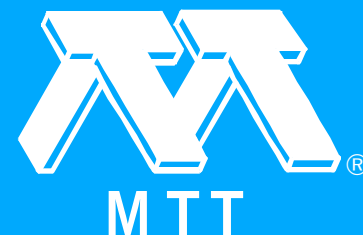
[Publications](#)

[Issues](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

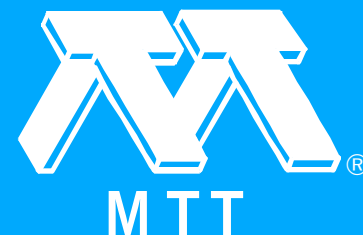
[Issues](#)

- ☐ [Theory of Periodic Dielectric Waveguides](#)
- ☐ [Theory of Periodic Dielectric Waveguides \(Correction\)](#)
- ☐ [Thermographic and Behavioral Studies of Rats in the Near Field of 918-MHz Radiations](#)
- ☐ [Third Generation Automatic Microwave Measurements](#)
- ☐ [Three-Dimensional Numerical Analysis of Microwave Cavities Using the TLM Method](#)
- ☐ [Three-Dimensional Transmission-Line Matrix Computer Analysis of Microstrip Resonators](#)
- ☐ [Time Varying IMPATT Impedance Measurements](#)
- ☐ [Time-Domain Measurement of Loss and Dispersion \(Short Papers\)](#)
- ☐ [TLMRES--The TLM Computer Program for the Analysis of Microstrip Resonators \(Computer Program Descriptions\)](#)
- ☐ [Transceiver Module for an L-Band Adaptive Array Antenna](#)
- ☐ [Transfer Function Approximations for a New Class of Bandpass Distributed Network Structures](#)
- ☐ [Transferred Electron Logic Devices \(TELDs\) for Gigabit Rate Signal Processing \(1976 \[MWSYM\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

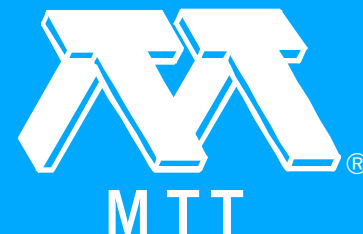
[Issues](#)

- ☐ Transferred Electron Logic Devices for Gigabit-Rate Signal Processing (Dec. 1976 [T-MTT])
- ☐ Transient Analysis of Systems with Exponential Transmission Lines
- ☐ Transmission Line Impedance Matching Using the Smith Chart (Comments)
- ☐ Transmission Line Transformation Between Arbitrary Impedances Using the Smith Chart (Letters)
- ☐ Transmission-Line Properties of a Strip on a Dielectric Sheet on a Plane
- ☐ Transmission-Line Transformation Between Arbitrary Impedances (Comments)
- ☐ Transmission-Line Transformation Between Arbitrary Impedances (Letters)
- ☐ Traveling Waves in Coupled Yagi Structures
- ☐ Traveling-Wave Masers for Radio Astronomy in the Frequency Range 20-40 GHz
- ☐ Tuning Procedure for Symmetric Coupled-Resonator Filters

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

U

- ☐ [UHF-Band Lumped-Element Circulator for Medium-Power Applications](#)
- ☐ [Ultra Low Noise, Ku-Band Parametric Amplifier Assembly](#)
- ☐ [Unified Approach to the Derivation of Variational Expression for Electromagnetic Fields](#)
- ☐ [Upper Bound on Cell Size for Moment-Method Solutions](#)
- ☐ [Useful Matrix Chain Parameter Identities for the Analysis of Multiconductor Transmission Lines \(Short Papers\)](#)
- ☐ [Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios \(1975 \[MWSYM\]\)](#)
- ☐ [Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios \(Dec. 1975 \[T-MTT\]\)](#)

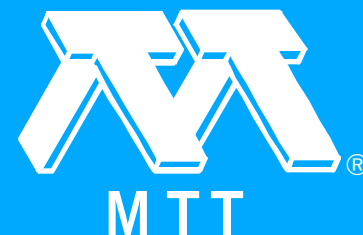
V

- ☐ [Varactor Frequency Doublers and Triplers for the 200 to 300 GHz Range](#)
- ☐ [Varactor-Tuned Millimeter-Wave MIC Oscillator \(Short Papers\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ☐ Variable Power Dividers in Satellite Systems
- ☐ Variation of the Electrical Characteristics of an Inhomogeneous Microstrip Line with the Dielectric Constant of the Substrate and with the Geometrical Dimensions (Short Papers)
- ☐ Variational Finite-Element Solution for Dissipative Waveguides and Transportation Application
- ☐ Variational Solution of Integral Equations (Correction)
- ☐ Vector Variational Formulation of Electromagnetic Fields in Anisotropic Media

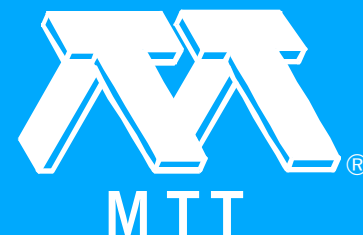
W

-
- ☐ W-40G Guided Millimeter-Wave Transmission System
 - ☐ Waveguide Bend Spurious Mode Program (Computer Program Descriptions)
 - ☐ Waveguide Components for Millimeter-Wave Communications at 40-90GHz
 - ☐ Waveguide Interferometer for Measuring Electric Susceptibility in Gases (Short Papers)

Click on title for a paper summary.



Paper Index



[Contents](#)

[Publications](#)

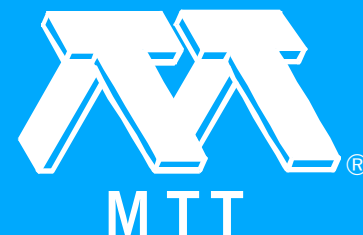
[Issues](#)

- ☐ Waveguide Subsidiary Resonance Ferrite Limiters
- ☐ Weighted Unidirectional Transducer SAW Filter at 328 MHz
- ☐ Wide-Band Balanced Line Microwave Hybrids
- ☐ Wide-Band Characteristics of a Coaxial-Cavity Solid-State Device Mount (Short Papers)
- ☐ Wide-Band Frequency Discriminator with High Linearity
- ☐ Wide-Band Gallium Arsenide Power MESFET Amplifiers
- ☐ Wide-Band Network Modeling of Interacting Inductive Irises and Steps
- ☐ Wide-Band Varactor-Tuned Coaxial Oscillators
- ☐ Wide-Band Varactor-Tuned GaAs MESFET Oscillators at X- and Ku-Bands
- ☐ Wide-Bandwidth Millimeter-Wave Gunn Amplifier in Reduced-Height Waveguide (Short Papers)
- ☐ Wideband Electronically Tuned Millimeter-Wave IMPATT Oscillators
- ☐ Wideband Tunable and Highly Stabilized Millimeterwave IMPATT Diode Oscillators

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ☐ Wideband, High Gain, Dual Diode Gunn Amplifier Circuits
- ☐ Wideband, Totally Coupled Directional Transformers
- ☐ Worst Case Network Tolerance Optimization

X

- ☐ X Band Bulk-Wave Delay Line Stabilized Oscillator
- ☐ X-Band MIC GaAs FET Power Amplifier
- ☐ X-Band Microstrip-Inserted Puck Circulator Using Arc-Plasma-Sprayed Ferrite (Short Papers)
- ☐ X-Band Silicon Power Transistor
- ☐ X-Band--GaAs FET YIG-Tuned Oscillator

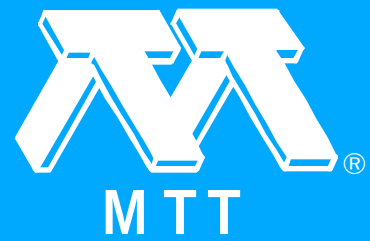
Y

- ☐ Y Junction Circulator Analysis
- ☐ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (1977 [MWSYM])
- ☐ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (Dec. 1977 [T-MTT])
- ☐ YIG-Tuned GaAs FET Oscillators

Click on title for a paper summary.



Author Index



IEEE

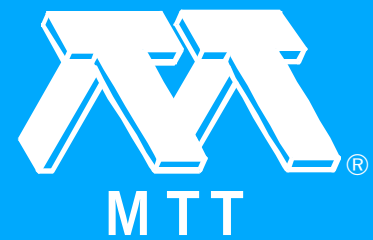
Contents

Authors

A B C D E F G H I
J K L M N O P Q R
S T U V W X Y Z

Colored letters are active links to the index.

Author Index



IEEE

[Contents](#)

[Authors](#)

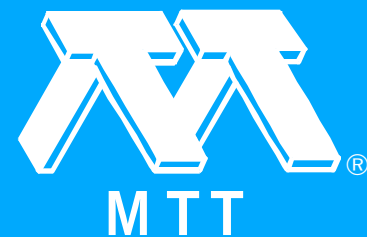
A

- ☐ [Abbott, D.A.](#)
- ☐ [Abdallah, E.A.F.](#)
- ☐ [Abdullah, F.](#)
- ☐ [Abele, T.A.](#)
- ☐ [Adam, J.D.](#)
- ☐ [Adam, S.F.](#)
- ☐ [Adams, A.T.](#)
- ☐ [Adde, R.](#)
- ☐ [Aditya, S.](#)
- ☐ [Adlerstein, M.G.](#)
- ☐ [Afsar, M.N.](#)
- ☐ [Agrawal, L.J.](#)
- ☐ [Agrawal, N.K.](#)
- ☐ [Aitken, J.E.](#)
- ☐ [Akaike, M.](#)
- ☐ [Akaiwa, Y.](#)
- ☐ [Akao, M.](#)
- ☐ [Akello, R.J.](#)
- ☐ [Akhtarzad, S.](#)
- ☐ [Akimoto, T.](#)
- ☐ [Al-Badwaihy, K.](#)
- ☐ [Alexander, P.H.](#)
- ☐ [Allen, C.W.](#)
- ☐ [Allen, J.L.](#)
- ☐ [Allen, Jr., E.L.](#)
- ☐ [Allison, R.](#)
- ☐ [Alsberg, D.A.](#)
- ☐ [Alusow, J.A.](#)
- ☐ [Amano, A.](#)
- ☐ [Amblard, Y.](#)
- ☐ [Amoss, J.W.](#)
- ☐ [Anand, Y.](#)
- ☐ [Andersen, J.B.](#)
- ☐ [Ando, Y.](#)

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

☐ Anselmo, A.J.

☐ Antich, P.

☐ Ara, Y.

☐ Arai, Y.

☐ Arain, M.H.

☐ Araki, K.

☐ Armstrong, A.L.

☐ Arnaud, J.A.

☐ Arora, R.K.

☐ Asfar, O.R.

☐ Ashley, J.R.

☐ Atia, A.E.

☐ Atkinson, E.R.

☐ Atsuki, K.

B

☐ Bahar, E.

☐ Bakeman, Jr., P.E.

☐ Baker, R.J.

☐ Balister, M.

☐ Bandler, J.W.

☐ Banerjee, D.K.

☐ Barabas, U.

☐ Barber, P.W.

☐ Barbero, J.

☐ Bardai, Z.M.D.

☐ Barley, T.A.

☐ Barman, F.

☐ Barnes, F.S.

☐ Barnoski, M.

☐ Barr, W.P.

☐ Barrett, A.H.

☐ Bassen, H.I.

☐ Bates, R.H.T.

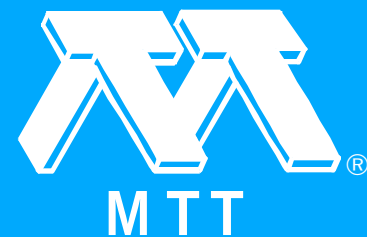
☐ Bathker, D.A.

☐ Batt, R.J.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Baudet, P.
- ☐ Bayuk, F.J.
- ☐ Beal, J.C.
- ☐ Beatty, R.W.
- ☐ Becker, E.E.
- ☐ Becker, S.
- ☐ Begemann, G.
- ☐ Bell, A.B.
- ☐ Bell, Jr., H.C.
- ☐ Belohoubek, E.
- ☐ Benedek, P.
- ☐ Beneking, H.
- ☐ Benko, E.
- ☐ Benson, Jr., W.S.
- ☐ Bera, R.
- ☐ Berceli, T.
- ☐ Berman, C.M.
- ☐ Bernard, N.
- ☐ Bernardi, P.
- ☐ Bernick, R.L.
- ☐ Berntsen, S.
- ☐ Bernues, F.J.
- ☐ Berson, B.E.
- ☐ Bertolani, F.
- ☐ Bertoni, H.
- ☐ Bertoni, H.L.
- ☐ Besse, M.
- ☐ Besser, L.
- ☐ Bhat, B.
- ☐ Bhattacharyya, T.
- ☐ Binet, M.
- ☐ Blot, J.P.
- ☐ Blue, M.D.
- ☐ Blume, H.-J.C.
- ☐ Boccon-Gibod, D.
- ☐ Boley, W.R.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Bolle, D.M.
- ☐ Borkar, S.R.
- ☐ Borowick, J.
- ☐ Borth, D.E.
- ☐ Bosch, B.G.
- ☐ Bosch, F.
- ☐ Bostian, C.W.
- ☐ Bottjer, M.F.
- ☐ Bowers, H.C.
- ☐ Bowman, R.R.
- ☐ Boyd, Jr., C.R.
- ☐ Bozler, C.O.
- ☐ Breuer, D.
- ☐ Brodwin, M.E.
- ☐ Brown, Jr., W.E.
- ☐ Brown, R.B.
- ☐ Brown, W.C.
- ☐ Brunner, F.

- ☐ Bruno, S.T.
- ☐ Buckman, A.B.
- ☐ Buntschuh, C.
- ☐ Bura, P.
- ☐ Burdette, E.C.
- ☐ Burton, R.W.
- ☐ Button, K.J.
- ☐ Buzzzi, J.M.

C

- ☐ Cabe, J.C.
- ☐ Caci, J.C.
- ☐ Cain, C.A.
- ☐ Cain, F.L.
- ☐ Caldwell, L.R.
- ☐ Calviello, J.
- ☐ Cambiaggio, E.
- ☐ Camisa, R.L.

Click on author name for a list of papers.



Author Index



IEEE

Contents

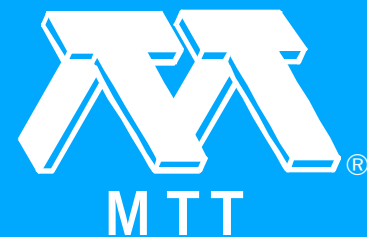
Authors

- ☐ Cardama, A.
- ☐ Cardasmenos, A.G.
- ☐ Carlin, H.J.
- ☐ Carlson, E.R.
- ☐ Carlton, P.A.
- ☐ Carroll, F.B.
- ☐ Carter, Jr., P.S.
- ☐ Caruso, G.
- ☐ Castro, A.A.
- ☐ Catravas, G.N.
- ☐ Caulton, M.
- ☐ Chambers, D.R.
- ☐ Chan, P.Y.
- ☐ Chang, D.C.
- ☐ Chang, K.
- ☐ Chang, N.S.
- ☐ Chang, W.H.
- ☐ Chang, W.S.C.
- ☐ Chang, Y.
- ☐ Chang, Y.-W.
- ☐ Chantry, G.W.
- ☐ Chao, C.
- ☐ Chao, C.L.
- ☐ Charalambous, C.
- ☐ Charlton, R.
- ☐ Chattopadhyay, A.
- ☐ Chen, J.H.K.
- ☐ Chen, K.-M.
- ☐ Chen, M.H.
- ☐ Cheo, P.K.
- ☐ Cheung, A.
- ☐ Cheung, A.C.
- ☐ Cheung, A.Y.
- ☐ Cheung, K.Y.
- ☐ Chiba, J.
- ☐ Childs, W.H.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Chin, G.
- ☐ Chiron, B.
- ☐ Choteau, P.
- ☐ Chou, C.-K.
- ☐ Choudhary, S.
- ☐ Chrepta, M.M.
- ☐ Chu, R.-S.
- ☐ Chu, R.S.
- ☐ Chu, W.Y.
- ☐ Chudobiak, W.J.
- ☐ Chui, M.F.
- ☐ Cicconi, G.
- ☐ Citerne, J.T.
- ☐ Civalleri, P.P.
- ☐ Claiborne, L.T.
- ☐ Clavin, A.
- ☐ Claxton, D.
- ☐ Claxton, D.H.
- ☐ Clayton, F.M.
- ☐ Clifton, B.J.
- ☐ Climer, B.J.
- ☐ Cloete, J.H.
- ☐ Coen, S.
- ☐ Cogdell, J.R.
- ☐ Cohen, L.D.
- ☐ Cohn, M.
- ☐ Collins, J.H.
- ☐ Conn, A.R.
- ☐ Conn, D.R.
- ☐ Consortini, A.
- ☐ Constant, E.
- ☐ Cook, C.
- ☐ Cook, Jr., A.M.
- ☐ Cook, W.A.
- ☐ Cooley, D.S.
- ☐ Cooper, W.

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Corbey, C.D.
- ☐ Cornick, J.A.F.
- ☐ Cosand, A.
- ☐ Costamagna, E.
- ☐ Courtney, K.R.
- ☐ Courtney, W.E.
- ☐ Courtois, L.
- ☐ Cowan, D.A.
- ☐ Cox, N.W.
- ☐ Cox, R.M.
- ☐ Craig, R.A.
- ☐ Crampagne, R.
- ☐ Crescenzi, Jr., E.J.
- ☐ Cripps, S.C.
- ☐ Cristal, E.G.
- ☐ Cronson, H.M.
- ☐ Crosignani, B.
- ☐ Crossett, J.A.

- ☐ Crowley, J.D.
- ☐ Csendes, Z.J.
- ☐ Cuccia, C.L.
- ☐ Cuhaci, M.
- ☐ Cullen, A.L.
- ☐ Cunitz, R.J.
- ☐ Cuozzo, F.
- ☐ Curtice, W.R.
- ☐ Cusack, J.M.
- ☐ Cushing, R.E.

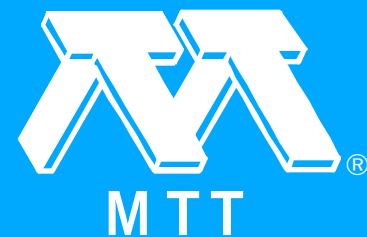
D

- ☐ Daiku, Y.
- ☐ Daino, B.
- ☐ Dakermadj, G.
- ☐ Dalsgaard, P.
- ☐ Damiano, J.-P.
- ☐ Daniel, H.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

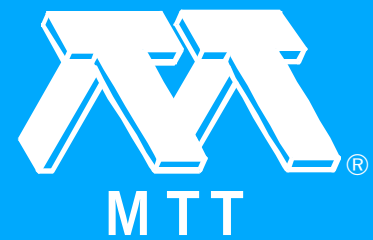
[Authors](#)

- ☐ [Das, B.N.](#)
- ☐ [Daumas, R.](#)
- ☐ [Davidson, E.G.S.](#)
- ☐ [Davies, J.B.](#)
- ☐ [Davies, O.J.](#)
- ☐ [Davies, R.](#)
- ☐ [Davis, M.E.](#)
- ☐ [Dawsey, J.R.](#)
- ☐ [Dawson, R.H.](#)
- ☐ [Day, P.I.](#)
- ☐ [de Koning, J.G.](#)
- ☐ [De Marinis, B.D.](#)
- ☐ [de Santis, P.](#)
- ☐ [De Vecchis, M.](#)
- ☐ [Decreton, M.C.](#)
- ☐ [Deficis, A.](#)
- ☐ [Degenford, J.E.](#)
- ☐ [DeGruyl, J.A.](#)
- ☐ [Dekkers, J.J.M.](#)
- ☐ [Delfour, A.](#)
- ☐ [Delvaux, J.](#)
- ☐ [DeMarinis, B.](#)
- ☐ [Denlinger, E.](#)
- ☐ [Denlinger, E.J.](#)
- ☐ [Derycke, A.C.](#)
- ☐ [Deshpande, M.D.](#)
- ☐ [DeVries, A.J.](#)
- ☐ [Di Porto, P.](#)
- ☐ [Diamant, P.](#)
- ☐ [DiBiase, R.](#)
- ☐ [Dickens, L.E.](#)
- ☐ [Dickinson, R.M.](#)
- ☐ [DiDomenico, M.](#)
- ☐ [Dikshit, R.](#)
- ☐ [Dobrowalski, J.A.](#)
- ☐ [Dobrowolski, J.A.](#)

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Donnelly, J.P.
- ☐ dos Santos, A.F.
- ☐ Doucet, H.J.
- ☐ Douville, R.J.
- ☐ Drobot, A.T.
- ☐ Dunn, J.G.
- ☐ Durney, C.H.

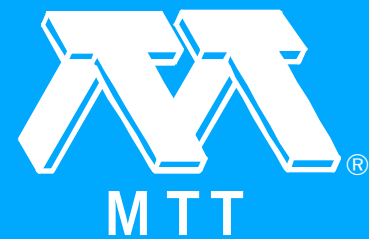
E

- ☐ East, J.R.
- ☐ Easter, B.
- ☐ Eastman, L.
- ☐ Edrich, J.
- ☐ Edwards, T.C.
- ☐ Edwards, W.P.
- ☐ Egami, S.
- ☐ Einarsson, O.
- ☐ Eisenhart, R.L.
- ☐ El-Sayed, O.L.
- ☐ El-Shandwily, M.E.
- ☐ Elachi, C.
- ☐ Elliott, J.
- ☐ Elmoazzen, Y.E.
- ☐ Emery, A.F.
- ☐ Emery, F.E.
- ☐ Emtage, P.R.
- ☐ Endersz, G.G.
- ☐ Engen, G.F.
- ☐ England, E.H.
- ☐ English, D.L.
- ☐ Epstein, N.
- ☐ Erickson, C.W.
- ☐ Erickson, J.E.
- ☐ Erickson, N.R.
- ☐ Erlinger, W.G.
- ☐ Ernst, R.L.

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Estes, M.F.
- ☐ Etlicher, B.
- ☐ Evans, G.
- ☐ Evtuhov, V.
- ☐ Ewen, H.I.

F

- ☐ Fairman, R.D.
- ☐ Falciasecca, G.
- ☐ Fank, F.B.
- ☐ Fanslow, G.E.
- ☐ Farrar, A.
- ☐ Farrayre, A.
- ☐ Faure, J.C.
- ☐ Felsen, L.B.
- ☐ Fetterman, H.R.
- ☐ Field, J.C.
- ☐ Figanier, J.P.
- ☐ Filensky, W.
- ☐ Findakly, T.K.
- ☐ Fisher, R.E.
- ☐ Flattau, T.
- ☐ Flyagin, V.A.
- ☐ Fong, T.T.
- ☐ Foote, F.B.
- ☐ Forterre, G.E.
- ☐ Foster, K.R.
- ☐ Foster, M.R.
- ☐ Foti, S.J.
- ☐ Franzen, N.R.
- ☐ Fray, C.
- ☐ Freeman, R.H.
- ☐ Friedman, M.
- ☐ Fukai, I.
- ☐ Fukuda, S.
- ☐ Fukukawa, Y.

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Fukumitsu, O.
- ☐ Fukuoka, J.-I.
- ☐ Fukuta, M.
- ☐ Furutsuka, T.
- ☐ Furuya, K.

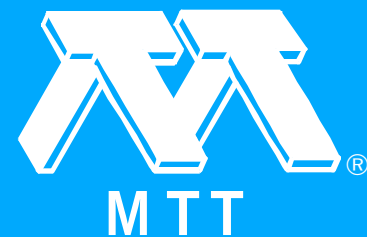
G

- ☐ Gaglione, S.
- ☐ Galani, Z.
- ☐ Gallagher, J.J.
- ☐ Galloway, W.D.
- ☐ Galore, B.
- ☐ Gandhi, O.P.
- ☐ Ganguly, A.K.
- ☐ Gaponov, A.V.
- ☐ Garault, Y.
- ☐ Garber, W.A.
- ☐ Gardiol, F.E.
- ☐ Garg, R.
- ☐ Garver, R.V.
- ☐ Gauthier, F.
- ☐ Gawronski, M.J.
- ☐ Geick, R.
- ☐ Geithman, G.A.
- ☐ Geller, B.
- ☐ Geller, B.D.
- ☐ Gelnovatch, V.G.
- ☐ Georgopoulos, C.J.
- ☐ Gerhard, A.R.
- ☐ Gerson, T.J.
- ☐ Getsinger, W.J.
- ☐ Gewartowski, J.W.
- ☐ Ghobrial, S.I.
- ☐ Giallorenzi, T.G.
- ☐ Giannini, F.
- ☐ Gibbs, S.E.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Gilden, M.
- ☐ Gladwell, G.M.L.
- ☐ Gance, B.
- ☐ Gance, B.S.
- ☐ Gloge, D.
- ☐ Gnerlich, H.R.
- ☐ Godlove, T.F.
- ☐ Goedbloed, J.J.
- ☐ Goldie, H.
- ☐ Goldsmith, P.F.
- ☐ Goldwasser, R.E.
- ☐ Gonda, J.
- ☐ Goodrich, L.C.
- ☐ Gopinath, A.
- ☐ Gorwara, A.K.
- ☐ Goto, S.
- ☐ Gotzman, J.
- ☐ Goud, P.A.
- ☐ Goudey, K.R.
- ☐ Gough, R.A.
- ☐ Goulon, J.
- ☐ Govindarajan, G.
- ☐ Grace, M.I.
- ☐ Granatstein, V.L.
- ☐ Grange, J.A.
- ☐ Grant, J.E.
- ☐ Grant, P.M.
- ☐ Grantham, W.L.
- ☐ Gray, R.E.
- ☐ Grayzel, A.I.
- ☐ Green, H.E.
- ☐ Green, J.J.
- ☐ Gregory, R.O.
- ☐ Greiling, P.T.
- ☐ Greiser, J.W.
- ☐ Grote, A.J.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Grove, H.M.
- ☐ Guentzler, R.E.
- ☐ Guillon, P.
- ☐ Guiraud, J.-L.
- ☐ Gunn, M.W.
- ☐ Gunshor, R.L.
- ☐ Gupta, C.
- ☐ Gupta, K.C.
- ☐ Gupta, K.K.
- ☐ Gupta, S.C.
- ☐ Guru, B.S.
- ☐ Gustincic, J.J.
- ☐ Guy, A.W.
- ☐ Gysel, U.
- ☐ Gysel, U.H.

H

- ☐ Haas, R.W.

- ☐ Haddad, G.I.
- ☐ Hafiz, S.A.
- ☐ Haga, I.
- ☐ Hagan, G.J.
- ☐ Hagisawa, H.
- ☐ Hagmann, M.J.
- ☐ Hahn, E.W.
- ☐ Haine, J.L.
- ☐ Haldenwang, P.
- ☐ Hall, G.
- ☐ Hallford, B.R.
- ☐ Hamasaki, J.
- ☐ Hamid, M.A.K.
- ☐ Hamilton, Jr., R.J.
- ☐ Hammad, A.E.
- ☐ Hammer, G.
- ☐ Hanley, G.
- ☐ Hardee, P.C.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Haroules, G.G.
- ☐ Harris, D.H.
- ☐ Harris, D.J.
- ☐ Harris, J.H.
- ☐ Harris, M.R.
- ☐ Harrison, R.G.
- ☐ Hartmann, C.S.
- ☐ Hartmann, P.R.
- ☐ Hartnagel, H.L.
- ☐ Hartop, R.
- ☐ Hashimoto, K.
- ☐ Hashimoto, M.
- ☐ Hashimoto, Y.
- ☐ Haskal, H.M.
- ☐ Hatano, S.
- ☐ Hatsuda, T.
- ☐ Haus, H.A.
- ☐ Haworth, J.
- ☐ Hayakawa, T.
- ☐ Hayasaka, T.
- ☐ Hayashi, H.
- ☐ Hayashi, R.
- ☐ Hayashi, Y.
- ☐ Hays, R.M.
- ☐ Heath, K.R.
- ☐ Heimenrath, Y.
- ☐ Heiter, G.L.
- ☐ Held, D.N.
- ☐ Hellum, J.M.
- ☐ Helszajn, J.
- ☐ Henaux, J.C.
- ☐ Heng, T.M.S.
- ☐ Henry, P.S.
- ☐ Herman, W.A.
- ☐ Herrick, D.L.
- ☐ Heyboer, T.L.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Hidaka, T.
- ☐ Hierl, T.L.
- ☐ Higgins, I.D.
- ☐ Higgins, V.J.
- ☐ Hill, D.A.
- ☐ Hill, G.N.
- ☐ Hill, J.L.
- ☐ Hines, M.E.
- ☐ Hinte, A.F.
- ☐ Hirachi, Y.
- ☐ Hirayama, M.
- ☐ Hirshfield, J.L.
- ☐ Hislop, A.
- ☐ Ho, C.Y.
- ☐ Ho, H.S.
- ☐ Hobson, G.S.
- ☐ Hodges, D.T.
- ☐ Hoefer, W.J.R.

- ☐ Hoer, C.A.
- ☐ Hoffman, G.R.
- ☐ Hofmann, H.
- ☐ Hoidges, D.T.
- ☐ Hollinger, J.P.
- ☐ Holt, J.A.G.
- ☐ Honijk, D.D.
- ☐ Horimatsu, T.
- ☐ Hornbuckle, D.P.
- ☐ Horton, J.B.
- ☐ Horton, M.C.
- ☐ Hoshika, H.
- ☐ Hoshino, N.
- ☐ Hsieh, C.-C.
- ☐ Hsu, T.-H.
- ☐ Hu, C.-L.J.
- ☐ Huang, C.I.
- ☐ Huang, H.-F.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Hudson, N.
- ☐ Huetz, A.
- ☐ Hughes, B.T.
- ☐ Hughes, L.R.
- ☐ Hume, R.M.
- ☐ Husain, A.
- ☐ Hussein, A.M.
- ☐ Hutchison, P.T.

I

- ☐ Ibrahim, M.M.
- ☐ Igarashi, M.
- ☐ Ikeda, M.
- ☐ Ikoma, T.
- ☐ Inada, K.
- ☐ Inoue, T.
- ☐ Irie, T.
- ☐ Ishibashi, T.

- ☐ Ishihara, H.
- ☐ Ishii, S.
- ☐ Ishii, T.
- ☐ Ishikawa, H.
- ☐ Ishikawa, S.
- ☐ Ishikawa, Y.
- ☐ Ishino, K.
- ☐ Iskander, M.F.
- ☐ Ito, Y.
- ☐ Itoh, T.
- ☐ Ivanek, F.

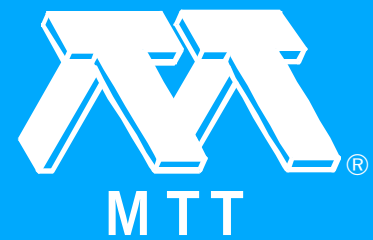
J

- ☐ Jack, M.A.
- ☐ Jacobs, H.
- ☐ Jager, D.
- ☐ James, D.S.
- ☐ Jansen, R.

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Javed, A.
- ☐ Jeunhomme, L.
- ☐ Johns, P.B.
- ☐ Johnson, C.C.
- ☐ Johnson, F.O.
- ☐ Johnson, J.W.
- ☐ Johnson, K.M.
- ☐ Joines, W.T.
- ☐ Jolly, S.T.
- ☐ Jones, G.D.
- ☐ Jones, W.L.
- ☐ Jordan, L.
- ☐ Joshi, J.S.
- ☐ Jouys, J.C.

K

- ☐ Kadowaki, Y.
- ☐ Kahn, D.
- ☐ Kainer, S.
- ☐ Kaji, E.
- ☐ Kajiwara, Y.
- ☐ Kalafus, R.M.
- ☐ Kallianteris, S.
- ☐ Kamal, A.A.
- ☐ Kamal, A.K.
- ☐ Kaminow, I.P.
- ☐ Kanda, M.
- ☐ Kane, L.
- ☐ Kaneko, Y.
- ☐ Kanmuri, N.
- ☐ Kantor, G.
- ☐ Kaplan, G.S.
- ☐ Karbowiak, A.E.
- ☐ Karekar, R.N.
- ☐ Karp, A.
- ☐ Kasahara, T.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Kashyap, S.C.
- ☐ Kashyap, S.G.
- ☐ Kato, F.
- ☐ Kato, H.
- ☐ Katoh, H.
- ☐ Kaur, A.R.
- ☐ Kawamoto, H.
- ☐ Kawamura, M.
- ☐ Kawamura, N.
- ☐ Kawasaki, R.
- ☐ Kearns, W.J.
- ☐ Keen, N.J.
- ☐ Kelly, A.J.
- ☐ Kemerley, R.T.
- ☐ Kendall, B.R.
- ☐ Kenney, J.E.
- ☐ Kenyon, N.D.
- ☐ Keriakos, M.H.
- ☐ Kerr, A.R.
- ☐ Keyes, L.
- ☐ Khan, P.J.
- ☐ Khoo, G.
- ☐ Kiehl, R.A.
- ☐ Kietzer, J.E.
- ☐ Kihm, R.T.
- ☐ Kim, J.H.
- ☐ Kim, Y.D.
- ☐ Kimura, K.
- ☐ King, R.J.
- ☐ Kirkpatrick, G.R.
- ☐ Kirton, P.A.
- ☐ Kitamura, M.
- ☐ Kitayama, K.
- ☐ Kitazawa, S.
- ☐ Kitazawa, T.
- ☐ Kitazume, S.

Click on author name for a list of papers.



Author Index



[Contents](#)

[Authors](#)

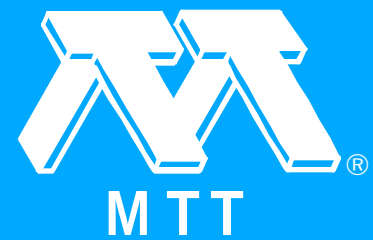
- ☐ Klatskin, J.
- ☐ Kmetovicz, R.E.
- ☐ Kneppo, I.
- ☐ Knerr, R.H.
- ☐ Knochel, R.
- ☐ Knorr, J.B.
- ☐ Knox, R.M.
- ☐ Kobayashi, M.
- ☐ Kobayashi, Y.
- ☐ Kobe, L.
- ☐ Kodera, H.
- ☐ Kogelnik, H.
- ☐ Kohiyama, K.
- ☐ Kohler, J.
- ☐ Kohzu, H.
- ☐ Kollberg, E.L.
- ☐ Komaki, S.
- ☐ Komarek, E.L.

- ☐ Komiak, J.
- ☐ Komizo, H.
- ☐ Kondoh, H.
- ☐ Kong, J.A.
- ☐ Konishi, Y.
- ☐ Konrad, A.
- ☐ Koopman, D.W.
- ☐ Kopeika, N.S.
- ☐ Kornhauser, E.T.
- ☐ Kosta, S.P.
- ☐ Kotsuka, Y.
- ☐ Kotzebue, K.L.
- ☐ Kouno, T.
- ☐ Koyama, J.
- ☐ Koyama, M.
- ☐ Koyama, T.
- ☐ Kraemer, E.
- ☐ Kramar, P.O.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Kramer, B.M.
- ☐ Kramer, N.B.
- ☐ Krauss, H.L.
- ☐ Kritikos, H.N.
- ☐ Krowne, C.M.
- ☐ Kruger, J.B.
- ☐ Ku, W.H.
- ☐ Kuchler, K.-D.
- ☐ Kudo, T.
- ☐ Kuester, E.F.
- ☐ Kuhlman, Jr., L.J.
- ☐ Kulasza, N.
- ☐ Kumagai, N.
- ☐ Kumar, A.
- ☐ Kumar, M.
- ☐ Kumazawa, H.
- ☐ Kuno, H.J.
- ☐ Kurita, O.

- ☐ Kurokawa, K.
- ☐ Kut, W.H.
- ☐ Kuwabara, N.
- ☐ Kuwahara, H.
- ☐ Kwok, S.P.
- ☐ Kyogoku, M.

L

- ☐ Ladbroke, P.H.
- ☐ Laker, K.R.
- ☐ Lamain, H.
- ☐ Lampariello, P.
- ☐ Lampe, M.
- ☐ Lance, A.L.
- ☐ Landauer, R.
- ☐ Lane, W.R.
- ☐ Langmann, U.
- ☐ Langmann, U.K.

Click on author name for a list of papers.



Author Index



[Contents](#)

[Authors](#)

- ☐ LaRiviere, H.J.A.
- ☐ Larrick, R.B.
- ☐ Lassiter, E.M.
- ☐ LaTourrette, P.M.
- ☐ Laughlin, G.J.
- ☐ Laura, P.A.A.
- ☐ Lawrence, J.P.
- ☐ Lazarus, M.J.
- ☐ Le-Ngoc, S.
- ☐ Leber, A.
- ☐ Lee, C.C.
- ☐ Lee, D.H.
- ☐ Lee, DL.
- ☐ Lee, K.J.
- ☐ Lee, L.-s.
- ☐ Lee, R.E.
- ☐ Lenox, R.H.
- ☐ Leskela, M.
- ☐ Levin, B.J.
- ☐ Levis, C.A.
- ☐ Levy, R.
- ☐ Lewin, L.
- ☐ Lewin, P.T.
- ☐ Li, R.C.M.
- ☐ Liao, S.Y.
- ☐ Liebe, H.J.
- ☐ Liechti, C.A.
- ☐ Lin, F.-L.C.
- ☐ Lin, H.-C.
- ☐ Lin, J.C.
- ☐ Lindley, W.T.
- ☐ Linn, D.F.
- ☐ Lint, B.C.S.
- ☐ Lint, Z.C.S.
- ☐ Linvill, J.G.
- ☐ Lippencott, G.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Liu, L.M.
- ☐ Liu, P.C.
- ☐ LoCascio, C.M.
- ☐ Lohr, Jr., R.F.
- ☐ Lomax, R.J.
- ☐ Long, S.I.
- ☐ Lords, J.L.
- ☐ Love, J.D.
- ☐ Luce, D.A.
- ☐ Luhmann, Jr., N.C.
- ☐ Luisoni, L.E.
- ☐ Luybaert, P.J.

M

- ☐ Maas, S.
- ☐ Macksey, H.M.
- ☐ Madsen, K.
- ☐ Maeda, M.
- ☐ Maekawa, E.
- ☐ Magarshack, J.
- ☐ Magin, R.L.
- ☐ Mahadevan, V.
- ☐ Mahmoud, S.F.
- ☐ Maki, D.W.
- ☐ Makimoto, T.
- ☐ Makios, V.
- ☐ Makiuchi, M.
- ☐ Malherbe, J.A.G.
- ☐ Maltese, U.
- ☐ Mammel, W.
- ☐ Manheimer, W.M.
- ☐ Mansour, N.A.
- ☐ Manus, E.A.
- ☐ Marcuse, D.
- ☐ Marki, F.A.
- ☐ Marquardt, J.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

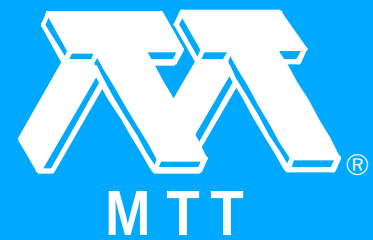
[Authors](#)

- ☐ Marshall, R.E.
- ☐ Marshall, T.C.
- ☐ Martin, R.J.
- ☐ Masaki, S.
- ☐ Masnari, N.A.
- ☐ Masse, C.F.
- ☐ Masse, D.
- ☐ Massoudi, H.
- ☐ Masuda, M.
- ☐ Mather, J.R.
- ☐ Mathews, D.
- ☐ Mathur, P.G.
- ☐ Matsuo, Y.
- ☐ Mattauch, R.J.
- ☐ Matthaei, G.L.
- ☐ Matthews, E.W.
- ☐ Matz, J.E.
- ☐ Mause, K.
- ☐ May, R.E.
- ☐ May, W.G.
- ☐ McAulay, A.I.D.
- ☐ McCleer, P.J.
- ☐ McColl, M.
- ☐ McCoy, G.L.
- ☐ McCulloch, D.
- ☐ McDermott, E.C.
- ☐ McDermott, Jr., E.C.
- ☐ McDonald, B.H.
- ☐ McDonald, D.G.
- ☐ McDonald, N.A.
- ☐ McGoogan, J.T.
- ☐ McGovern, P.A.
- ☐ McIntosh, J.
- ☐ McIsaac, P.R.
- ☐ McLevige, W.V.
- ☐ McMaster, T.F.

Click on author name for a list of papers.



Author Index



IEEE

Contents

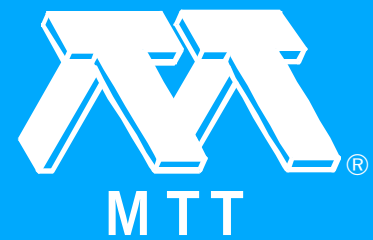
Authors

- ☐ McMillan, R.W.
- ☐ Mecklenbrauker, W.F.G.
- ☐ Meier, P.J.
- ☐ Meixner, R.P.
- ☐ Mellor, D.J.
- ☐ Melngailis, J.
- ☐ Memita, T.
- ☐ Mendoza, F.G.
- ☐ Menzel, W.
- ☐ Mercer, P.
- ☐ Meyer, J.H.
- ☐ Meyer, W.
- ☐ Meyerhoff, J.L.
- ☐ Midford, T.A.
- ☐ Millea, M.F.
- ☐ Miller, C.K.S.
- ☐ Miller, R.L.
- ☐ Miller, S.E.
- ☐ Milligan, T.A.
- ☐ Mindock, R.M.
- ☐ Ming, K.J.
- ☐ Mirshekar-Syahkal, D.
- ☐ Mitchell, J.L.
- ☐ Mitchell, P.G.
- ☐ Mitsui, S.
- ☐ Mitsui, Y.
- ☐ Mittra, R.
- ☐ Miyakawa, T.
- ☐ Miyauchi, K.
- ☐ Miyoshi, T.
- ☐ Mizuno, K.
- ☐ Mizushina, S.
- ☐ Mohr, H.J.
- ☐ Mok, C.K.
- ☐ Mokari-Bolhassan, M.E.
- ☐ Moll, N.J.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ [Moore, B.D.](#)
- ☐ [Moore, J.M.](#)
- ☐ [Moose, L.F.](#)
- ☐ [Morgan, L.A.](#)
- ☐ [Mori, T.](#)
- ☐ [Morin, S.](#)
- ☐ [Morishita, K.](#)
- ☐ [Morita, K.](#)
- ☐ [Moroson, H.](#)
- ☐ [Morris, G.E.](#)
- ☐ [Mosko, J.A.](#)
- ☐ [Mross, M.R.](#)
- ☐ [Mueller, R.S.](#)
- ☐ [Muller, G.](#)
- ☐ [Murphy, B.T.](#)
- ☐ [Murphy, R.A.](#)
- ☐ [Murray, R.W.](#)
- ☐ [Myers, P.C.](#)

- ☐ [Mykietyn, E.](#)

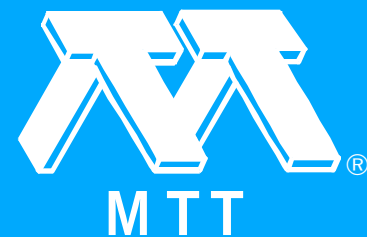
N

- ☐ [Nadan, J.S.](#)
- ☐ [Naditch, G.H.](#)
- ☐ [Nagai, N.](#)
- ☐ [Nagao, T.](#)
- ☐ [Nagasako, I.](#)
- ☐ [Nahas, J.J.](#)
- ☐ [Nair, R.A.](#)
- ☐ [Naito, Y.](#)
- ☐ [Nakagami, T.](#)
- ☐ [Nakaji, E.M.](#)
- ☐ [Nakajima, N.](#)
- ☐ [Nakamura, Y.](#)
- ☐ [Nakatani, M.](#)
- ☐ [Nakayama, Y.](#)
- ☐ [Nalbandoglu, A.H.](#)

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Nanbu, S.
- ☐ Nanda, V.P.
- ☐ Napier, P.J.
- ☐ Nation, J.A.
- ☐ Navarro, M.S.
- ☐ Nayfeh, A.H.
- ☐ Neelakantaswamy, P.S.
- ☐ Neidert, R.E.
- ☐ Nemoto, S.
- ☐ Nemoto, T.
- ☐ Ness, J.B.
- ☐ Neuf, D.
- ☐ Neumann, E.-G.
- ☐ Newman, B.A.
- ☐ Ng, E.
- ☐ Nguyen-Ba, H.
- ☐ Niehenke, E.C.
- ☐ Nielsen, O.

- ☐ Nigrin, J.
- ☐ Nihei, F.
- ☐ Nishikawa, T.
- ☐ Nishimura, M.
- ☐ Nishitani, K.
- ☐ Noguchi, M.
- ☐ Noguchi, T.
- ☐ Noonan, J.P.
- ☐ Nordgard, J.D.
- ☐ Novak, S.
- ☐ Novick, G.
- ☐ Ntake, P.L.
- ☐ Nudd, G.R.
- ☐ Nussbaum, S.

O

- ☐ O'Shaughnessy, B.P.
- ☐ Oakes, J.G.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

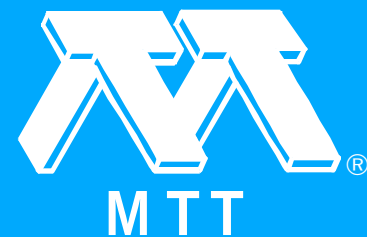
[Authors](#)

- ☐ Obah, C.O.G.
- ☐ Ogasawara, N.
- ☐ Ogawa, M.
- ☐ Ogusu, K.
- ☐ Ohata, K.
- ☐ Ohi, K.
- ☐ Ohmori, M.
- ☐ Ohnishi, K.
- ☐ Ohshita, M.
- ☐ Ohsuka, T.
- ☐ Ohtomo, I.
- ☐ Okamoto, H.
- ☐ Okamoto, K.
- ☐ Okamura, S.
- ☐ Okata, T.
- ☐ Okazaki, K.
- ☐ Okean, H.C.
- ☐ Okoshi, T.
- ☐ Okwit, S.
- ☐ Oliner, A.A.
- ☐ Oliva, S.A.
- ☐ Olsen, R.G.
- ☐ Omori, M.
- ☐ Ondria, J.
- ☐ Ono, K.
- ☐ Ono, S.
- ☐ Osepchuk, J.M.
- ☐ Otoshi, T.Y.
- ☐ Ott, E.
- ☐ Otto, O.W.
- ☐ Ou, W.P.
- ☐ Owen, B.
- ☐ Owens, J.M.
- ☐ Owens, R.P.
- ☐ Oxley, T.H.

Click on author name for a list of papers.



Author Index



[Contents](#)

[Authors](#)

P

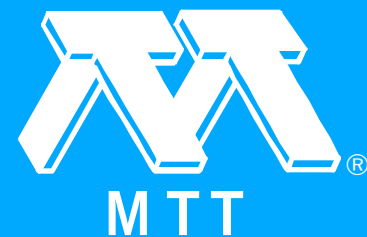
- ☐ Paczkowski, J.P.
- ☐ Paik, S.F.
- ☐ Painchaud, G.R.
- ☐ Pande, M.K.
- ☐ Pang, K.K.
- ☐ Panish, M.B.
- ☐ Papiernik, A.
- ☐ Parisot, M.
- ☐ Parker, C.D.
- ☐ Parker, D.
- ☐ Parriaux, O.
- ☐ Partain, L.D.
- ☐ Passchier, W.F.
- ☐ Patterson, J.T.
- ☐ Paul, C.R.
- ☐ Paul, J.A.

- ☐ Pavlidis, D.
- ☐ Pedersen, R.J.
- ☐ Pedler, W.F.
- ☐ Peng, S.T.
- ☐ Perkowitz, S.
- ☐ Perlman, B.S.
- ☐ Perlow, S.M.
- ☐ Petelin, M.I.
- ☐ Petersen, O.G.
- ☐ Petersen, W.C.
- ☐ Pettersson, L.
- ☐ Peugeot, C.
- ☐ Peyrat, A.
- ☐ Pfitzenmaier, G.
- ☐ Phillips, T.L.
- ☐ Pickard, W.F.
- ☐ Pierro, J.
- ☐ Pierson, L.G.

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Piotrowski, W.S.
- ☐ Pivnichny, J.
- ☐ Plambeck, R.L.
- ☐ Plourde, J.K.
- ☐ Podell, A.F.
- ☐ Pompei, D.
- ☐ Posner, R.S.
- ☐ Pospieszalski, M.W.
- ☐ Potok, M.H.N.
- ☐ Potter, B.R.
- ☐ Pozar, D.M.
- ☐ Predmore, C.R.
- ☐ Premoli, A.
- ☐ Presser, A.
- ☐ Priou, A.
- ☐ Priou, A.C.
- ☐ Providakes, G.
- ☐ Pucci, F.

- ☐ Pucel, R.A.

Q

- ☐ Quate, C.F.

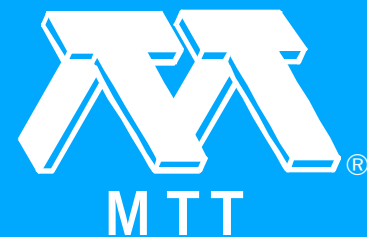
R

- ☐ Raczy, L.
- ☐ Rae, K.N.S.
- ☐ Ragan, L.H.
- ☐ Rahmat-Samii, Y.
- ☐ Rakosi, F.
- ☐ Ramachandraiah, M.S.
- ☐ Rast, Jr., G.J.
- ☐ Raue, J.E.
- ☐ Read, M.E.
- ☐ Reeder, T.M.
- ☐ Regier, R.D.
- ☐ Rehnmark, S.
- ☐ Reiter, G.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

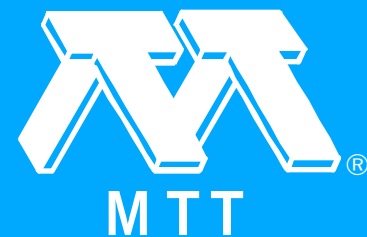
[Authors](#)

- ☐ Ren, C.-L.
- ☐ Reudink, D.O.
- ☐ Rhodes, J.D.
- ☐ Riblet, G.
- ☐ Riblet, G.P.
- ☐ Riblet, H.J.
- ☐ Richings, J.G.
- ☐ Risch, C.O.
- ☐ Rivier, E.
- ☐ Rizk, M.R.M.
- ☐ Rizzoli, V.
- ☐ Roberts, R.G.
- ☐ Robinson, J.E.
- ☐ Robinson, J.M.
- ☐ Roche, M.
- ☐ Rochelle, J.M.
- ☐ Rodrigue, G.P.
- ☐ Roe, K.C.
- ☐ Rogai, S.
- ☐ Rogers, R.G.
- ☐ Rolland, P.-A.
- ☐ Ronchi, L.
- ☐ Ros, A.
- ☐ Rosatelli, C.
- ☐ Rosen, A.
- ☐ Rosen, J.
- ☐ Rosenbaum, F.J.
- ☐ Rosenthal, S.W.
- ☐ Ross, G.F.
- ☐ Rosztoczy, F.E.
- ☐ Rouille, C.
- ☐ Rousseau, M.
- ☐ Rowbotham, T.R.
- ☐ Rowe, H.E.
- ☐ Rozenfeld, P.
- ☐ Rozzell, T.C.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Rozzi, T.E.
- ☐ Rubin, D.
- ☐ Rucker, C.T.
- ☐ Rudge, A.W.
- ☐ Rudokas, R.
- ☐ Rudokas, R.S.
- ☐ Rudolph, H.-D.
- ☐ Ruehli, A.E.
- ☐ Ruella, P.
- ☐ Rulf, B.
- ☐ Ruscio, J.T.
- ☐ Ruttan, T.
- ☐ Ryan, C.
- ☐ Ryken, Jr., M.L.

S

- ☐ Saad, S.S.
- ☐ Safi, M.

- ☐ Saha, P.K.
- ☐ Saito, M.
- ☐ Saito, S.
- ☐ Saito, T.
- ☐ Sakaguchi, Y.
- ☐ Sakamoto, K.
- ☐ Salinger, J.
- ☐ Salmer, G.
- ☐ Salsano, A.
- ☐ Samaras, G.M.
- ☐ Samardzija, N.
- ☐ Sannino, M.
- ☐ Sard, E.
- ☐ Sato, H.
- ☐ Sauter, E.
- ☐ Savage, E.B.
- ☐ Sawa, S.
- ☐ Sawano, H.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Schaffner, G.
- ☐ Schechter, M.
- ☐ Schiek, B.
- ☐ Schjaer-Jacobsen, H.
- ☐ Schlesinger, S.P.
- ☐ Schlomann, E.
- ☐ Schneider, M.V.
- ☐ Schneider, S.
- ☐ Schoonaert, D.H.
- ☐ Schott, F.W.
- ☐ Schott, W.
- ☐ Schrader, D.H.
- ☐ Schroeder, L.C.
- ☐ Schroeder, W.E.
- ☐ Schultz, G.V.
- ☐ Schunemann, K.
- ☐ Schwan, H.P.
- ☐ Schwartz, P.M.
- ☐ Schwering, F.
- ☐ Sciambi, Jr., A.F.
- ☐ Seal, W.D.
- ☐ Seals, J.
- ☐ Seaman, R.L.
- ☐ Sebring, J.R.
- ☐ Sechi, F.N.
- ☐ Sekido, K.
- ☐ Selim, J.D.
- ☐ Semet, A.
- ☐ Senise, J.T.
- ☐ Sethares, J.
- ☐ Shafai, L.
- ☐ Shamasundara, S.D.
- ☐ Shanley, J.F.
- ☐ Shen, L.C.
- ☐ Shiau, Y.
- ☐ Shigesawa, H.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Shimizu, Y.
- ☐ Shin, S.-Y.
- ☐ Shindo, S.
- ☐ Shirahata, K.
- ☐ Shrubbs, S.J.W.
- ☐ Shuch, H.P.
- ☐ Siegel, P.H.
- ☐ Silver, A.H.
- ☐ Silvester, P.
- ☐ Simpson, T.L.
- ☐ Singh, D.N.
- ☐ Singh, J.P.
- ☐ Singh, N.
- ☐ Sirles, C.W.
- ☐ Sivo, J.N.
- ☐ Skeie, H.
- ☐ Sladek, N.J.
- ☐ Slaymaker, N.A.
- ☐ Slobodnik, Jr., A.J.
- ☐ Smith, Jr., C.V.
- ☐ Smith, R.E.
- ☐ Smith, V.
- ☐ Smith, W.R.
- ☐ Smolinsky, G.
- ☐ Snapp, C.P.
- ☐ Snell, Jr., W.W.
- ☐ Snyder, A.W.
- ☐ Snyder, R.V.
- ☐ Soares, R.A.
- ☐ Sobhy, M.I.
- ☐ Sobol, H.
- ☐ Sodha, M.S.
- ☐ Sokolov, V.
- ☐ Sokullu, A.M.
- ☐ Solbach, K.
- ☐ Solie, L.P.

Click on author name for a list of papers.



Author Index



[Contents](#)

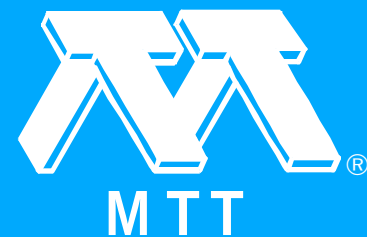
[Authors](#)

- ☐ Solomon, A.H.
- ☐ Somlo, P.I.
- ☐ Sorrentino, R.
- ☐ Sparks, R.A.
- ☐ Speciale, R.A.
- ☐ Speiser, J.M.
- ☐ Spencer, N.W.
- ☐ Spielman, B.E.
- ☐ Spitzer, R.
- ☐ Sprangle, P.
- ☐ Srivastava, G.P.
- ☐ Srivastava, N.C.
- ☐ Staelin, D.H.
- ☐ Starski, J.P.
- ☐ Steele, S.R.
- ☐ Steffek, L.J.
- ☐ Steinberg, R.
- ☐ Stempler, D.
- ☐ Stephenson, D.T.
- ☐ Stephenson, I.M.
- ☐ Stern, R.A.
- ☐ Sterzer, F.
- ☐ Stette, G.R.
- ☐ Stillings, C.J.
- ☐ Stinehelfer, H.E.
- ☐ Stitzer, S.N.
- ☐ Stowe, S.
- ☐ Strid, E.
- ☐ Stuchly, S.S.
- ☐ Stutzman, W.L.
- ☐ Suematsu, Y.
- ☐ Suetake, K.
- ☐ Sugiura, T.
- ☐ Sullivan, D.B.
- ☐ Susman, L.
- ☐ Suttie, R.A.

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Sutton, C.H.
- ☐ Suyama, K.
- ☐ Suzuki, H.
- ☐ Suzuki, M.
- ☐ Suzuki, N.
- ☐ Swan, C.B.
- ☐ Sweet, A.A.
- ☐ Swift, C.T.
- ☐ Syrett, B.A.
- ☐ Szenasi, S.

T

- ☐ Taflove, A.
- ☐ Tai, C.-T.
- ☐ Takao, I.
- ☐ Takase, I.
- ☐ Takayama, Y.
- ☐ Takenaka, S.
- ☐ Takeuchi, T.
- ☐ Takiyama, K.
- ☐ Tamir, T.
- ☐ Tamura, S.
- ☐ Tan, F.C.
- ☐ Tan, F.C.F.
- ☐ Tanabe, K.
- ☐ Tanaka, I.
- ☐ Tanaka, K.
- ☐ Tanaka, M.
- ☐ Tanaka, S.
- ☐ Tanaka, T.
- ☐ Tang, D.
- ☐ Tang, D.D.
- ☐ Tang, R.
- ☐ Tanji, A.
- ☐ Tannenwald, P.E.
- ☐ Tarassov, V.J.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

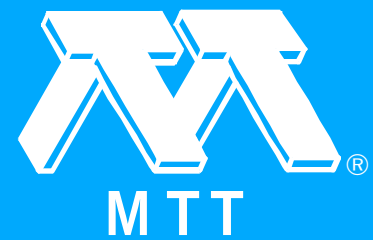
[Authors](#)

- ☐ Tarnawecky, M.Z.
- ☐ Tatsuguchi, I.
- ☐ Taub, J.
- ☐ Taub, J.J.
- ☐ Tauritz, J.L.
- ☐ Tearle, C.A.
- ☐ Teh, G.A.
- ☐ Temple, S.J.
- ☐ Terakado, R.
- ☐ Thal, Jr., H.L.
- ☐ Tham, Q.C.
- ☐ Thomson, A.F.
- ☐ Thrane, L.
- ☐ Tien, P.K.
- ☐ Tiernan, R.J.
- ☐ Tinney, C.E.
- ☐ Tippet, J.C.
- ☐ Tischler, F.J.
- ☐ Tognazzi, R.
- ☐ Tohyama, H.
- ☐ Tokita, N.
- ☐ Tokoyo, N.
- ☐ Tokumitsu, Y.
- ☐ Toler, J.C.
- ☐ Topuz, E.
- ☐ Toutain, S.
- ☐ Townes, C.H.
- ☐ Toyama, Y.
- ☐ Tozer, R.C.
- ☐ Tremere, D.A.
- ☐ Trew, R.J.
- ☐ Tripathi, V.K.
- ☐ Tromp, H.
- ☐ Troy, Jr., B.E.
- ☐ Tsai, C.S.
- ☐ Tsai, L.L.

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Tsai, T.-L.
- ☐ Tsai, W.C.
- ☐ Tsandoulas, G.N.
- ☐ Tseng, B.
- ☐ Tserng, H.Q.
- ☐ Tsui, J.
- ☐ Tsukamoto, K.
- ☐ Tsutsumi, M.
- ☐ Tucker, R.S.
- ☐ Tufekcioglu, A.
- ☐ Turner, J.A.

U

- ☐ Uehara, Y.
- ☐ Uhler, Jr., A.
- ☐ Upadhyayula, C.L.
- ☐ Upadhyayula, L.C.
- ☐ Utsumi, Y.

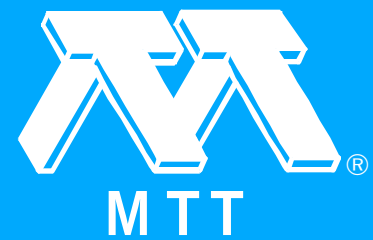
V

- ☐ Valdoni, F.
- ☐ Van Bladel, J.
- ☐ Van Blaricum, M.L.
- ☐ van de Vaart, H.
- ☐ van der Heyden, B.F.
- ☐ Van Der Pauw, L.J.
- ☐ van Gelder, H.
- ☐ van Heuven, J.H.C.
- ☐ Van Hook, H.J.
- ☐ Vanier, G.R.
- ☐ Vassallo, C.
- ☐ Vaterkowski, J.L.
- ☐ Vaughan, J.R.M.
- ☐ Vendelin, G.D.
- ☐ Venema, A.
- ☐ Vernet, G.

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Vernon, Jr., F.L.
- ☐ Verplanken, M.
- ☐ Villasenor, P.
- ☐ Vlaardingerbroek, M.T.
- ☐ Vokes, J.C.
- ☐ Voss, W.A.G.

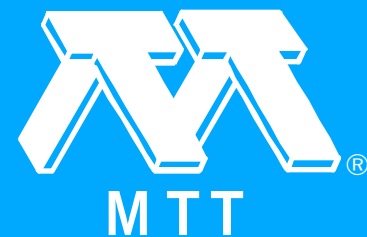
W

- ☐ Wachtel, H.
- ☐ Wahi, P.
- ☐ Wait, J.R.
- ☐ Wakino, K.
- ☐ Walker, M.G.
- ☐ Wallace, R.N.
- ☐ Walsh, J.E.
- ☐ Walter, R.
- ☐ Wang, H.-C.
- ☐ Wang, S.-Y.
- ☐ Wanselow, R.D.
- ☐ Warner, J.
- ☐ Watanabe, K.
- ☐ Watjen, J.P.
- ☐ Webb, D.C.
- ☐ Weidman, M.P.
- ☐ Weiner, D.D.
- ☐ Weinreb, S.
- ☐ Weir, W.B.
- ☐ Weis, M.
- ☐ Weisberg, L.R.
- ☐ Weisbrod, S.
- ☐ Wellens, U.
- ☐ Weller, J.F.
- ☐ Weller, K.P.
- ☐ Wenzel, R.J.
- ☐ Westphal, W.B.
- ☐ Wexler, A.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

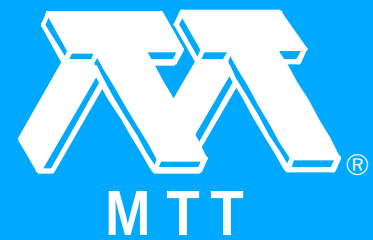
[Authors](#)

- ☐ Wheeler, H.A.
 - ☐ Whelehan, J.
 - ☐ Whelehan, J.J.
 - ☐ Whicker, L.R.
 - ☐ Whitehouse, H.J.
 - ☐ Whitman, G.
 - ☐ Wickstrom, R.A.
 - ☐ Wight, J.S.
 - ☐ Wiley, P.H.
 - ☐ Wilhelm, J.F.
 - ☐ Williams, A.E.
 - ☐ Williams, N.
 - ☐ Williamson, A.G.
 - ☐ Williamson, R.C.
 - ☐ Willing, H.A.
 - ☐ Wilson, L.K.
 - ☐ Wilson, M.G.F.
 - ☐ Wilson, W.J.
 - ☐ Winn, R.K.
 - ☐ Wisseman, W.R.
 - ☐ Witters, D.M.
 - ☐ Wolfe, A.R.
 - ☐ Wolff, E.A.
 - ☐ Wolff, I.
 - ☐ Wong, D.Y.
 - ☐ Wong, R.W.
 - ☐ Wright, D.L.
 - ☐ Wrixon, G.T.
 - ☐ Wu, C.-L.
 - ☐ Wu, T.-K.
 - ☐ Wu, T.K.
 - ☐ Wu, Y.-S.
 - ☐ Wu, Y.S.
- Y**
-
- ☐ Yahara, T.

Click on author name for a list of papers.



Author Index



[Contents](#)

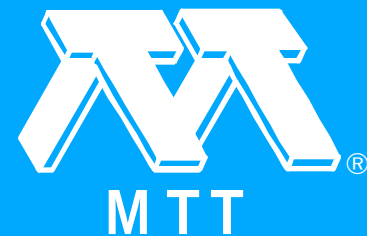
[Authors](#)

- ☐ Yamada, J.
- ☐ Yamada, S.
- ☐ Yamaguchi, G.M.
- ☐ Yamaguchi, M.
- ☐ Yamaguchi, S.
- ☐ Yamamoto, H.
- ☐ Yamamoto, K.
- ☐ Yamashita, E.
- ☐ Yamaura, I.
- ☐ Yanai, H.
- ☐ Yang, R.F.H.
- ☐ Yao, I.W.
- ☐ Yariv, A.
- ☐ Yeh, C.
- ☐ Yeh, D.T.
- ☐ Ying, R.S.
- ☐ Yip, G.L.
- ☐ Yngvesson, K.S.
- ☐ Yodokawa, T.
- ☐ Yoshida, N.
- ☐ Young, D.T.
- ☐ Young, L.
- ☐ Youssef, S.E.
- ☐ Yuan, H.-T.
- ☐ Yuan, L.T.
- ☐ Yuki, S.
- ☐ Yukimoto, T.
- ☐ Yulpatov, V.K.
- ☐ Yunik, M.
- Z**
- ☐ Zimmerman, R.L.
- ☐ Zimmermann, P.
- ☐ Ziolkowski, F.P.
- ☐ Zuckerman, D.N.

Click on author name for a list of papers.



Papers by Author



Contents

Authors

Abbott, D.A.

- ☐ Contributors (Jun. 1976 [T-MTT])
- ☐ Some Aspects of GaAs MESFET Reliability

Abdallah, E.A.F.

- ☐ Contributors (Sep. 1977 [T-MTT])
- ☐ General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part I: Full-Height Ferrite Configuration
- ☐ General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part II: Two-Disk Ferrite Configuration

Abdullah, F.

- ☐ A Large-Signal Theory for Broad-Band Frequency Converters Using Abrupt Junction Varactor Diodes
- ☐ Contributors (Feb. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Abele, T.A.

- ☐ [A High-Capacity Digital Communication System Using TE/sub 01/ Transmission in Circular Waveguide](#)
- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)

Adam, J.D.

- ☐ [Microwave Devices Based on Magnetostatic Wave Reflecting Arrays](#)

Adam, S.F.

- ☐ [A New 34-GHz 3.5-mm Low-Cost Utility Coaxial Connector Featuring Low Leakage, Low Standing-Wave Ratio, and Long Life \(Short Papers\)](#)
- ☐ [Editor's Overview \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [International Microwave Symposium \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [New High Performance 3.5 mm, Low Cost, Utility Coaxial Connector with Mode Free Operation Through 34 GHz](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Adams, A.T.

- ☐ [Computation of Propagation Constants for the Fundamental and Higher Order Modes in Microstrip \(Short Papers\)](#)

Adde, R.

- ☐ [The Josephson Self-Oscillator Mixer as a Submillimeter and Far-Infrared Detector](#)

Aditya, S.

- ☐ [Guided Waves on a Flattened Sheath Helix \(Letters\)](#)

Adlerstein, M.G.

- ☐ [A 60-W CW Solid-State Oscillator at C Band \(Letters\)](#)

Afsar, M.N.

- ☐ [Dispersive Fourier Transform Spectrometry with Variable-Thickness Variable-Temperature Liquid Cells](#)
- ☐ [Precise Dielectric Measurements of Low-Loss Materials at Millimeter and Submillimeter Wavelengths](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Agrawal, L.J.

- ☐ [A Wide-Band Parametric Amplifier with Triple-Tuned Signal Circuit and Single-Tuned Idler Circuit \(Letters\)](#)

Agrawal, N.K.

- ☐ [A Wide-Band Parametric Amplifier with Triple-Tuned Signal Circuit and Single-Tuned Idler Circuit \(Letters\)](#)

Aitken, J.E.

- ☐ [Contributors \(Aug. 1976 \[T-MTT\]\)](#)
- ☐ [Microwave Measurement of the Temperature Coefficient of Permittivity for Sapphire and Alumina \(Short Papers\)](#)
- ☐ [Quasi-Static Characteristics of Microstrip on an Anisotropic Sapphire Substrate](#)

Akaike, M.

- ☐ [A Nonlinear Analysis of Schottky-Barrier Diode Upconverters](#)

Click on title for a paper summary.

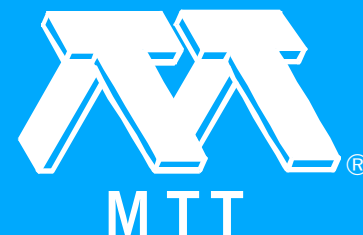


Papers by Author

- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Contributors (Nov. 1976 [T-MTT])
- ❑ Highly Reliable High-Power 86-GHz Components and Transmitter--Receiver Modules
- ❑ Oscillation Characteristics of Millimeter-Wave IMPATT Diodes Mounted in Low-Impedance Waveguide Mounts (Short Papers)
- ❑ Schottky-Barrier Diode Converters in the Short Millimeter Wavelengths Region

Akaiwa, Y.

- ❑ A Compact 60-GHz Transmitter--Receiver
- ❑ Contributors (Jan. 1977 [T-MTT])
- ❑ Contributors (Nov. 1976 [T-MTT])
- ❑ Mode Classification of a Triangular Ferrite Post for Y-Circulator Operation (Short Papers)



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Akao, M.

- ☐ [4 GHz 8x8 Switch Matrix for SDMA System](#)

Akello, R.J.

- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)
- ☐ [Experimental Measurement of Microstrip Transistor-Package Parasitic Reactances](#)

Akhtarzad, S.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Jun. 1975 \[T-MTT\]\)](#)
- ☐ [The Design of Coupled Microstrip Lines](#)
- ☐ [Three-Dimensional Numerical Analysis of Microwave Cavities Using the TLM Method](#)
- ☐ [Three-Dimensional Transmission-Line Matrix Computer Analysis of Microstrip Resonators](#)
- ☐ [TLMRES--The TLM Computer Program for the Analysis of Microstrip Resonators \(Computer Program Descriptions\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Akimoto, T.

- ☐ [Circular Arc Polygonal Type TEon Mode Filter](#)

Al-Badwaihy, K.

- ☐ [Near Zone Microwave Exposure of a Biological Sphere](#)

Alexander, P.H.

- ☐ [Wide-Band Characteristics of a Coaxial-Cavity Solid-State Device Mount \(Short Papers\)](#)

Allen, C.W.

- ☐ [A Wide-Band Rotating Coupler for VHF Use \(Short Papers\)](#)

Allen, J.L.

- ☐ [Broadside-Coupled Strips in a Layered Dielectric Medium \(Correction\)](#)
- ☐ [Multi-Section Inhomogeneous Coupled-Line Filters with Large Mode-Velocity Ratios](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Allen, Jr., E.L.

- ☐ [Integrated TRAPATT Diode Arrays \(Short Papers\)](#)

Allison, R.

- ☐ [A 3.5 Watt High Efficiency Frequency Quadrupler for X-Band Applications](#)

Alsberg, D.A.

- ☐ [A High-Capacity Digital Communication System Using TE/sub 01/ Transmission in Circular Waveguide](#)
- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)

Alusow, J.A.

- ☐ [The Physics and Equivalent Circuit of the Basic SAW Resonator](#)

Amano, A.

- ☐ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [High Power GaAs IMPATT Amplifier \(Dec. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [High Power GaAs IMPATT Amplifiers \(1977 \[MWSYM\]\)](#)

Amblard, Y.

- ❑ [X Band Bulk-Wave Delay Line Stabilized Oscillator](#)

Amoss, J.W.

- ❑ [Series Interconnection of Six TRAPATT Devices on a Diamond Substrate](#)

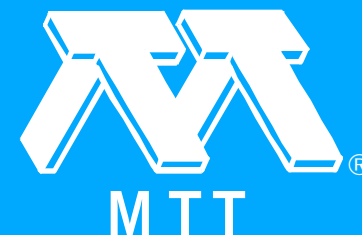
- ❑ [Symmetry Experiments with Four-Mesa IMPATT Diodes \(Letters\)](#)

Anand, Y.

- ❑ [RF Burnout of Mixer Diodes as Induced Under Controlled Laboratory Conditions and Correlation to Simulated System Performance](#)

Andersen, J.B.

- ❑ [Contributors \(Jul. 1975 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ Propagation in Rectangular Waveguides with Arbitrary Internal and External Media

Ando, Y.

- ❑ Contributors (Sep. 1977 [T-MTT])
- ❑ Propagation Losses of Guided Modes in an Optical Graded-Index Slab Waveguide with Metal Cladding

Anselmo, A.J.

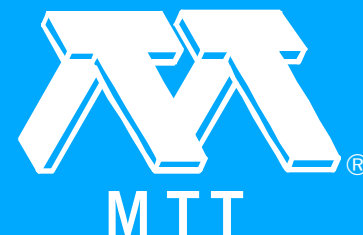
- ❑ Practical Realization of Broadband Microwave Diplexers

Antich, P.

- ❑ Selective Heating of Cutaneous Human Tumors at 27.12 MHz (Abstract)

Ara, Y.

- ❑ A New Microwave Amplitude Limiter Using GaAs Field Effect Transistor



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Arai, Y.

- ☐ [A 6-GHz Four-Stage GaAs MESFET Power Amplifier \(Short Papers\)](#)
- ☐ [A 7 GHz FM Transmitter Utilizing GaAs Power MESFETs](#)

Arain, M.H.

- ☐ [Tapered Asymmetric Microstrip Magic Tee](#)
- ☐ [Tapered Asymmetric Microstrip Magic Tee \(Short Papers\)](#)

Araki, K.

- ☐ [A New Type of Isolator Using the Edge-Guided Mode \(Letters\)](#)
- ☐ [Canonical Representation and Figure of Merit of Circulator](#)
- ☐ [Contributors \(Aug. 1976 \[T-MTT\]\)](#)
- ☐ [Field Distribution of a New Type of E.G. Mode Isolator](#)
- ☐ [New Edge Guided Mode Devices](#)
- ☐ [Reflection Problems in a Ferrite Stripline](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Armstrong, A.L.

- ☐ [Fast, High Power, Octave Bandwidth, X-Band Waveguide Microwave Switch](#)

Arnaud, J.A.

- ☐ [Application of a Property of the Airy Function to Fiber Optics \(Short Papers\)](#)
- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)
- ☐ [Guidance of 100-GHz Beams by Cylindrical Mirrors](#)
- ☐ [Pulse Broadening in Multimode Optical Fibers with Large Delta n/n. Numerical Results](#)
- ☐ [Radiation from Curved Dielectric Slabs and Fibers \(Comments\)](#)

Arora, R.K.

- ☐ [Guided Waves on a Flattened Sheath Helix \(Letters\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Asfar, O.R.

- ☐ Circular Waveguide with Sinusoidally Perturbed Walls
- ☐ Contributors (Sep. 1975 [T-MTT])

Ashley, J.R.

- ☐ Automated Spectral Analysis of Microwave Oscillator Noise
- ☐ Contributors (Apr. 1977 [T-MTT])
- ☐ IMPATT and Gunn Diode Noise Diagnostics
- ☐ The Measurement of Noise in Microwave Transmitters

Atia, A.E.

- ☐ Contributors (Dec. 1977 [T-MTT])
- ☐ Contributors (Oct. 1976 [T-MTT])
- ☐ Dual Mode Canonical Waveguide Filters (1977 [MWSYM])
- ☐ Dual-Mode Canonical Waveguide Filters (Dec. 1977 [T-MTT])
- ☐ General TE/sub 011/-Mode Waveguide Bandpass Filters

Click on title for a paper summary.



Papers by Author

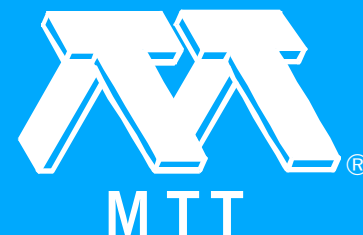
- ❑ Generalized TE/sub 011/ Mode Waveguide Bandpass Filters
- ❑ Measurements of Intercavity Couplings (Short Papers)
- ❑ Temperature Compensation of TE/sub 011/-Mode Circular Cavities (Short Papers)

Atkinson, E.R.

- ❑ Hyperthermia Dose Definition

Atsuki, K.

- ❑ Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations
- ❑ Application of MIC Formulas to a Class of Integrated-Optics Modulator Analyses: A Simple Transformation (Short Papers)
- ❑ Contributors (Apr. 1976 [T-MTT])
- ❑ Contributors (Feb. 1977 [T-MTT])



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ Distributed Capacitance of a Thin-Film Electrooptic Light Modulator (Letters)

Bahar, E.

- ☐ Contributors (Nov. 1977 [T-MTT])
- ☐ Coupling Between Guided Surface Waves, Lateral Waves, and the Radiation Fields by Rough Surfaces--Full-Wave Solutions
- ☐ Waveguide Bend Spurious Mode Program (Computer Program Descriptions)

Bakeman, Jr., P.E.

- ☐ Fast, High Power, Octave Bandwidth, X-Band Waveguide Microwave Switch

Baker, R.J.

- ☐ A System for Developing Microwave Induced Hyperthermia in Small Animals (1977 [MWSYM])

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Balister, M.

- ☐ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ☐ [Multiband Low-Noise Receivers for a Very Large Array](#)

Bandler, J.W.

- ☐ [An Introduction to Simulation and Optimization](#)
- ☐ [Contributors \(Apr. 1976 \[T-MTT\]\)](#)
- ☐ [Contributors \(Aug. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Sep. 1976 \[T-MTT\]\)](#)
- ☐ [Efficient Calculation of Exact Group Delay Sensitivities](#)
- ☐ [Efficient Calculation of Exact Group Delay Sensitivities \(Correction\)](#)
- ☐ [FLOPT2--A Program for Least pth Optimization with Extrapolation to Minimax Solutions \(Computer Program Descriptions\)](#)
- ☐ [Integrated Approach to Microwave Design \(1975 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ Integrated Approach to Microwave Design (Sep. 1976 [T-MTT])
- ❑ MINOPT--An Optimization Program Based on Recent Minimax Results (Computer Program Descriptions)
- ❑ New Results in the Least pth Approach to Minimax Design
- ❑ Worst Case Network Tolerance Optimization

Banerjee, D.K.

- ❑ A Gaussian-Beam Launcher for Microwave Exposure Studies (Short Papers)
- ❑ Contributors (May 1977 [T-MTT])

Barabas, U.

- ❑ Clocked Diode Pulse Amplifiers for Microwave Bit Rates
- ❑ Contributors (Dec. 1976 [T-MTT])
- ❑ Diode Circuits for Pulse Regeneration and Multiplexing at Ultrahigh Bit Rates

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Barber, P.W.

- ☐ Contributors (May 1977 [T-MTT])
- ☐ Resonance Electromagnetic Absorption by Nonspherical Dielectric Objects

Barbero, J.

- ☐ Error in Impedance Measurement When the Signal is Introduced Across the Slotted-Line Probe (Comments and Author's Reply)

Bardai, Z.M.D.

- ☐ Microwave Devices Based on Magnetostatic Wave Reflecting Arrays

Barley, T.A.

- ☐ Automated Spectral Analysis of Microwave Oscillator Noise
- ☐ Contributors (Apr. 1977 [T-MTT])
- ☐ The Measurement of Noise in Microwave Transmitters

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Barman, F.

- ☐ [Acoustic-Surface-Wave Resonators for Band-Pass Filter Applications](#)
- ☐ [Synthesis of Acoustic-Surface-Wave-Resonator Filters Using any of Various Coupling Mechanisms](#)

Barnes, F.S.

- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [Model for Some Nonthermal Effects of Radio and Microwave Fields on Biological Membranes](#)

Barnoski, M.

- ☐ [Single Strand Optical Fibre Systems \(Invited Paper\)](#)

Barr, W.P.

- ☐ [A Low Noise FET Amplifier in Coplanar Waveguide](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Barrett, A.H.

- ☐ [Microwave Thermography as a Diagnostic Tool for the Detection of Cancer \(Abstract\)](#)

Bassen, H.I.

- ☐ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)
- ☐ [Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies \(Comments\)](#)
- ☐ [Precise Calibration of Plane-Wave Microwave Power Density Using Power Equation Techniques](#)

Bates, R.H.T.

- ☐ [Analytic Constraints on Electromagnetic Field Computations](#)
- ☐ [Contributors \(Aug. 1975 \[T-MTT\]\)](#)

Bathker, D.A.

- ☐ [A 400 kW Long Pulse X-Band Planetary Radar](#)
- ☐ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [The High-Power X-Band Planetary Radar at Goldstone: Design, Development, and Early Results](#)

Batt, R.J.

- ❑ [The Measurement of the Surface Resistivity of Evaporated Gold at 890 GHz](#)

Baudet, P.

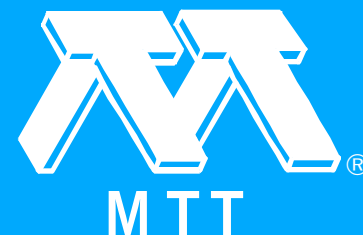
- ❑ [Submicrometer Self-Aligned GaAs MESFET \(Short Papers\)](#)

Bayuk, F.J.

- ❑ [Ka-Band Solid State Power Amplifier](#)
- ❑ [Large Signal Device Characterization for Broadband Ka-Band IMPATT Amplifier Design](#)

Beal, J.C.

- ❑ [Contributors \(Feb. 1975 \[T-MTT\]\)](#)
- ❑ [Scattering of Surface Waves at a Dielectric Discontinuity on a Planar Waveguide](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Scattering of Surface Waves by Metallic Obstacles on the Dielectric-Image Line](#)

Beatty, R.W.

- ❑ [Effect of Discontinuities on the Group Delay of a Microwave Transmission Line \(Short Papers\)](#)
- ❑ [The 1975 S-MTT National Lectureship](#)

Becker, E.E.

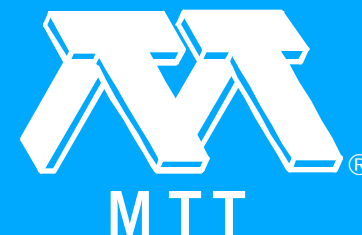
- ❑ [Laser Fiber Coupling with a Hyperbolic Lens \(Short Papers\)](#)

Becker, S.

- ❑ [Passive L-Band Radiometer for Remote Sensing of Earth Resources](#)

Begemann, G.

- ❑ [Components for Microwave Integrated Circuits with Evanescent Mode Resonators \(1977 \[MWSYM\]\)](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ Components for Microwave Integrated Circuits with Evanescent-Mode Resonators (Dec. 1977 [T-MTT])
- ❑ Contributors (Dec. 1977 [T-MTT])

Bell, A.B.

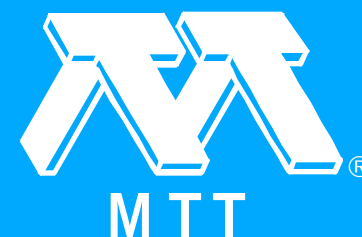
- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Low Noise and Linear FET Amplifiers for Satellite Communications
- ❑ Low-Noise and Linear FET Amplifiers for Satellite Communications

Bell, Jr., H.C.

- ❑ Tuning Procedure for Symmetric Coupled-Resonator Filters

Belohoubek, E.

- ❑ Loss Considerations for Microstrip Resonators (Short Papers)



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Benedek, P.

- ☐ [Microstrip Discontinuity Capacitances for Right-Angle Bends, T Junctions, and Crossings \(Correction\)](#)

Beneking, H.

- ☐ [GBIT/s Pulse Regeneration and Amplification with GaAs-MESFETs](#)
- ☐ [The GaAs MESFET as a Pulse Regenerator in the Gigabit per Second Range \(Letters\)](#)

Benko, E.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [High Power Pulsed UHF and L-Band \$p^{+}n^{-}n^{+}\$ Silicon TRAPATT Diode Oscillators](#)
- ☐ [High-Power Pulsed UHF and L Band \$p^{+}n^{-}n^{+}\$ Silicon TRAPATT Diode Lasers](#)
- ☐ [High-Power Pulsed UHF and L Band \$p^{+}n^{-}n^{+}\$ Silicon TRAPATT Diode Lasers \(Correction\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Wideband Electronically Tuned Millimeter-Wave IMPATT Oscillators

Benson, Jr., W.S.

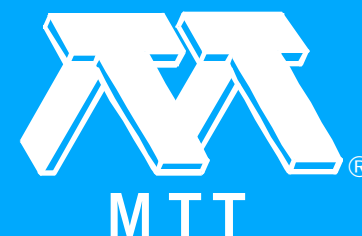
- ❑ Contributors (Apr. 1977 [T-MTT])
- ❑ Error Minimization in Network Analyzer Measurement of Varactor Quality (Short Papers)

Bera, R.

- ❑ Contributors (Jun. 1976 [T-MTT])
- ❑ Performance of GaAs MESFET Mixers at X Band

Berceli, T.

- ❑ Contributors (Apr. 1975 [T-MTT])
- ❑ FM Distortion in Single and Cascaded Injection Locked Diode Oscillators
- ❑ Improved Microwave Repeaters for Hungarian All-Solid-State Communications Systems



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Berman, C.M.

- ☐ Behavioral Suppression by 383-MHz Radiation (Short Papers)

Bernard, N.

- ☐ A New Edge-Mode Isolator in the Very High Frequency Range
- ☐ Contributors (Mar. 1976 [T-MTT])

Bernardi, P.

- ☐ Effects of the Surroundings on Electromagnetic-Power Absorption in Layered-Tissue Media (Short Papers)
- ☐ Shuttle Pulse Measurement of Mode Coupling and Conversion (Short Papers)

Bernick, R.L.

- ☐ Contributors (Dec. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ [Y-Band \(170-260 GHz\) Tunable CW IMPATT Diode Oscillators \(1977 \[MWSYM\]\)](#)
- ❑ [Y-Band \(170-260 GHz\) Tunable CW IMPATT Diode Oscillators \(Dec. 1977 \[T-MTT\]\)](#)

Berntsen, S.

- ❑ [Contributors \(Jul. 1975 \[T-MTT\]\)](#)
- ❑ [Propagation in Rectangular Waveguides with Arbitrary Internal and External Media](#)

Bernues, F.J.

- ❑ [A Solid-State 94 GHz Doppler Radar](#)

Berson, B.E.

- ❑ [Active Solid State Microwave Device Performance](#)

Bertolani, F.

- ❑ [Shuttle Pulse Measurement of Mode Coupling and Conversion \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Bertoni, H.

- ☐ [Theory of Periodic Dielectric Waveguides \(Correction\)](#)

Bertoni, H.L.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Theory of Periodic Dielectric Waveguides](#)

Besse, M.

- ☐ [Analysis of an Inhomogeneously Loaded Rectangular Waveguide with Dielectric and Metallic Losses](#)
- ☐ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)

Besser, L.

- ☐ [Stability Considerations of Low-Noise Transistor Amplifiers with Simultaneous Noise and Power Match](#)

Bhat, B.

- ☐ [Guided Waves on a Flattened Sheath Helix \(Letters\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Bhattacharyya, T.

- ☐ Contributors (Sep. 1976 [T-MTT])
- ☐ Effect of the Magnetic Perturbation on Magnetostatic Surface-Wave Propagation
- ☐ The Piezoelectric-Magnetoelastic Wave Propagation through the Conducting Plate in a Composite Medium (Short Papers)

Binet, M.

- ☐ Submicrometer Self-Aligned GaAs MESFET (Short Papers)

Blot, J.P.

- ☐ Characteristics and Applications of Coupled Microstrip Lines

Blue, M.D.

- ☐ Reflectivity of Common Materials in the Submillimeter Region

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Blume, H.-J.C.

- ☐ [Noise Calibration Repeatability of an Airborne Third-Generation Radiometer \(Letters\)](#)

Boccon-Gibod, D.

- ☐ [Submicrometer Self-Aligned GaAs MESFET \(Short Papers\)](#)

Boley, W.R.

- ☐ [Third Generation Automatic Microwave Measurements](#)

Bolle, D.M.

- ☐ [Annotated Literature Survey of Microwave Ferrite Control Components and Materials for 1968-1974](#)
- ☐ [Characteristic Impedance and Field Patterns of the Shielded Microstrip on a Ferrite Substrate \(Short Papers\)](#)
- ☐ [Contributors \(Nov. 1975 \[T-MTT\]\)](#)
- ☐ [The Edge Guided Mode on Ferrite Loaded Stripline](#)
- ☐ [The Modal Spectrum of Ferrite-Loaded Striplines](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Borkar, S.R.

- ☐ [Capacitance of a Circular Disk for Applications in Microwave Integrated Circuits \(Short Papers\)](#)

Borowick, J.

- ☐ [Antenna Array for Limited Scan Applications](#)

Borth, D.E.

- ☐ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)
- ☐ [Theoretical Analysis of Acoustic Signal Generation in Materials Irradiated with Microwave Energy](#)

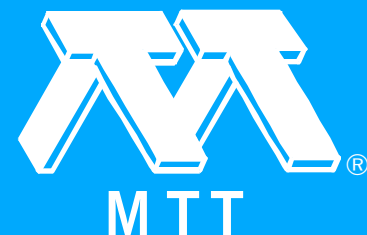
Bosch, B.G.

- ☐ [Clocked Diode Pulse Amplifiers for Microwave Bit Rates](#)
- ☐ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [Diode Circuits for Pulse Regeneration and Multiplexing at Ultrahigh Bit Rates](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Bosch, F.

- ☐ [Switching Performance of mm-Wave PIN Diodes for Ultra High Data Rates](#)

Bostian, C.W.

- ☐ [Depolarization Measurements on the ATS-6 20 GHz Downlink: A Description of the VPI&SU Experiment and Some Initial Results \(1975 \[MWSYM\]\)](#)
- ☐ [Depolarization Measurements on the ATS-6 20-GHz Downlink: A Description of the VPI & SU Experiment and Some Initial Results \(Short Papers\)](#)

Bottjer, M.F.

- ☐ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ☐ [The Super-Schottky Diode](#)

Bowers, H.C.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ High Power Pulsed UHF and L-Band $p^{+}/n^{-}/n^{+}$ Silicon TRAPATT Diode Oscillators
- ❑ High-Power Pulsed UHF and L Band $p^{+}-n-n^{+}$ Silicon TRAPATT Diode Lasers
- ❑ High-Power Pulsed UHF and L Band $p^{+}-n-n^{+}$ Silicon TRAPATT Diode Lasers (Correction)

Bowman, R.R.

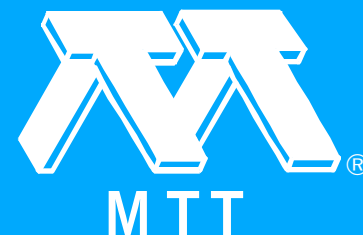
- ❑ A Probe for Measuring Temperature in Radio-Frequency-Heated Material (Short Papers)

Boyd, Jr., C.R.

- ❑ Design of Ferrite Differential Phase Shift Sections

Bozler, C.O.

- ❑ Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes



Contents

Authors

Click on title for a paper summary.



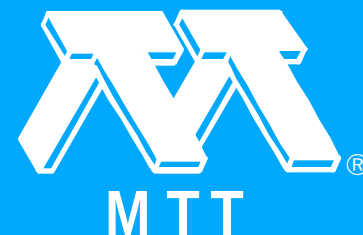
Papers by Author

Breuer, D.

- ☐ [A Silicon Monolithic Technology for 1-2 GHz Analog Signal Processing](#)

Brodwin, M.E.

- ☐ [A Passive Electrodeless Method for Determining the Interior Field of Biological Materials](#)
- ☐ [Computation of the Electromagnetic Fields and Induced Temperatures Within a Model of the Microwave-Irradiated Human Eye](#)
- ☐ [Contributors \(Aug. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Aug. 1976 \[T-MTT\]\)](#)
- ☐ [Contributors \(Nov. 1975 \[T-MTT\]\)](#)
- ☐ [Numerical Solution of Steady-State Electromagnetic Scattering Problems Using the Time-Dependent Maxwell's Equations](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Brown, Jr., W.E.

- ☐ [Imaging RADAR Potentials for Earth Resources](#)

Brown, R.B.

- ☐ [Electrical Matching of Unidirectional Surface Wave Devices](#)

Brown, W.C.

- ☐ [Optimization of the Efficiency and Other Properties of the Rectenna Element](#)

Brunner, F.

- ☐ [Measurement of the Electromagnetic-Field Components in a Rectangular Drift Tube-Loaded Cavity Using Various Perturbing Objects \(Short Papers\)](#)

Bruno, S.T.

- ☐ [A New 34-GHz 3.5-mm Low-Cost Utility Coaxial Connector Featuring Low Leakage, Low Standing-Wave Ratio, and Long Life \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [New High Performance 3.5 mm, Low Cost, Utility Coaxial Connector with Mode Free Operation Through 34 GHz](#)

Buckman, A.B.

- ❑ [Theory of an Efficient Electronic Phase Shifter Employing a Multilayer Dielectric-Waveguide Structure](#)

Buntschuh, C.

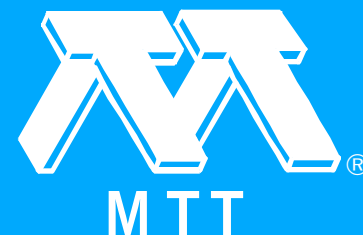
- ❑ [High Directivity Microstrip Couplers Using Dielectric Overlays](#)

Bura, P.

- ❑ [FET Mixers for Communication Satellite Transponders](#)

Burdette, E.C.

- ❑ [Preliminary In-Vivo Probe Measurements of Electrical Properties of Tumors in Mice](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Burton, R.W.

- ☐ [Infrared Detection of Surface Charge and Current Distributions](#)

Button, K.J.

- ☐ [Foreword - Part I \(Jun. 1977 \[T-MTT\]\)](#)
- ☐ [Technology Forecasting and Assessment \(1975 \[MWSYM\]\)](#)

Buzzi, J.M.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

Cabe, J.C.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

Caci, J.C.

- ☐ [Microwave Deviation Linearity Test Method](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Cain, C.A.

- ☐ Contributors (Nov. 1977 [T-MTT])
- ☐ Theoretical Analysis of Acoustic Signal Generation in Materials Irradiated with Microwave Energy

Cain, F.L.

- ☐ Preliminary In-Vivo Probe Measurements of Electrical Properties of Tumors in Mice

Caldwell, L.R.

- ☐ Contributors (Oct. 1977 [T-MTT])
- ☐ Thermographic and Behavioral Studies of Rats in the Near Field of 918-MHz Radiations

Calviello, J.

- ☐ Varactor Frequency Doublers and Triplers for the 200 to 300 GHz Range

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Cambiaggio, E.

- ☐ [Influence a of Solid Elastic Properties on the Scattering of Rayleigh Wave by Normal Discontinuities](#)

Camisa, R.L.

- ☐ [Graceful Degradation Properties of Matched N-Port Power Amplifier Combiners](#)

Cardama, A.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Modal Analysis of Coupling Problems in Optical Fibers](#)

Cardasmenos, A.G.

- ☐ [A Traveling-Wave Maser Amplifier for 85-90 GHz Using a Slot-Fed Image-Guide Slow-Wave Circuit](#)
- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [K-Band Traveling-Wave Maser Using Ruby](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Low Noise Traveling-Wave Maser Receiver for Three Millimeter Wavelength](#)

Carlin, H.J.

- ❑ [A Coupled-Line Model for Dispersion in Parallel-Coupled Microstrips \(Short Papers\)](#)
- ❑ [Improved Accuracy for Commensurate-Line Synthesis \(Short Papers\)](#)

Carlson, E.R.

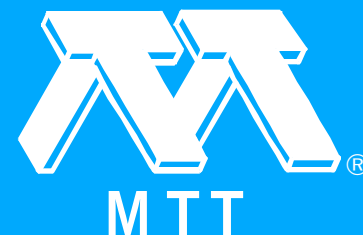
- ❑ [Subharmonically Pumped Millimeter-Wave Mixers Built with Notch-Front and Beam-Lead Diodes](#)

Carlton, P.A.

- ❑ [A 3-dB Interdigitated Coupler on Fused Silica](#)

Carroll, F.B.

- ❑ [Changes in Tumor Blood Flow Produced by Microwave Induced Hyperthermia \(Abstract\)](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Carter, Jr., P.S.

- ☐ [A High Power X-Band Frequency Selective Passive YIG Limiter](#)

Caruso, G.

- ☐ [Analysis of Frequency-Conversion Techniques in Measurements of Microwave Transistor Noise Temperatures](#)
- ☐ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)

Castro, A.A.

- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [Generation of Millimeter-Wave Signals of High Spectral Purity](#)

Catravas, G.N.

- ☐ [A Multiple-Animal Array for Equal Power Density Microwave Irradiation \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Contributors (May 1977 [T-MTT])

Caulton, M.

- ❑ The 1976 International Microwave Symposium (Dec. 1976 [T-MTT])

Chambers, D.R.

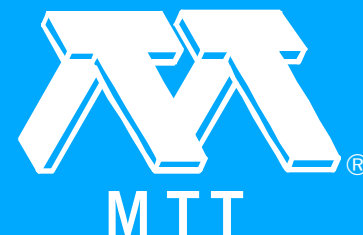
- ❑ Design and Performance of a Broadband MIC Low Noise K-Band Balanced Mixer, Polar Discriminator and Related Components

Chan, P.Y.

- ❑ Testing of a Multichannel Satellite Transponder Using Automatic Testing Equipment (ATE)

Chang, D.C.

- ❑ A New Approximation for the Capacitance of a Rectangular-Coaxial-Strip Transmission Line (Short Papers)
- ❑ Contributors (Dec. 1977 [T-MTT])



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ Contributors (Jan. 1975 [T-MTT])
- ☐ Contributors (Nov. 1975 [T-MTT])
- ☐ Nondegenerate Surface-Wave Mode Coupling Between Dielectric Waveguides
- ☐ Propagating Modes Along a Thin Wire Located Above a Grounded Dielectric Slab (Dec. 1977 [T-MTT])
- ☐ Propagating Modes Along a Thin Wire Located Near a Grounded Dielectric Slab (1977 [MWSYM])
- ☐ Propagation, Attenuation, and Dispersion Characteristics of Inhomogeneous Dielectric Slab Waveguides
- ☐ Single-Mode Pulse Dispersion in Optical Waveguides

Chang, K.

- ☐ Contributors (Feb. 1976 [T-MTT])
- ☐ Coupling Between Narrow Transverse Inductive Strips in Waveguide
- ☐ Equivalent Circuit of a Narrow Axial Strip in Waveguide (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Chang, N.S.

- ☐ [A Frequency-Independent Large-Signal Equivalent Circuit for a BARITT Diode and Its Application to an Amplifier \(Short Papers\)](#)
- ☐ [Contributors \(Jul. 1977 \[T-MTT\]\)](#)
- ☐ [Energy Analysis for the Amplification Phenomena of Magnetostatic Surface Waves in a YIG-Semiconductor Coupled System](#)

Chang, W.H.

- ☐ [Analytical IC Metal-Line Capacitance Formulas \(Correction\)](#)
- ☐ [Analytical IC Metal-Line Capacitance Formulas \(Short Papers\)](#)

Chang, W.S.C.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Integrated Optics at 10.6- \$\mu\$ m Wavelength](#)
- ☐ [Review of Integrated Optics](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Chang, Y.

- ☐ [Millimeter-Wave IMPATT Sources for Communication Applications](#)
- ☐ [Wideband Electronically Tuned Millimeter-Wave IMPATT Oscillators](#)

Chang, Y.-W.

- ☐ [Contributors \(Jun. 1975 \[T-MTT\]\)](#)
- ☐ [High Data-Rate Solid-State Millimeter-Wave Transmitter Module](#)

Chantry, G.W.

- ☐ [Dielectric Measurements in the Submillimeter Region and a Suggested Interpretation of the Poley Absorption](#)
- ☐ [Precise Dielectric Measurements of Low-Loss Materials at Millimeter and Submillimeter Wavelengths](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Chao, C.

- ☐ Contributors (Dec. 1977 [T-MTT])
- ☐ Wideband Electronically Tuned Millimeter-Wave IMPATT Oscillators
- ☐ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (1977 [MWSYM])
- ☐ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (Dec. 1977 [T-MTT])

Chao, C.L.

- ☐ A New Odd Number N-Way Power Combiner/Divider
- ☐ Characteristics of Unsymmetrical Broadside-Coupled Strips in an Inhomogeneous Dielectric Medium

Charalambous, C.

- ☐ MINOPT--An Optimization Program Based on Recent Minimax Results (Computer Program Descriptions)
- ☐ New Results in the Least pth Approach to Minimax Design

Click on title for a paper summary.



Papers by Author

- ❑ Optimization of Microwave Networks (Short Papers)

Charlton, R.

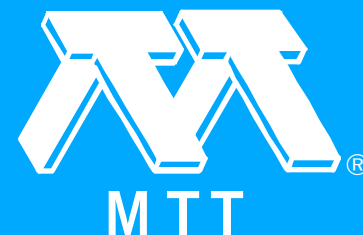
- ❑ Characterization of Microwave Oscillator and Amplifier Circuits Using an IMPATT Diode Biased Below Breakdown (Comments and Authors' Reply)

Chattopadhyay, A.

- ❑ Evaluation of the Equivalent Circuit Parameters of Microstrip Discontinuities through Perturbation of a Resonant Ring (Short Papers)
- ❑ Measurement of the Equivalent Circuit Parameters of Discontinuities in a Resonant Microstrip Ring

Chen, J.H.K.

- ❑ Contributors (Aug. 1975 [T-MTT])
- ❑ MINOPT--An Optimization Program Based on Recent Minimax Results (Computer Program Descriptions)
- ❑ New Results in the Least pth Approach to Minimax Design



Contents

Authors

Click on title for a paper summary.



Papers by Author

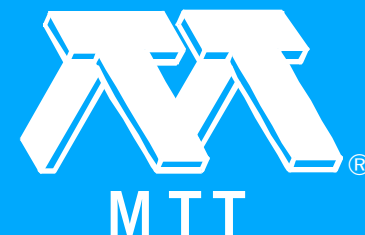
- ❑ [Worst Case Network Tolerance Optimization](#)

Chen, K.-M.

- ❑ [Contributors \(Jul. 1976 \[T-MTT\]\)](#)
- ❑ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ❑ [Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies](#)
- ❑ [Internal EM Field and Absorbed Power Density in Human Torsos Induced by 1-500-MHz EM Waves](#)

Chen, M.H.

- ❑ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [Short-Circuit Tuning Method for Singly Terminated Filters \(1977 \[MWSYM\]\)](#)
- ❑ [Short-Circuit Tuning Method for Singly Terminated Filters \(Dec. 1977 \[T-MTT\]\)](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Cheo, P.K.

- ☐ [A Broad Band GaAs Microstrip Modulator at 16 GHz for CO/sub 2/ Laser Radiation](#)

Cheung, A.

- ☐ [Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies \(Comments\)](#)

Cheung, A.C.

- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [K-Band Traveling-Wave Maser Using Ruby](#)

Cheung, A.Y.

- ☐ [A Bolusing Technique for Batch Microwave Irradiation of Tumors in the Far Field](#)
- ☐ [Experimental Development of Simulated Biomaterials for Dosimetry Studies of Hazardous Microwave Radiation \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Cheung, K.Y.

- ☐ [Bias Frequency Modulation of GaAs Millimeter-Wave Diode Oscillators \(Short Papers\)](#)

Chiba, J.

- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)
- ☐ [Experimental Studies of the Losses and Radiations Due to Bends in the Goubau Line](#)
- ☐ [Studies in Overhead Wire--Goubau Line Above Ground](#)

Childs, W.H.

- ☐ [A 3-dB Interdigitated Coupler on Fused Silica](#)
- ☐ [Design Techniques for Bandpass Filters Using Edge-Coupled Microstrip Lines on Fused Silica](#)

Chin, G.

- ☐ [Instrument Landing System Performance Prediction](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Chiron, B.

- ☐ [A New Edge-Mode Isolator in the Very High Frequency Range](#)
- ☐ [Contributors \(Mar. 1976 \[T-MTT\]\)](#)

Choteau, P.

- ☐ [The Elliptical Dielectric Waveguide a Very Useful Model for Some Microwave and Millimeter Wave Integrated Circuits and Components](#)

Chou, C.-K.

- ☐ [Contributors \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [Effect of Microwave Fields on Rabbit Vagus Nerves and Superior Cervical Ganglia](#)
- ☐ [Microwave Effect on Rabbit Superior Cervical Ganglion \(Oct. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Choudhary, S.

- ☐ [Propagation in Inhomogeneous Slab Waveguides](#)

Chrepta, M.M.

- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [Measurement of Guide Wavelength in Rectangular Dielectric Waveguide](#)

Chu, R.-S.

- ☐ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)
- ☐ [Modal Theory of Spatially Periodic Media](#)

Chu, R.S.

- ☐ [Theory for Electrooptical Grating Modulators](#)

Chu, W.Y.

- ☐ [FLOPT2--A Program for Least pth Optimization with Extrapolation to Minimax Solutions \(Computer Program Descriptions\)](#)

Click on title for a paper summary.



Papers by Author

- ☐ [New Results in the Least pth Approach to Minimax Design](#)

Chudobiak, W.J.

- ☐ [A Microstrip and Stripline Crossover Structure \(Letters\)](#)
- ☐ [An All-Harmonic Coupling-Band Hybrid \(Letters\)](#)

Chui, M.F.

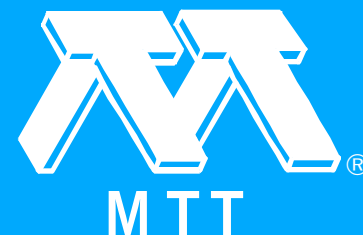
- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [K-Band Traveling-Wave Maser Using Ruby](#)

Cicconi, G.

- ☐ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)
- ☐ [Solutions of the Vector Wave Equation for Inhomogeneous Dielectric Cylinders--Scattering in Waveguide](#)

Citerne, J.T.

- ☐ [The Elliptical Dielectric Waveguide a Very Useful Model for Some Microwave and Millimeter Wave Integrated Circuits and Components](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Civalleri, P.P.

- ☐ [A Coupled-Line Model for Dispersion in Parallel-Coupled Microstrips \(Short Papers\)](#)

Claiborne, L.T.

- ☐ [Currently Practical Acoustic Surface Wave Devices](#)

Clavin, A.

- ☐ [Technology Forecasting and Assessment \(1975 \[MWSYM\]\)](#)
- ☐ [Technology Forecasting and Assessment \(1976 \[MWSYM\]\)](#)

Claxton, D.

- ☐ [A Silicon Monolithic Technology for 1-2 GHz Analog Signal Processing](#)
- ☐ [Applications of Advanced Technologies to Digital Microwave Systems](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Claxton, D.H.

- ☐ [Broad-Band Varactor-Tuned IMPATT-Diode Oscillator \(Short Papers\)](#)

Clayton, F.M.

- ☐ [A Large-Signal Theory for Broad-Band Frequency Converters Using Abrupt Junction Varactor Diodes](#)
- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)

Clifton, B.J.

- ☐ [Schottky-Barrier Diodes for Submillimeter Heterodyne Detection](#)
- ☐ [Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes](#)

Climer, B.J.

- ☐ [Microwave Integrated Circuit Receivers at Millimetric Wavelengths](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Cloete, J.H.

- ☐ [Computation of the Hecken Impedance Function \(Letters\)](#)

Coen, S.

- ☐ [A Chebyshev Approximation Method for Microstrip Problems](#)
- ☐ [A Legendre Approximation Method for the Circular Microstrip Disk Problem](#)
- ☐ [A Note on Green's Function for Microstrip \(Short Papers\)](#)
- ☐ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Nov. 1975 \[T-MTT\]\)](#)

Cogdell, J.R.

- ☐ [A Millimeter-Wave Directional Filter Cavity](#)
- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Cohen, L.D.

- ☐ [Varactor Frequency Doublers and Triplers for the 200 to 300 GHz Range](#)

Cohn, M.

- ☐ [An MIC Push-Pull FET Amplifier](#)
- ☐ [Contributors \(Aug. 1975 \[T-MTT\]\)](#)
- ☐ [Harmonic Mixing with an Antiparallel Diode Pair \(Aug. 1975 \[T-MTT\]\)](#)
- ☐ [Octave Bandwidth High Speed Limiter with Uniform Suppression Characteristics](#)

Collins, J.H.

- ☐ [Microwave Devices Based on Magnetostatic Wave Reflecting Arrays](#)
- ☐ [Real Time Wideband Cepstrum Analysis Based on SAW Devices](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Conn, A.R.

- ☐ [Optimization of Microwave Networks \(Short Papers\)](#)

Conn, D.R.

- ☐ [Contributors \(Jun. 1975 \[T-MTT\]\)](#)
- ☐ [Frequency Multiplication by a P-I-N Diode when Driven into Avalanche Breakdown](#)

Consortini, A.

- ☐ [Field Propagation in an Open-Beam Waveguide \(Short Papers\)](#)

Constant, E.

- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [New Modes of Operation for Avalanche Diodes: Frequency Multiplication and Upconversion](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Cook, C.

- ☐ RF Burnout of Mixer Diodes as Induced Under Controlled Laboratory Conditions and Correlation to Simulated System Performance

Cook, Jr., A.M.

- ☐ Calculations of Antenna Temperature, Horizontal Path Attenuation, and Zenith Attenuation Due to Water Vapor in the Frequency Band 150-700 GHz

Cook, W.A.

- ☐ Absolute Load Detection with Microwave Gunn Oscillators (Short Papers)

Cooley, D.S.

- ☐ An Automated Receiver Test Concept

Cooper, W.

- ☐ Technology Forecasting and Assessment (1975 [MWSYM])

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Corbey, C.D.

- ☐ [Contributors \(Jan. 1976 \[T-MTT\]\)](#)
- ☐ [Wide-Band Varactor-Tuned Coaxial Oscillators](#)

Cornick, J.A.F.

- ☐ [Analysis of a Waveguide Mounting Configuration for Electronically Tuned Transferred-Electron-Device Oscillators and its Circuit Application](#)
- ☐ [Analysis of Waveguide Post Configurations: Part I--Gap Immittance Matrices](#)
- ☐ [Analysis of Waveguide Post Configurations: Part II--Dual-Gap Cases](#)
- ☐ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Sep. 1976 \[T-MTT\]\)](#)

Cosand, A.

- ☐ [A Silicon Monolithic Technology for 1-2 GHz Analog Signal Processing](#)

Click on title for a paper summary.



Papers by Author



Contents

Authors

Costamagna, E.

- ☐ [Asymmetric Coupled Transmission Lines in an Inhomogeneous Medium \(Comments\)](#)

Courtney, K.R.

- ☐ [Contributors \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [Microwave Effect on Rabbit Superior Cervical Ganglion \(Oct. 1975 \[T-MTT\]\)](#)

Courtney, W.E.

- ☐ [Complex Permittivity of GaAs and CdTe at Microwave Frequencies](#)
- ☐ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)

Courtois, L.

- ☐ [A New Class of Nonreciprocal Components Using Slot Line \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ A New Edge-Mode Isolator in the Very High Frequency Range
- ❑ Contributors (Mar. 1976 [T-MTT])

Cowan, D.A.

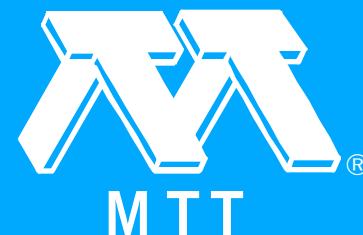
- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Low Noise and Linear FET Amplifiers for Satellite Communications
- ❑ Low-Noise and Linear FET Amplifiers for Satellite Communications

Cox, N.W.

- ❑ Series Interconnection of Six TRAPATT Devices on a Diamond Substrate
- ❑ Symmetry Experiments with Four-Mesa IMPATT Diodes (Letters)

Cox, R.M.

- ❑ Contributors (Dec. 1976 [T-MTT])



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author

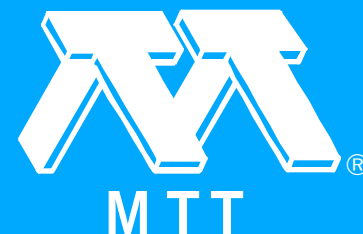
- ❑ [MLS--A Practical Application of Microwave Technology \(1976 \[MWSYM\]\)](#)
- ❑ [MLS--A Practical Application of Microwave Technology \(Dec. 1976 \[T-MTT\]\)](#)

Craig, R.A.

- ❑ [A New Edge-Mode Isolator in the Very High Frequency Range \(Comments\)](#)
- ❑ [Design and Performance of an Integrated Three Channel Tracking YIG Preselector](#)

Crampagne, R.

- ❑ [A Two- or Three-Dimensional Green's Function which can be Applied to Hyperfrequency Microelectronic Transmission Lines \(Letters\)](#)
- ❑ [Approximation for the Symmetrical Parallel-Strip Transmission Line \(Comments\)](#)
- ❑ [Synthesis of Certain Transmission Lines Employed in Microwave Integrated Circuits \(Letters\)](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Crescenzi, Jr., E.J.

- ☐ [A 12-15 GHz High Gain Amplifier Design Using Submicron Gate GaAs Field Effect Transistors](#)
- ☐ [Ku-Band Receiver Front-End Using MIC Technology](#)

Cripps, S.C.

- ☐ [An Experimental Evaluation of X-Band GaAs FET Mixers Using Single and Dual-Gate Devices](#)

Cristal, E.G.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [On Some Integral Relationships for Commensurate Transmission-Line Networks](#)
- ☐ [On Some Integral Relationships for Commensurate Transmission-Line Networks \(Short Papers\)](#)
- ☐ [Tapped-Line Coupled Transmission Lines with Applications to Interdigital and Compline Filters \(Dec. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

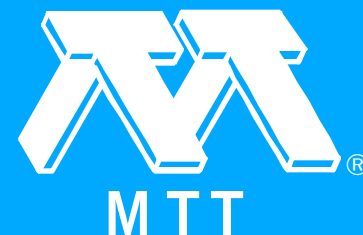
- ❑ Tapped-Line Coupled-Transmission-Lines with Applications to Compline and Interdigital Filters (1975 [MWSYM])

Cronson, H.M.

- ❑ A Six-Port Automatic Network Analyzer (1977 [MWSYM])
- ❑ A Six-Port Automatic Network Analyzer (Dec. 1977 [T-MTT])
- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Picosecond Pulse Sequential Waveform Generation
- ❑ Picosecond-Pulse Sequential Waveform Generation (Short Papers)
- ❑ Time-Domain Measurement of Loss and Dispersion (Short Papers)

Crosignani, B.

- ❑ Contributors (May 1975 [T-MTT])
- ❑ Statistical Coupled Equations in Lossless Optical Fibers



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Crossett, J.A.

- ☐ [Digital Telecommunications Radio Systems](#)

Crowley, J.D.

- ☐ [Actively Controlled SAW Multistrip Coupler](#)

Csendes, Z.J.

- ☐ [A Note on the Finite-Element Solution of Exterior-Field Problems \(Short Papers\)](#)

Cuccia, C.L.

- ☐ [Microwave QPSK Demodulation Techniques at the Receiver Front End](#)
- ☐ [PSK and QPSK Modulators for Gigabit Data Rates](#)

Cuhaci, M.

- ☐ [Radiation from Triangular and Circular Resonators in Microstrip](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Cullen, A.L.

- ☐ [On the Accuracy of the Beam-Wave Theory of the Open Resonator \(Letters\)](#)

Cunitz, R.J.

- ☐ [Behavioral Suppression by 383-MHz Radiation \(Short Papers\)](#)

Cuozzo, F.

- ☐ [Influence a of Solid Elastic Properties on the Scattering of Rayleigh Wave by Normal Discontinuities](#)

Curtice, W.R.

- ☐ [A Transferred-Electron Frequency Memorizer](#)
- ☐ [A Transferred-Electron Frequency Memorizer \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Cusack, J.M.

- ☐ [Computer-Controlled Infrared Microscope for Thermal Analysis of Microwave Transistors](#)

Cushing, R.E.

- ☐ [The Selection of High-Power Integrated Microwave Components for Military Satellite Communication Terminals](#)

Daiku, Y.

- ☐ [Design of Printed Resonant Antennas for Monolithic-Diode Detectors](#)

Daino, B.

- ☐ [Contributors \(May 1975 \[T-MTT\]\)](#)
- ☐ [Statistical Coupled Equations in Lossless Optical Fibers](#)

Dakermadj, G.

- ☐ [Microwave-Power Absorption by Rectangular-Shaped Conductive Dielectric Samples in Stripline \(Letters\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Dalsgaard, P.

- ☐ [Contributors \(Jul. 1975 \[T-MTT\]\)](#)
- ☐ [Propagation in Rectangular Waveguides with Arbitrary Internal and External Media](#)

Damiano, J.-P.

- ☐ [Influence a of Solid Elastic Properties on the Scattering of Rayleigh Wave by Normal Discontinuities](#)

Daniel, H.

- ☐ [Measurement of the Electromagnetic-Field Components in a Rectangular Drift Tube-Loaded Cavity Using Various Perturbing Objects \(Short Papers\)](#)

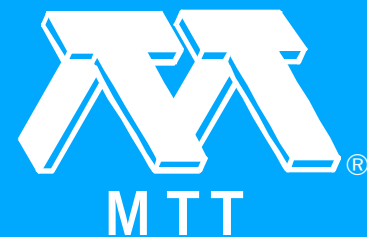
Das, B.N.

- ☐ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)
- ☐ [Coupled Transmission Lines](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ☐ [Coupled Transmission Lines \(Correction\)](#)
- ☐ [Input Impedance of Coaxial Line to Circular Waveguide Feed](#)

Daumas, R.

- ☐ [Variation of the Electrical Characteristics of an Inhomogeneous Microstrip Line with the Dielectric Constant of the Substrate and with the Geometrical Dimensions \(Short Papers\)](#)

Davidson, E.G.S.

- ☐ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)
- ☐ [Waveguide Subsidiary Resonance Ferrite Limiters](#)

Davies, J.B.

- ☐ [Computer Analysis of Gradually Tapered Waveguide with Arbitrary Cross Sections \(Short Papers\)](#)
- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

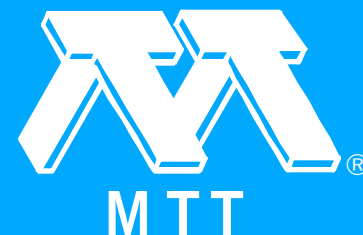
- ❑ Spectral Domain Solution of Arbitrary Coplanar Transmission Line with Multilayer Substrate (Short Papers)
- ❑ The Solution of Electromagnetic Eigenvalue Problems by Least Squares Boundary Residuals (Short Papers)

Davies, O.J.

- ❑ Computer Analysis of Gradually Tapered Waveguide with Arbitrary Cross Sections (Short Papers)
- ❑ Contributors (May 1977 [T-MTT])

Davies, R.

- ❑ An Analytical Comparison of Two Simple High-Q Gunn Oscillators (Short Papers)
- ❑ Contributors (Jan. 1976 [T-MTT])
- ❑ Contributors (May 1977 [T-MTT])
- ❑ Wide-Band Varactor-Tuned Coaxial Oscillators



Contents

Authors

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Davis, M.E.

- ☐ [Digital Phase Shifter Elements for a K/sub u/-Band Phased Array RADAR](#)
- ☐ [Integrated Diode Phase Shifters and Performance in a 502-Element X-Band Array](#)
- ☐ [Integrated Diode Phase-Shifter Elements for an X-Band Phased-Array Antenna \(Short Papers\)](#)
- ☐ [Transceiver Module for an L-Band Adaptive Array Antenna](#)

Dawsey, J.R.

- ☐ [A Low Noise FET Amplifier in Coplanar Waveguide](#)

Dawson, R.H.

- ☐ [Equivalent Circuit of the Schottky-Barrier Field-Effect Transistor at Microwave Frequencies \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Day, P.I.

- ☐ [Transmission Line Transformation Between Arbitrary Impedances Using the Smith Chart \(Letters\)](#)

de Koning, J.G.

- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)
- ☐ [Full-Band Low-Loss Continuous Tracking Circulation in K Band \(Short Papers\)](#)
- ☐ [Gunn-Effect Amplifiers for Microwave Communication Systems in X, Ku, and Ka Bands](#)
- ☐ [Wideband, High Gain, Dual Diode Gunn Amplifier Circuits](#)

De Marinis, B.D.

- ☐ [The 1976 International Microwave Symposium \(Dec. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

de Santis, P.

- ☐ [Contributors \(Jan. 1976 \[T-MTT\]\)](#)
- ☐ [Contributors \(Jul. 1976 \[T-MTT\]\)](#)
- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Nov. 1975 \[T-MTT\]\)](#)
- ☐ [Edge Guided Waves Five Years Later](#)
- ☐ [Fringing-Field Effects in Edge-Guided Wave Devices](#)
- ☐ [High-Azimuthal-Index Resonances in Ferrite MIC Disk Resonators](#)
- ☐ [Symmetrical Four-Port Edge-Guided Wave Circulators](#)
- ☐ [The Edge-Guided-Wave Circulator \(Short Papers\)](#)

De Vecchis, M.

- ☐ [A New Class of Nonreciprocal Components Using Slot Line \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Decreton, M.C.

- ☐ Non Destructive Resonant Technique for the Measurement of Complex Permittivity -- Theoretical Analysis and Experimental Results
- ☐ Nondestructive Measurement of Complex Permittivity for Dielectric Slabs (Short Papers)

Deficis, A.

- ☐ Fiberoptic Microprobes for Measurement of Electromagnetic Fields
- ☐ Non-Perturbing Microprobes for Measurement in Electromagnetic Fields

Degenford, J.E.

- ☐ Analysis and Design of a Low-Noise X-Band MIC Mixer 1-GHz IF Amplifier
- ☐ Contributors (Apr. 1975 [T-MTT])
- ☐ Contributors (Aug. 1975 [T-MTT])

Click on title for a paper summary.



Papers by Author

- ❑ Harmonic Mixing with an Antiparallel Diode Pair (Aug. 1975 [T-MTT])
- ❑ Octave Bandwidth High Speed Limiter with Uniform Suppression Characteristics
- ❑ Page Charges (Announcement) (Jun. 1976 [T-MTT])

DeGruyl, J.A.

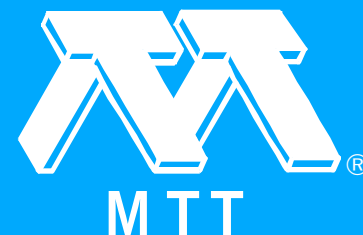
- ❑ Electronically-Tunable, Low Noise K/sub a/-Band Paramp-Downconverter Satellite Communications Receiver
- ❑ Ultra Low Noise, Ku-Band Parametric Amplifier Assembly

Dekkers, J.J.M.

- ❑ Enhancement of Surface-Acoustic-Wave Piezoelectric Coupling in Three-Layer Substrates (Short Papers)

Delfour, A.

- ❑ Y Junction Circulator Analysis



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Delvaux, J.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

DeMarinis, B.

- ☐ [Foreword \(1976 \[MWSYM\]\)](#)

Denlinger, E.

- ☐ [Loss Considerations for Microstrip Resonators \(Short Papers\)](#)

Denlinger, E.J.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Microstrip Varactor-Tuned Millimeter Wave IMPATT Diode Oscillators \(1975 \[MWSYM\]\)](#)
- ☐ [Microstrip Varactor-Tuned Millimeter-Wave IMPATT Diode Oscillators \(Dec. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Derycke, A.C.

- ☐ [High-Efficiency Frequency Multiplication with GaAs Avalanche Diodes \(Short Papers\)](#)

Deshpande, M.D.

- ☐ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)
- ☐ [Input Impedance of Coaxial Line to Circular Waveguide Feed](#)

DeVries, A.J.

- ☐ [Commercial Application of a Surface Wave Television IF Filter](#)

Di Porto, P.

- ☐ [Contributors \(May 1975 \[T-MTT\]\)](#)
- ☐ [Statistical Coupled Equations in Lossless Optical Fibers](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Diamant, P.

- ☐ [Analysis of a Waveguide Hybrid Junction by Rank Reduction](#)
- ☐ [Analysis of Waveguide Junctions by Rank Reduction](#)
- ☐ [Contributors \(Jul. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [Rank Reduction of Ill-Conditioned Matrices in Waveguide Junction Problems](#)

DiBiase, R.

- ☐ [Design and Performance of an Integrated Three Channel Tracking YIG Preselector](#)
- ☐ [Premature Decline Limiting in X-Band YIG Filters](#)

Dickens, L.E.

- ☐ [A New "Phased-Type" Image Enhanced Mixer](#)
- ☐ [An Integrated-Circuit Balanced Mixer, Image and Sum Enhanced](#)

Click on title for a paper summary.



Papers by Author

- ❑ Contributors (Mar. 1975 [T-MTT])

Dickinson, R.M.

- ❑ Performance of a High-Power, 2.388-GHz Receiving Array in Wireless Power Transmission Over 1.54 km

DiDomenico, M.

- ❑ Light Wave Communications (Invited Paper)

Dikshit, R.

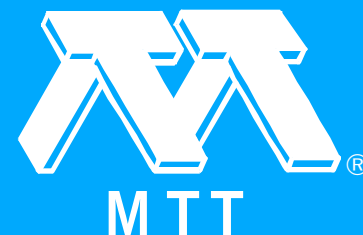
- ❑ FET Mixers for Communication Satellite Transponders
- ❑ Testing of a Multichannel Satellite Transponder Using Automatic Testing Equipment (ATE)

Dobrowalski, J.A.

- ❑ Solution of Large, Sparse Systems in Design and Analysis

Dobrowolski, J.A.

- ❑ Microwave YIG-Tuned Elements as Transducers for Monitoring of EHV AC and HVDC Transmission Systems



IEEE

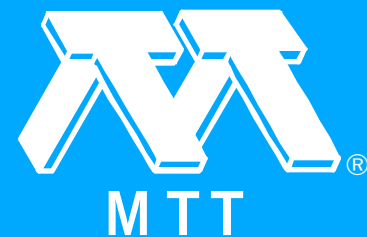
Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Donnelly, J.P.

- ☐ [Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes](#)

dos Santos, A.F.

- ☐ [The Method of Series Expansion in the Frequency Domain Applied to Multidielectric Transmission Lines \(Short Papers\)](#)

Doucet, H.J.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

Douville, R.J.

- ☐ [A 12 GHz Low Cost Earth Terminal for Direct TV Reception from Broadcast Satellites \(1977 \[MWSYM\]\)](#)
- ☐ [A 12-GHz Low-Cost Earth Terminal for Direct TV Reception from Broadcast Satellites \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Drobot, A.T.

- ☐ [The Linear and Self-Consistent Nonlinear Theory of the Electron Cyclotron Maser Instability](#)

Dunn, J.G.

- ☐ [A Waveguide Applicator for Sheet Materials \(Letters\)](#)

Durney, C.H.

- ☐ [Contributors \(Feb. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Jan. 1976 \[T-MTT\]\)](#)
- ☐ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Oct. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Sep. 1975 \[T-MTT\]\)](#)
- ☐ [Electromagnetic Power Absorption in Anisotropic Tissue Media \(Short Papers\)](#)
- ☐ [Long-Wavelength Analysis of Plane Wave Irradiation of a Prolate Spheroid Model of Man](#)

Click on title for a paper summary.

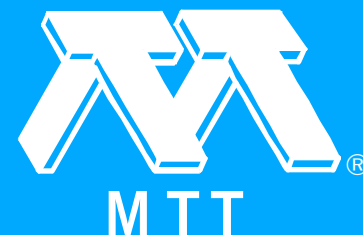


Papers by Author

- ❑ Long-Wavelength Analysis of Plane Wave Irradiation of an Ellipsoidal Model of Man
- ❑ Long-Wavelength Electromagnetic Power Absorption in Ellipsoidal Model of Man and Animals
- ❑ Long-Wavelength Electromagnetic Power Absorption in Prolate Spheroidal Models of Man and Animals
- ❑ Rate Effects in Isolated Turtle Hearts Induced by Microwave Irradiation
- ❑ Upper Bound on Cell Size for Moment-Method Solutions

East, J.R.

- ❑ BARITT Devices for Self-Mixed Doppler Radar Applications
- ❑ Contributors (Dec. 1976 [T-MTT])
- ❑ Design, Fabrication, and Evaluation of BARITT Devices for Doppler System Applications
- ❑ K-Band BARITT Doppler Detectors



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Easter, B.

- ☐ Contributors (Aug. 1975 [T-MTT])
- ☐ Contributors (May 1977 [T-MTT])
- ☐ Experimental Measurement of Microstrip Transistor-Package Parasitic Reactances
- ☐ Measured Odd- and Even-Mode Dispersion of Coupled Microstrip Lines (Short Papers)
- ☐ The Equivalent Circuit of Some Microstrip Discontinuities

Eastman, L.

- ☐ Solid State Microwave Devices (Rump Session)

Edrich, J.

- ☐ A Cryogenically Cooled Two-Channel Paramp Radiometer for 47 GHz
- ☐ A Low-Noise 47-GHz Mixer Using a Permanent Josephson Junction

Click on title for a paper summary.

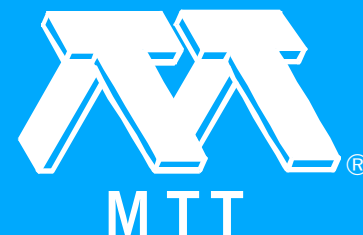


Papers by Author

- ❑ Complex Permittivity and Penetration Depth of Certain Biological Tissue Between 40 and 90 GHz
- ❑ Complex Permittivity and Penetration Depth of Muscle and Fat Tissues Between 40 and 90 GHz (Letters)
- ❑ Contributors (Apr. 1977 [T-MTT])
- ❑ Contributors (Nov. 1976 [T-MTT])
- ❑ Results, Potentials, and Limitations of Josephson-Mixer Receivers at Millimeter and Long Submillimeter Wavelengths

Edwards, T.C.

- ❑ 2-18-GHz Dispersion Measurements on 10-100-Omega Microstrip Lines on Sapphire
- ❑ Contributors (Aug. 1976 [T-MTT])
- ❑ Quasi-Static Characteristics of Microstrip on an Anisotropic Sapphire Substrate



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Edwards, W.P.

- ☐ [RF Cavity Irradiation Dosimetry \(Short Papers\)](#)

Egami, S.

- ☐ [Contributors \(Mar. 1975 \[T-MTT\]\)](#)
- ☐ [In-Line Signal Circuit for Broad-Band Parametric Amplifiers](#)

Einarsson, O.

- ☐ [Minimax Optimization by Algorithms Employing Modified Lagrangians \(Short Papers\)](#)

Eisenhart, R.L.

- ☐ [A 2-Gap Waveguide Mount \(Comments\)](#)
- ☐ [Discussion of a 2-Gap Waveguide Mount \(Short Papers\)](#)
- ☐ [Time Varying IMPATT Impedance Measurements](#)

El-Sayed, O.L.

- ☐ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Generalized Analysis of Parallel Two-Post Mounting Structures in Waveguide

El-Shandwily, M.E.

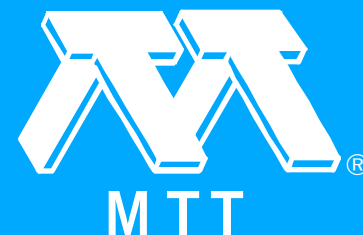
- ❑ Contributors (Sep. 1977 [T-MTT])
- ❑ General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part I: Full-Height Ferrite Configuration
- ❑ General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part II: Two-Disk Ferrite Configuration

Elachi, C.

- ❑ Fiber and Diffused Waveguide Structures for Distributed-Feedback Lasers (Short Papers)
- ❑ Imaging RADAR Potentials for Earth Resources

Elliott, J.

- ❑ Noise in Microwave Transmission Applications of Gunn and IMPATT Diodes (Panel Session)



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Elmoazzen, Y.E.

- ☐ Contributors (Nov. 1975 [T-MTT])
- ☐ Numerical Solution of Coupling Between Two Collinear Parallel-Plate Waveguides

Emery, A.F.

- ☐ Contributors (Jun. 1975 [T-MTT])
- ☐ Effect of 2450-MHz Radiation on the Rabbit Eye

Emery, F.E.

- ☐ YIG-Tuned GaAs FET Oscillators

Emtage, P.R.

- ☐ Contributors (Mar. 1977 [T-MTT])
- ☐ Frequency Selective High Power YIG Limiters
- ☐ Interaction of Signals in Ferromagnetic Microwave Limiters

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Endersz, G.G.

- ☐ Contributors (Apr. 1975 [T-MTT])
- ☐ Linearity Improvement of Microwave FM Oscillators by Harmonic Tuning

Engen, G.F.

- ☐ An Improved Circuit for Implementing the Six-Port Technique of Microwave Measurements (1977 [MWSYM])
- ☐ An Improved Circuit for Implementing the Six-Port Technique of Microwave Measurements (Dec. 1977 [T-MTT])
- ☐ Automated Calibration of Directional-Coupler-Bolometer-Mount Assemblies (1975 [MWSYM])
- ☐ Automated Calibration of Directional-Coupler-Bolometer-Mount Assemblies (Dec. 1975 [T-MTT])
- ☐ Contributors (Dec. 1975 [T-MTT])
- ☐ Contributors (Dec. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Author

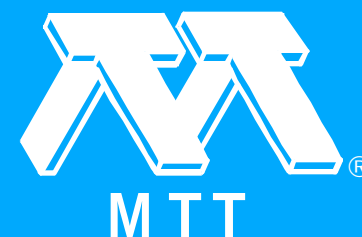
- ❑ [The Six-Port Reflectometer: An Alternative Network Analyzer \(1977 \[MWSYM\]\)](#)
- ❑ [The Six-Port Reflectometer: An Alternative Network Analyzer \(Dec. 1977 \[T-MTT\]\)](#)

England, E.H.

- ❑ [A Coaxial to Microstrip Transition \(Short Papers\)](#)

English, D.L.

- ❑ [Circuit Characterization of V-Band IMPATT Oscillators and Amplifiers](#)
- ❑ [Contributors \(Jun. 1975 \[T-MTT\]\)](#)
- ❑ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ❑ [High Data-Rate Solid-State Millimeter-Wave Transmitter Module](#)
- ❑ [Millimeter-Wave IMPATT Power Amplifier/Combiner](#)
- ❑ [Millimeter-Wave Power Amplifier and Combiner](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

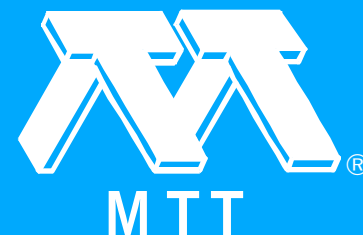
- ❑ Nonlinear and Intermodulation Characteristics of Millimeter-Wave IMPATT Amplifiers

Epstein, N.

- ❑ All GFEC Dual Mode Quasi Elliptic Multiplexers for Satellite Transponders
- ❑ Tetsing of a Multichannel Satellite Transponder Using Automatic Testing Equipment (ATE)

Erickson, C.W.

- ❑ Contributors (Feb. 1975 [T-MTT])
- ❑ High Order Modes in a Spherical Fabry-Perot Resonator
- ❑ Observation and Application of High-Order Azimuthal Modes in a Fabry-Perot Resonator (Short Papers)
- ❑ Perturbation Theory Generalized to Arbitrary (p,l) Modes in a Fabry-Perot Resonator (Letters)



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Erickson, J.E.

- ☐ [A Study of Nonlinearities and Intermodulation Characteristics of 3-Port Distributed Circulators](#)
- ☐ [Contributors \(Feb. 1976 \[T-MTT\]\)](#)

Erickson, N.R.

- ☐ [A Directional Filter Diplexer Using Optical Techniques for Millimeter to Submillimeter Wavelengths](#)

Erlinger, W.G.

- ☐ [Measurement Systems to Display \$\text{Re}\(z/\text{sub s. t./}\)\$ of Singly Terminated Filters](#)
- ☐ [Narrowband Contiguous Multiplexing Filters with Arbitrary Amplitude and Delay Response](#)

Ernst, R.L.

- ☐ [Graceful Degradation Properties of Matched N-Port Power Amplifier Combiners](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Estes, M.F.

- ☐ [Broadside-Coupled Strips in a Layered Dielectric Medium \(Correction\)](#)

Etlicher, B.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

Evans, G.

- ☐ [Fiber and Diffused Waveguide Structures for Distributed-Feedback Lasers \(Short Papers\)](#)

Evtuhov, V.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [GaAs and GaAlAs Devices for Integrated Optics](#)

Ewen, H.I.

- ☐ [Application of Intermediate Frequency Interferometry to Transport Vehicle Control Systems](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Fairman, R.D.

- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ InP Gunn-Effect Devices for Millimeter-Wave Amplifiers and Oscillators

Falciasecca, G.

- ☐ Contributors (Nov. 1977 [T-MTT])
- ☐ Random Discrete Imperfections in Millimeter Waveguide Systems

Fank, F.B.

- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ InP Gunn-Effect Devices for Millimeter-Wave Amplifiers and Oscillators

Fanslow, G.E.

- ☐ A Passive Method for Monitoring Non-Ionizing Radiation

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Farrar, A.

- ☐ [Computation of Propagation Constants for the Fundamental and Higher Order Modes in Microstrip \(Short Papers\)](#)

Farreyre, A.

- ☐ [High-Efficiency Frequency Multiplication with GaAs Avalanche Diodes \(Short Papers\)](#)

Faure, J.C.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

Felsen, L.B.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Evanescent Waves](#)
- ☐ [Propagation in Inhomogeneous Slab Waveguides](#)
- ☐ [Rays, Beams, and Modes Pertaining to the Excitation of Dielectric Waveguides](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Fetterman, H.R.

- ☐ Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes

Field, J.C.

- ☐ NOVA (Network Optimization Via Adjoint) (Computer Program Descriptions)

Figanier, J.P.

- ☐ The Method of Series Expansion in the Frequency Domain Applied to Multidielectric Transmission Lines (Short Papers)

Filensky, W.

- ☐ GBIT/s Pulse Regeneration and Amplification with GaAs-MESFETs
- ☐ The GaAs MESFET as a Pulse Regenerator in the Gigabit per Second Range (Letters)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Findakly, T.K.

- ☐ [Contributors \(Jan. 1976 \[T-MTT\]\)](#)
- ☐ [On the Design of Dielectric Loaded Waveguides](#)

Fisher, R.E.

- ☐ [Foreword \(Apr. 1975 \[T-MTT\]\)](#)

Flattau, T.

- ☐ [Passive L-Band Radiometer for Remote Sensing of Earth Resources](#)

Flyagin, V.A.

- ☐ [The Gyrotron](#)

Fong, T.T.

- ☐ [Circuit Characterization of V-Band IMPATT Oscillators and Amplifiers](#)
- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [High Power W-Band Pulsed IMPATT Oscillators](#)

Foote, F.B.

- ❑ [CW Performance of Optically-Pumped Lasers in the Millimeter-Wave Spectral Region](#)

Forterre, G.E.

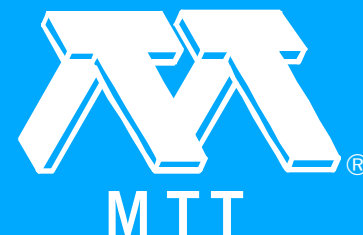
- ❑ [A New Edge-Mode Isolator in the Very High Frequency Range](#)
- ❑ [Contributors \(Mar. 1976 \[T-MTT\]\)](#)

Foster, K.R.

- ❑ [Effect of Surface Cooling and Blood Flow on the Electromagnetic Heating of Tissue](#)

Foster, M.R.

- ❑ [Dielectric Measurements for the Design of a Phantom Eye](#)
- ❑ [Microwave Irradiation Design Using Dielectric Lenses](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Microwave Irradiation Design Using Dielectric Lenses \(Short Papers\)](#)

Foti, S.J.

- ❑ [Electronically-Tunable, Low Noise K/sub a/-Band Paramp-Downconverter Satellite Communications Receiver](#)
- ❑ [Low Noise Microwave and Millimeter Wave Integrated Circuit Mixers](#)

Franzen, N.R.

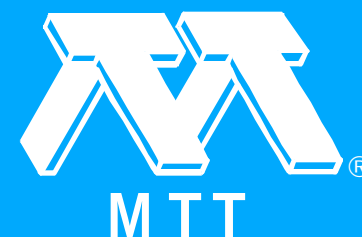
- ❑ [Super - TSD: A Generalization of the TSD Network Analyzer Calibration Procedure, Covering n-Port Measurements with Leakage](#)

Fray, C.

- ❑ [Theoretical Analysis of Open Ring Line](#)

Freeman, R.H.

- ❑ [Rebuttal of "Dispersion of Nonlinear Elements as a Source of Electromagnetic Shock Structure" \(Letters\)](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Friedman, M.

- ☐ [Variational Solution of Integral Equations \(Correction\)](#)

Fukai, I.

- ☐ [Analysis of the Transient Temperature Distribution in a Stripline with Triple-Layer Dielectric \(Short Papers\)](#)

Fukuda, S.

- ☐ [A New Microwave Amplitude Limiter Using GaAs Field Effect Transistor](#)

Fukukawa, Y.

- ☐ [A High Power 50GHz DDR IMPATT Oscillator with Low Side Band Noise](#)
- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [High-Power 50-GHz Double-Drift-Region IMPATT Oscillators with Improved Bias Circuits for Eliminating Low-Frequency Instabilities](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Fukumitsu, O.

- ☐ [Application of the Beam Mode Expansion to the Analysis of Noise Reduction Structure \(Short Papers\)](#)

Fukuoka, J.-I.

- ☐ [Analysis of the Transient Temperature Distribution in a Stripline with Triple-Layer Dielectric \(Short Papers\)](#)

Fukuta, M.

- ☐ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ☐ [Power GaAs MESFET with a High Drain-Source Breakdown Voltage](#)

Furutsuka, T.

- ☐ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ☐ [Submicron Single-Gate and Dual-Gate GaAs MESFET's with Improved Low Noise and High Gain Performance](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Furuya, K.

- ☐ [An Ideal Refractive-Index-Distribution and Mode Filter for Band Broadening of Multimode Optical Fiber](#)
- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Quasi-Guided Modes and Related Radiation Losses in Optical Dielectric Waveguides with External Higher Index Surroundings](#)

Gaglione, S.

- ☐ [Lithium Ferrite C-Band Latching Phase Shifters](#)

Galani, Z.

- ☐ [A Broadband Planar N-Way Combiner/Divider](#)

Gallagher, J.J.

- ☐ [Calculations of Antenna Temperature, Horizontal Path Attenuation, and Zenith Attenuation Due to Water Vapor in the Frequency Band 150-700 GHz](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Galloway, W.D.

- ☐ Behavioral Suppression by 383-MHz Radiation (Short Papers)

Galore, B.

- ☐ Commercial Glow Discharge Tubes As Detectors of X-Band Radiation (Short Papers)

Gandhi, O.P.

- ☐ A Microwave Applicator for In Vivo Rapid Inactivation of Enzymes in the Central Nervous System (Short Papers)
- ☐ A Nonperturbing Liquid Crystal Fiberoptic Microwave Power Probe
- ☐ Conditions of Strongest Electromagnetic Power Deposition in Man and Animals
- ☐ Contributors (Dec. 1975 [T-MTT])
- ☐ Contributors (Oct. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ☐ [Resonant Electromagnetic Power Deposition in Man and Animals](#)
- ☐ [Upper Bound on Cell Size for Moment-Method Solutions](#)

Ganguly, A.K.

- ☐ [Analysis of Dispersion in Arbitrarily Configured Dielectric-Loaded Transmission Structures](#)
- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [Dispersion Characteristics for Arbitrarily Configured Transmission Media \(Short Papers\)](#)
- ☐ [Microstrip Excitation of Magnetostatic Surface Waves: Theory and Experiment](#)
- ☐ [Radiation Resistance of Microstrip Excited Magnetostatic Surface Waves](#)

Gaponov, A.V.

- ☐ [The Gyrotron](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Garault, Y.

- ☐ [Accurate Resonant Frequencies of Dielectric Resonators](#)
- ☐ [An Accurate Design of Resonance Frequencies of Dielectric Resonators](#)
- ☐ [Analysis of an Inhomogeneously Loaded Rectangular Waveguide with Dielectric and Metallic Losses](#)
- ☐ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)
- ☐ [Coupling Between: A Microstrip Transmission Line and a Dielectric Resonator and Between Two Adjacent Dielectric Resonators for Application to Bandpass Filter](#)
- ☐ [Q Factors of Free and Shielded Cylindrical Dielectric Resonators](#)

Garber, W.A.

- ☐ [Submillimeter-Wave Detection with Submicron-Size Schottky-Barrier Diodes](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gardiol, F.E.

- ☐ Contributors (Mar. 1977 [T-MTT])
- ☐ On the Design of Dielectric Loaded Waveguides (Comments)
- ☐ Propagation in Circular Waveguide Loaded with an Azimuthally Magnetized Ferrite Tube (Short Papers)
- ☐ Slotted Line Measurements for Propagation Constant in Lossy Waveguide (Short Papers)

Garg, R.

- ☐ Expressions for Wavelength and Impedance of a Slotline (Letters)

Garver, R.V.

- ☐ Error in Impedance Measurement When the Signal is Introduced Across the Slotted-Line Probe (Comments and Author's Reply)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gauthier, F.

- ☐ [Analysis of an Inhomogeneously Loaded Rectangular Waveguide with Dielectric and Metallic Losses](#)
- ☐ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)

Gawronski, M.J.

- ☐ [A High Power MIC Passive Diode Receiver Protector with Integral STC Using Variable Basewidth Techniques](#)

Geick, R.

- ☐ [Application of Submillimeter Spectroscopy to Magnetic Excitations](#)

Geithman, G.A.

- ☐ [A Microwave Irradiation Chamber for Scientific Studies on Agricultural Products \(Short Papers\)](#)
- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Geller, B.

- ☐ [Octave Bandwidth High Speed Limiter with Uniform Suppression Characteristics](#)

Geller, B.D.

- ☐ [An MIC Push-Pull FET Amplifier](#)

Gelnovatch, V.G.

- ☐ [A Computer Program for the Direct Calibration of Two-Port Reflectometers for Automated Microwave Measurements \(Short Papers\)](#)

Georgopoulos, C.J.

- ☐ [High Power Microwave P-I-N Diode Inductive Driving](#)

Gerhard, A.R.

- ☐ [Measuring Dielectric Constant of Substrates for Microstrip Applications \(Letters\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gerson, T.J.

- ☐ [Surface Electromagnetic Modes of a Ferrite Slab \(Correction\)](#)

Getsinger, W.J.

- ☐ [The Centimeter Wave Beacons of the COMSTAR Domestic Communications Satellites](#)

Gewartowski, J.W.

- ☐ [The System/Circuit Interface in IMPATT Diode Applications](#)

Ghobrial, S.I.

- ☐ [Intermodulation Distortion and Gain Compression in Varactor Frequency Converters \(Short Papers\)](#)

Giallorenzi, T.G.

- ☐ [Actively Controlled SAW Multistrip Coupler](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Giannini, F.

- ❑ Effects of the Surroundings on Electromagnetic-Power Absorption in Layered-Tissue Media (Short Papers)
- ❑ Power Generation and Efficiency in GaAs Traveling-Wave Amplifiers (Short Papers)

Gibbs, S.E.

- ❑ Millimetre-Wave Insular Guide Frequency Scanned Array

Gilden, M.

- ❑ A Broad Band GaAs Microstrip Modulator at 16 GHz for CO/sub 2/ Laser Radiation

Gladwell, G.M.L.

- ❑ A Chebyshev Approximation Method for Microstrip Problems
- ❑ A Legendre Approximation Method for the Circular Microstrip Disk Problem

Click on title for a paper summary.



Papers by Author

- ❑ Contributors (Jan. 1977 [T-MTT])
- ❑ Contributors (Nov. 1975 [T-MTT])

Glance, B.

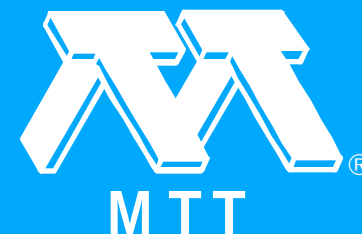
- ❑ A Discriminator-Stabilized Microstrip Oscillator (Short Papers)

Glance, B.S.

- ❑ Local-Oscillator Noise Cancellation in the Subharmonically Pumped Down-Converter (Short Papers)
- ❑ Microstrip Varactor-Tuned Millimeter-Wave Transmitter (Letters)

Gloge, D.

- ❑ Contributors (Jan. 1975 [T-MTT])
- ❑ Propagation Effects in Optical Fibers



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gnerlich, H.R.

- ☐ [A New Look at Noise in Transferred Electron Oscillators \(1977 \[MWSYM\]\)](#)
- ☐ [A New Look at Noise in Transferred Electron Oscillators \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)

Godlove, T.F.

- ☐ [Relativistic Electron Beam Interactions for Generation of High Power at Microwave Frequencies](#)

Goedbloed, J.J.

- ☐ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ☐ [Theory of Noise and Transfer Properties of IMPATT Diode Amplifiers](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Goldie, H.

- ☐ [A 2-Kilowatt Average Power X-Band Receiver Protector for the Lincoln Laboratory SOSI Radar](#)
- ☐ [A High Power MIC Passive Diode Receiver Protector with Integral STC Using Variable Basewidth Techniques](#)
- ☐ [A High Power X-Band Frequency Selective Passive YIG Limiter](#)
- ☐ [Frequency Selective High Power YIG Limiters](#)

Goldsmith, P.F.

- ☐ [A 230-GHz Radiometer System Employing a Second-Harmonic Mixer \(Short Papers\)](#)

Goldwasser, R.E.

- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)
- ☐ [Gunn-Effect Amplifiers for Microwave Communication Systems in X, Ku, and Ka Bands](#)
- ☐ [Wideband, High Gain, Dual Diode Gunn Amplifier Circuits](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gonda, J.

- ☐ Contributors (May 1977 [T-MTT])
- ☐ IMPATT Diode Circuit Design for Parametric Stability

Goodrich, L.C.

- ☐ Absolute Load Detection with Microwave Gunn Oscillators (Short Papers)

Gopinath, A.

- ☐ Calculation of Microstrip Discontinuity Inductances
- ☐ Contributors (Aug. 1975 [T-MTT])
- ☐ Contributors (Oct. 1977 [T-MTT])
- ☐ Equivalent Circuit Capacitance of Microstrip Step Change in Width
- ☐ Equivalent Circuit Parameters of Microstrip Step Change in Width and Cross Junctions (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gorwara, A.K.

- ☐ Cooperative Signal Processing Beacon Transponder for Airport Traffic Control
- ☐ Design and Performance of a Broadband MIC Low Noise K-Band Balanced Mixer, Polar Discriminator and Related Components

Goto, S.

- ☐ Contributors (Jul. 1977 [T-MTT])
- ☐ Ferrite Planar Circuit in Microwave IC
- ☐ Ferrite Planar Circuits in Microwave Integrated Circuits

Gotzman, J.

- ☐ Basic Parameters of Nonsymmetrical Coplanar Line

Goud, P.A.

- ☐ Contributors (Sep. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Author

- ❑ [Intermodulation Distortion Analysis of Reflection-Type IMPATT Amplifiers Using Volterra Series Representation](#)

Goudey, K.R.

- ❑ [High Power Monopulse Tracking Feed](#)

Gough, R.A.

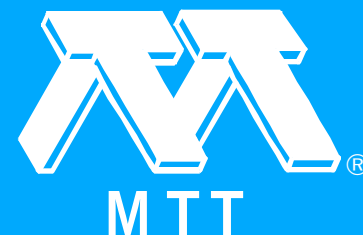
- ❑ [Contributors \(Jan. 1976 \[T-MTT\]\)](#)
- ❑ [Wide-Band Varactor-Tuned Coaxial Oscillators](#)

Goulon, J.

- ❑ [Dispersive Fourier Transform Spectrometry with Variable-Thickness Variable-Temperature Liquid Cells](#)

Govindarajan, G.

- ❑ [Waveguide Bend Spurious Mode Program \(Computer Program Descriptions\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Grace, M.I.

- ☐ [A High-Power Solid-State C-Band Transmitter for MIS Applications](#)

Granatstein, V.L.

- ☐ [Foreword - Part II \(Jun. 1977 \[T-MTT\]\)](#)
- ☐ [Mechanisms for Coherent Scattering of Electromagnetic Waves from Relativistic Electron Beams](#)
- ☐ [Relativistic Electron Beam Interactions for Generation of High Power at Microwave Frequencies](#)
- ☐ [The Electron Cyclotron Maser--An Historical Survey](#)

Grange, J.A.

- ☐ [A New Mixer Design for 140-220 GHz \(Short Papers\)](#)
- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)

Grant, J.E.

- ☐ [Technology Forecasting and Assessment \(1975 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Grant, P.M.

- ☐ [Real Time Wideband Cepstrum Analysis Based on SAW Devices](#)

Grantham, W.L.

- ☐ [Microwave Scattering from the Ocean Surface](#)
- ☐ [Microwave Scattering from the Ocean Surface \(Short Papers\)](#)

Gray, R.E.

- ☐ [A High-Power Solid-State C-Band Transmitter for MIS Applications](#)

Grayzel, A.I.

- ☐ [An Alternate Derivation and Procedure for Cristal's Transformation for Transmission-Line Networks \(Letters\)](#)
- ☐ [The Synthesis of Quarter-Wave Transformers, Low-Pass and Half-Wave Filters in the Sine Plane \(Letters\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Green, H.E.

- ☐ [The Numerical Solution of Some Important Transmission-Line Problems \(Correction\)](#)
- ☐ [The Resonant Frequency of a Narrow-Gap Cylindrical Cavity \(Letters\)](#)

Green, J.J.

- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)
- ☐ [Microwave Properties of Lithium Ferrites \(Short Papers\)](#)

Gregory, R.O.

- ☐ [A Low-Cost Multiple-Channel 12-GHz Receiver for Satellite Television Broadcasting](#)
- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)

Greiling, P.T.

- ☐ [Broad-Band Varactor-Tuned IMPATT-Diode Oscillator \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Greiser, J.W.

- ☐ [The Design and Performance of a Circularly Polarized Direct Contact Applicator for Microwave Diathermy](#)

Grote, A.J.

- ☐ [Large Signal Device Characterization for Broadband Ka-Band IMPATT Amplifier Design](#)

Grove, H.M.

- ☐ [A Microwave Applicator for In Vivo Rapid Inactivation of Enzymes in the Central Nervous System \(Short Papers\)](#)

Guentzler, R.E.

- ☐ [Additional Information on the Noise-Temperature Behavior of F8T5 Lamps \(Letters\)](#)
- ☐ [Contributors \(Jul. 1977 \[T-MTT\]\)](#)
- ☐ [The New Similarity Rules Applied to Argon Microwave Noise Sources](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Guillon, P.

- ☐ [Accurate Resonant Frequencies of Dielectric Resonators](#)
- ☐ [An Accurate Design of Resonance Frequencies of Dielectric Resonators](#)
- ☐ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)
- ☐ [Coupling Between: A Microstrip Transmission Line and a Dielectric Resonator and Between Two Adjacent Dielectric Resonators for Application to Bandpass Filter](#)
- ☐ [Q Factors of Free and Shielded Cylindrical Dielectric Resonators](#)

Guiraud, J.-L.

- ☐ [A Two- or Three-Dimensional Green's Function which can be Applied to Hyperfrequency Microelectronic Transmission Lines \(Letters\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Gunn, M.W.

- ☐ [Hall Field and Magnetoresistance Effects in Rectangular Waveguide Completely Filled with Semiconductor \(Short Papers\)](#)
- ☐ [Microwave Propagation in Rectangular Waveguide Containing a Semiconductor Subject to a Transverse Magnetic Field \(Short Papers\)](#)

Gunshor, R.L.

- ☐ [Contributors \(Apr. 1976 \[T-MTT\]\)](#)
- ☐ [Internal Dynamics and Microwave Properties of X-Band Transferred-Electron Devices](#)

Gupta, C.

- ☐ [Contributors \(Oct. 1977 \[T-MTT\]\)](#)
- ☐ [Equivalent Circuit Capacitance of Microstrip Step Change in Width](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gupta, K.C.

- ❑ [Effect of Diode Parameters on Reflection-Type Phase Shifters \(Short Papers\)](#)
- ❑ [Expressions for Wavelength and Impedance of a Slotline \(Letters\)](#)

Gupta, K.K.

- ❑ [A Gaussian-Beam Launcher for Microwave Exposure Studies \(Short Papers\)](#)
- ❑ [Contributors \(May 1977 \[T-MTT\]\)](#)

Gupta, S.C.

- ❑ [A Wide-Band Parametric Amplifier with Triple-Tuned Signal Circuit and Single-Tuned Idler Circuit \(Letters\)](#)
- ❑ [Propagation and Radiation Behaviour of Dielectric Coated E-Plane Sectoral Horn](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Guru, B.S.

- ☐ Contributors (Jul. 1976 [T-MTT])
- ☐ Contributors (Sep. 1977 [T-MTT])
- ☐ Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies
- ☐ Internal EM Field and Absorbed Power Density in Human Torsos Induced by 1-500-MHz EM Waves

Gustincic, J.J.

- ☐ A Quasi-Optical Receiver Design

Guy, A.W.

- ☐ Contributors (Jun. 1975 [T-MTT])
- ☐ Contributors (Oct. 1975 [T-MTT])
- ☐ Contributors (Oct. 1977 [T-MTT])
- ☐ Effect of 2450-MHz Radiation on the Rabbit Eye

Click on title for a paper summary.



Papers by Author

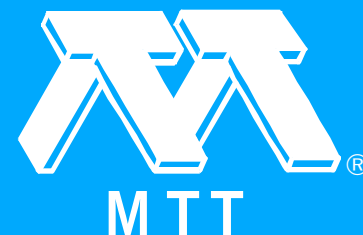
- ❑ Effect of Microwave Fields on Rabbit Vagus Nerves and Superior Cervical Ganglia
- ❑ Microwave Effect on Rabbit Superior Cervical Ganglion (Oct. 1975 [T-MTT])
- ❑ Thermographic and Behavioral Studies of Rats in the Near Field of 918-MHz Radiations

Gysel, U.

- ❑ Design and Performance of a Broadband MIC Low Noise K-Band Balanced Mixer, Polar Discriminator and Related Components

Gysel, U.H.

- ❑ A New N-Way Power Divider/Combiner Suitable for High-Power Applications
- ❑ Contributors (May 1976 [T-MTT])
- ❑ High-Power C-Band Multiple-IMPATT-Diode Amplifiers
- ❑ Wide-Band Frequency Discriminator with High Linearity



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Haas, R.W.

- ❑ 22-GHz Measurements of Dielectric Constants and Loss Tangents of Castable Dielectrics at Room and Cryogenic Temperatures (Short Papers)

Haddad, G.I.

- ❑ BARITT Devices for Self-Mixed Doppler Radar Applications
- ❑ Contributors (Dec. 1976 [T-MTT])
- ❑ Contributors (Sep. 1977 [T-MTT])
- ❑ Design, Fabrication, and Evaluation of BARITT Devices for Doppler System Applications
- ❑ Effects of Depletion-Layer Modulation on Spurious Oscillations in IMPATT Diodes
- ❑ Harmonic Tuning Effects of TRAPATT Oscillators
- ❑ K-Band BARITT Doppler Detectors
- ❑ The Operation of S-Band TRAPATT Oscillators with Tuning at Multiple Harmonic Frequencies (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hafiz, S.A.

- ☐ [Near Zone Microwave Exposure of a Biological Sphere](#)

Haga, I.

- ☐ [A New Microwave Amplitude Limiter Using GaAs Field Effect Transistor](#)

Hagan, G.J.

- ☐ [Microwave Irradiation Design Using Dielectric Lenses](#)
- ☐ [Microwave Irradiation Design Using Dielectric Lenses \(Short Papers\)](#)

Hagisawa, H.

- ☐ [Influence of Longitudinal Magnetic Field on the CW Submillimeter Waves Output from HCN Gas Laser](#)

Hagmann, M.J.

- ☐ [Contributors \(Oct. 1977 \[T-MTT\]\)](#)
- ☐ [Upper Bound on Cell Size for Moment-Method Solutions](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hahn, E.W.

- ☐ [Selective Heating of Cutaneous Human Tumors at 27.12 MHz \(Abstract\)](#)

Haine, J.L.

- ☐ [Contributors \(Oct. 1977 \[T-MTT\]\)](#)
- ☐ [Direct Design Formulas for Asymmetric Bandpass Channel Diplexers](#)

Haldenwang, P.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

Hall, G.

- ☐ [RF Burnout of Mixer Diodes as Induced Under Controlled Laboratory Conditions and Correlation to Simulated System Performance](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hallford, B.R.

- ☐ [An Experimental Study of Image Termination Methods for Low Noise Mixers](#)

Hamasaki, J.

- ☐ [A Semi-Transparent Mirror-Type Directional Coupler for Optical Fiber Applications \(Letters\)](#)
- ☐ [Power Transfer of a Parallel Optical Fiber Directional Coupler \(Letters\)](#)

Hamid, M.A.K.

- ☐ [A Time-Domain Technique for Characterizing Leaky Coaxial Cables](#)
- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [Iterative Solutions of Waveguide Discontinuity Problems](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hamilton, Jr., R.J.

- ☐ Amplifier Applications of Millimeter Wave InP GUNN Devices
- ☐ Contributors (Apr. 1975 [T-MTT])
- ☐ Contributors (Feb. 1977 [T-MTT])
- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ Full-Band Low-Loss Continuous Tracking Circulation in K Band (Short Papers)
- ☐ Gunn-Effect Amplifiers for Microwave Communication Systems in X, Ku, and Ka Bands
- ☐ InP Gunn-Effect Devices for Millimeter-Wave Amplifiers and Oscillators
- ☐ Wideband, High Gain, Dual Diode Gunn Amplifier Circuits

Hammad, A.E.

- ☐ Solution of Large, Sparse Systems in Design and Analysis

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Hammer, G.

- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)
- ☐ [Improved Microwave Repeaters for Hungarian All-Solid-State Communications Systems](#)

Hanley, G.

- ☐ [Lithium Ferrite C-Band Latching Phase Shifters](#)

Hardee, P.C.

- ☐ [Complex Permittivity and Penetration Depth of Certain Biological Tissue Between 40 and 90 GHz](#)
- ☐ [Complex Permittivity and Penetration Depth of Muscle and Fat Tissues Between 40 and 90 GHz \(Letters\)](#)

Haroules, G.G.

- ☐ [Application of Intermediate Frequency Interferometry to Transport Vehicle Control Systems](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Harris, D.H.

- ☐ X-Band Microstrip-Inserted Puck Circulator Using Arc-Plasma-Sprayed Ferrite (Short Papers)

Harris, D.J.

- ☐ The Measurement of the Surface Resistivity of Evaporated Gold at 890 GHz

Harris, J.H.

- ☐ Contributors (Jan. 1975 [T-MTT])
- ☐ Coupling from Multimode to Single-Mode Linear Waveguides Using Horn-Shaped Structures

Harris, M.R.

- ☐ C-Band Solid State TWT Replacement

Harrison, R.G.

- ☐ A Broad-Band Frequency Divider Using Microwave Varactors

Click on title for a paper summary.



Papers by Author

- ❑ [Broadband Frequency Dividers Using Microwave Varactors](#)
- ❑ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)

Hartmann, C.S.

- ❑ [Weighted Unidirectional Transducer SAW Filter at 328 MHz](#)

Hartmann, P.R.

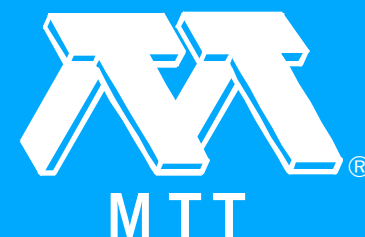
- ❑ [Digital Telecommunications Radio Systems](#)

Hartnagel, H.L.

- ❑ [Contributors \(Oct. 1976 \[T-MTT\]\)](#)
- ❑ [Dielectric Waveguides for Underwater Transmission of High Microwave Power](#)
- ❑ [The Design and Performance of Three-Line Microstrip Couplers](#)

Hartop, R.

- ❑ [A 400 kW Long Pulse X-Band Planetary Radar](#)
- ❑ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)



IEEE

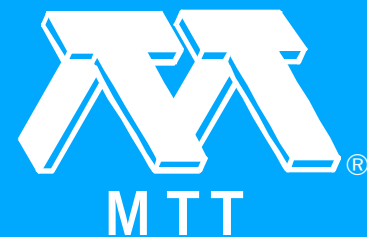
[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ❑ [The High-Power X-Band Planetary Radar at Goldstone: Design, Development, and Early Results](#)

Hashimoto, K.

- ❑ [Circular TE/sub 0n/ Mode Filters for Guided Millimeter-Wave Transmission \(Jan. 1976 \[T-MTT\]\)](#)
- ❑ [Contributors \(Jan. 1976 \[T-MTT\]\)](#)
- ❑ [Contributors \(Jul. 1975 \[T-MTT\]\)](#)
- ❑ [Randomly Imperfect Waveguides for Millimeter and Submillimeter Wavelengths for Long-Distance Transmission Applications](#)

Hashimoto, M.

- ❑ [A Perturbation Method for the Analysis of Wave Propagation in Inhomogeneous Dielectric Waveguides with Perturbed Media](#)
- ❑ [Analysis of Guided Waves Along the Cladded Optical Fiber: Parabolic-Index Core and Homogeneous Cladding](#)
- ❑ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Contributors \(Jul. 1976 \[T-MTT\]\)](#)
- ❑ [Contributors \(Sep. 1976 \[T-MTT\]\)](#)
- ❑ [Propagation of Cladded Inhomogeneous Dielectric Waveguides](#)

Hashimoto, Y.

- ❑ [Microwave Applications of Thin Magnetic Resistive Sheets](#)

Haskal, H.M.

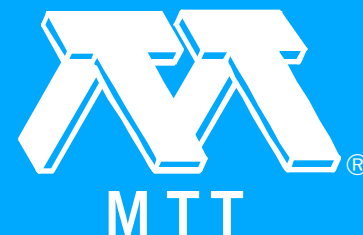
- ❑ [Contributors \(Jan. 1976 \[T-MTT\]\)](#)
- ❑ [On the Design of Dielectric Loaded Waveguides](#)

Hatano, S.

- ❑ [Measurement of Surface Resistance in Oversized Circular Waveguide at Millimeter Wavelengths \(Short Papers\)](#)

Hatsuda, T.

- ❑ [Computation of Coplanar-Type Strip-Line Characteristics by Relaxation Method and its Application to Microwave Circuits](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Haus, H.A.

- ☐ [Theoretical Aspects of Gunn and IMPATT Diode Noise](#)

Haworth, J.

- ☐ [A Magnetostatic Delay Line Oscillator](#)

Hayakawa, T.

- ☐ [Circular Arc Polygonal Type TE_{0n} Mode Filter](#)

Hayasaka, T.

- ☐ [4-W IMPATT Amplifiers for 6 - 8 GHz 1800CH FM Radio Systems](#)

Hayashi, H.

- ☐ [Wideband Tunable and Highly Stabilized Millimeterwave IMPATT Diode Oscillators](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hayashi, R.

- ☐ [Receiving Part of Satellite Borne Millimeter Wave Transponder](#)

Hayashi, Y.

- ☐ [A Coplanar Waveguide with Thick Metal-Coating \(Short Papers\)](#)

Hays, R.M.

- ☐ [SAW Transform Signal Processing](#)

Heath, K.R.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature \(1975 \[MWSYM\]\)](#)
- ☐ [IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature \(Dec. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Heimenrath, Y.

- ☐ [Commercial Glow Discharge Tubes As Detectors of X-Band Radiation \(Short Papers\)](#)

Heiter, G.L.

- ☐ [A Microwave Linearity Test Set](#)

Held, D.N.

- ☐ [Analysis of Noise in Room-Temperature Millimeter-Wave Mixers](#)

Hellum, J.M.

- ☐ [Millimeter-Wave IMPATT Sources for Communication Applications](#)

Helszajn, J.

- ☐ [Contributors \(Jul. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Mar. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ❑ Design Data for Radial-Waveguide Circulators Using Partial-Height Ferrite Resonators
- ❑ Insertion Loss of 3-Port Circulator with One Port Terminated in Variable Short Circuit (Short Papers)
- ❑ Scattering Matrices of Junction Circulator with Chebyshev Characteristics
- ❑ Suppression of Higher Order Modes in Waveguide-Junction Circulators Using Coupled Open Dielectric Resonators (Letters)
- ❑ Waveguide Subsidiary Resonance Ferrite Limiters

Henaus, J.C.

- ❑ The Josephson Self-Oscillator Mixer as a Submillimeter and Far-Infrared Detector

Heng, T.M.S.

- ❑ A Power Silicon Microwave MOS Transistor
- ❑ Contributors (Jun. 1976 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Henry, P.S.

- ☐ [An Efficient Microstrip Upconverter for K/sub a/-Band](#)
- ☐ [Local-Oscillator Noise Cancellation in the Subharmonically Pumped Down-Converter \(Short Papers\)](#)

Herman, W.A.

- ☐ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)
- ☐ [Precise Calibration of Plane-Wave Microwave Power Density Using Power Equation Techniques](#)

Herrick, D.L.

- ☐ [NOVA \(Network Optimization Via Adjoints\) \(Computer Program Descriptions\)](#)

Heyboer, T.L.

- ☐ [YIG-Tuned GaAs FET Oscillators](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hidaka, T.

- ☐ [The Double-Swept-Frequency Locating Reflectometer \(Short Papers\)](#)

Hierl, T.L.

- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)
- ☐ [Full-Band Low-Loss Continuous Tracking Circulation in K Band \(Short Papers\)](#)

Higgins, I.D.

- ☐ [An Analytical Comparison of Two Simple High-Q Gunn Oscillators \(Short Papers\)](#)
- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)

Higgins, V.J.

- ☐ [RF Burnout of Mixer Diodes as Induced Under Controlled Laboratory Conditions and Correlation to Simulated System Performance](#)

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Hill, D.A.

- ☐ Contributors (May 1975 [T-MTT])
- ☐ Influence of Spatial Dispersion of the Shield Transfer Impedance of a Braided Coaxial Cable (Letters)
- ☐ Propagation Along a Braided Coaxial Cable in a Circular Tunnel
- ☐ Propagation Along a Braided Coaxial Cable Located Close to a Tunnel Wall (Short Papers)

Hill, G.N.

- ☐ Series Interconnection of Six TRAPATT Devices on a Diamond Substrate
- ☐ Symmetry Experiments with Four-Mesa IMPATT Diodes (Letters)

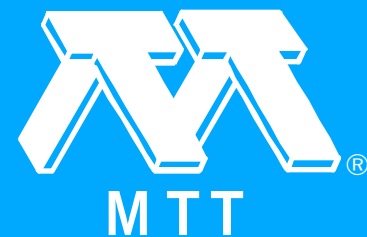
Hill, J.L.

- ☐ Contributors (Sep. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

- ❑ [Transient Analysis of Systems with Exponential Transmission Lines](#)

Hines, M.E.

- ❑ [Contributors \(Jul. 1976 \[T-MTT\]\)](#)
- ❑ [Evaluation of MTT Transactions \(1976\)\(Letters\)](#)
- ❑ [Image Conversion Effects in Diode Mixers](#)
- ❑ [Power Amplification of Microwave FM Communication Signals Using a Phase-Locked Voltage-Tuned Oscillator](#)
- ❑ [Symmetrical 2N-Port Directional Couplers](#)

Hinte, A.F.

- ❑ [Practical Realization of Broadband Microwave Diplexers](#)

Hirachi, Y.

- ❑ [A High Power 50GHz DDR IMPATT Oscillator with Low Side Band Noise](#)
- ❑ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [High-Power 50-GHz Double-Drift-Region IMPATT Oscillators with Improved Bias Circuits for Eliminating Low-Frequency Instabilities](#)

Hirayama, M.

- ❑ [150 GHz Band IMPATT Oscillators, Frequency Converters and Doublers](#)

Hirshfield, J.L.

- ❑ [The Electron Cyclotron Maser--An Historical Survey](#)

Hislop, A.

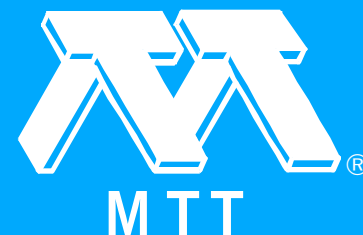
- ❑ [A Broad-Band 40--60-GHz Balanced Mixer \(Letters\)](#)

Ho, C.Y.

- ❑ [Analysis of DC Blocks Using Coupled Lines \(Letters\)](#)

Ho, H.S.

- ❑ [Microwave Irradiation Design Using Dielectric Lenses](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ Microwave Irradiation Design Using Dielectric Lenses (Short Papers)
- ☐ RF Cavity Irradiation Dosimetry (Short Papers)

Hobson, G.S.

- ☐ Characterization of Microwave Oscillator and Amplifier Circuits Using an IMPATT Diode Biased Below Breakdown (Comments and Authors' Reply)

Hodges, D.T.

- ☐ CW Performance of Optically-Pumped Lasers in the Millimeter-Wave Spectral Region

Hoefer, W.J.R.

- ☐ Aperture Coupling Between Microstrip and Resonant Cavities
- ☐ Contributors (May 1977 [T-MTT])
- ☐ Contributors (Oct. 1977 [T-MTT])

Click on title for a paper summary.

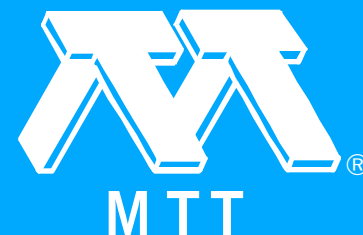


Papers by Author

- ❑ Equivalent Series Inductivity of a Narrow Transverse Slit in Microstrip
- ❑ Evaluation of the Equivalent Circuit Parameters of Microstrip Discontinuities through Perturbation of a Resonant Ring (Short Papers)
- ❑ Measurement of the Equivalent Circuit Parameters of Discontinuities in a Resonant Microstrip Ring

Hoer, C.A.

- ❑ A Microwave Network Analyzer Using Two 6-Port Reflectometers
- ❑ A Network Analyzer Incorporating Two Six-Port Reflectometers
- ❑ Contributors (Dec. 1975 [T-MTT])
- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios (1975 [MWSYM])



Contents

Authors

Click on title for a paper summary.



Papers by Author

- ❑ [Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios \(Dec. 1975 \[T-MTT\]\)](#)

Hoffman, G.R.

- ❑ [Template Methods for Efficient Microwave Filter Design](#)

Hofmann, H.

- ❑ [Calculation of Quasi-Planar Lines for mm-Wave Application](#)

Hoidges, D.T.

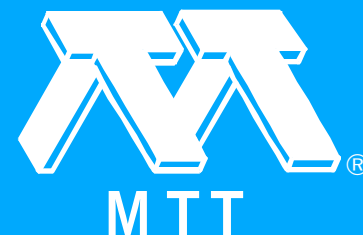
- ❑ [Submillimeter-Wave Detection with Submicron-Size Schottky-Barrier Diodes](#)

Hollinger, J.P.

- ❑ [A Versatile Millimeter-Wave Imaging System](#)
- ❑ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)

Holt, J.A.G.

- ❑ [Increase in X-Ray Sensitivity of Cancer After Exposure to 434 MHz Electromagnetic Radiation](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Honijk, D.D.

- ☐ [Dispersive Fourier Transform Spectrometry with Variable-Thickness Variable-Temperature Liquid Cells](#)

Horimatsu, T.

- ☐ [A 6-GHz Four-Stage GaAs MESFET Power Amplifier \(Short Papers\)](#)

Hornbuckle, D.P.

- ☐ [Broad-Band Medium-Power Amplification in the 2-12.4-GHz Range with GaAs MESFET's](#)
- ☐ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)

Horton, J.B.

- ☐ [Editor's Overview \(Dec. 1976 \[T-MTT\]\)](#)

Horton, M.C.

- ☐ [TEM Bandpass Filters Having Eighth-Wavelength Coupled Stubs](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hoshika, H.

- ☐ [Broad-Band 180° Phase Shift Section in X Band \(Short Papers\)](#)

Hoshino, N.

- ☐ [Resonant Frequency of a TE//sub 01delta/° Dielectric Resonator](#)

Hsieh, C.-C.

- ☐ [A S-Band High Power Feedback Amplifier](#)

Hsu, T.-H.

- ☐ [Process Technology and Modeling of a Low-Noise Silicon Bipolar Transistor with Sub-Micron Emitter Widths](#)

Hu, C.-L.J.

- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [Model for Some Nonthermal Effects of Radio and Microwave Fields on Biological Membranes](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Huang, C.I.

- ☐ [Dynamic Microwave Frequency Division Characteristics of Coplanar Transferred-Electron Devices in a Resistive Circuit \(Letters\)](#)

Huang, H.-F.

- ☐ [Absolute Load Detection with Microwave Gunn Oscillators \(Short Papers\)](#)

Hudson, N.

- ☐ [Phase Noise Measurements in the Frequency Domain](#)

Huetz, A.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

Hughes, B.T.

- ☐ [A Low Noise FET Amplifier in Coplanar Waveguide](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hughes, L.R.

- ☐ [Determination of Complex Dielectric and Magnetic Properties of Materials](#)

Hume, R.M.

- ☐ [An Automated Receiver Test Concept](#)

Husain, A.

- ☐ [Design of Direct Phase Modulators for High Speed Digital Radio Systems Using MIC Techniques](#)

Hussein, A.M.

- ☐ [Central Metal Post in Stripline Circulators \(Short Papers\)](#)
- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)
- ☐ [Performance Characteristics of 4-Port Stripline Circulators \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hutchison, P.T.

- ☐ [A High-Capacity Digital Communication System Using TE/sub 01/ Transmission in Circular Waveguide](#)
- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)

Ibrahim, M.M.

- ☐ [Central Metal Post in Stripline Circulators \(Short Papers\)](#)
- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)
- ☐ [Performance Characteristics of 4-Port Stripline Circulators \(Short Papers\)](#)

Igarashi, M.

- ☐ [Microwave Permeability Tensor of Partially Magnetized Ferrites](#)

Ikeda, M.

- ☐ [Injection Locking of an IMPATT Diode Oscillator by Using a Low-Frequency Signal Parametric Injection Locking](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ikoma, T.

- ☐ [Recent Development or Transferred Electron Logic Devices in Japan](#)

Inada, K.

- ☐ [Circular Arc Polygonal Type TEon Mode Filter](#)

Inoue, T.

- ☐ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)
- ☐ [High-Efficiency Millimeter-Wave Bolometer Mount](#)

Irie, T.

- ☐ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ☐ [Reliability Study of GaAs MESFET's](#)

Ishibashi, T.

- ☐ [150 GHz Band IMPATT Oscillators, Frequency Converters and Doublers](#)

Click on title for a paper summary.



Papers by Author

- ❑ [200-GHz 50-mW CW Oscillation with Silicon SDR IMPATT \(Short Papers\)](#)

Ishihara, H.

- ❑ [Waveguide Components for Millimeter-Wave Communications at 40-90GHz](#)

Ishii, S.

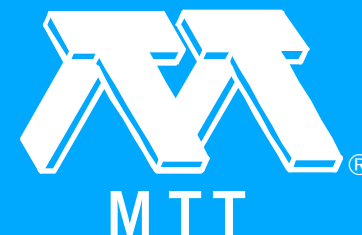
- ❑ [Advanced Loss-Reduction Techniques in Millimeter Waveguide Instruments](#)

Ishii, T.

- ❑ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [High Power GaAs IMPATT Amplifier \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [High Power GaAs IMPATT Amplifiers \(1977 \[MWSYM\]\)](#)

Ishikawa, H.

- ❑ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ [Power GaAs MESFET with a High Drain-Source Breakdown Voltage](#)

Ishikawa, S.

- ☐ [An Ideal Refractive-Index-Distribution and Mode Filter for Band Broadening of Multimode Optical Fiber](#)

Ishikawa, Y.

- ☐ [Microwave Bandpass Filters Containing Dielectric Resonators with Improved Temperature Stability and Spurious Response](#)

Ishino, K.

- ☐ [Microwave Applications of Thin Magnetic Resistive Sheets](#)

Iskander, M.F.

- ☐ [A Time-Domain Technique for Characterizing Leaky Coaxial Cables](#)
- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

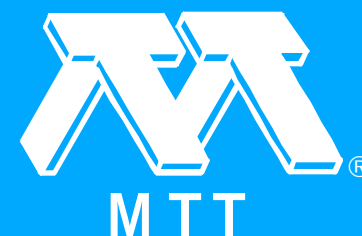
- Iterative Solutions of Waveguide Discontinuity Problems

Ito, Y.

- 4 GHz 8x8 Switch Matrix for SDMA System

Itoh, T.

- A Method for Measuring the Refractive Index Profile of Thin-Film Waveguides (Letters)
- Application of Gratings in a Dielectric Waveguide for Leaky-Wave Antennas and Band-Reject Filters (Short Papers)
- Contributors (Dec. 1977 [T-MTT])
- Contributors (Jan. 1977 [T-MTT])
- Contributors (Nov. 1976 [T-MTT])
- Contributors (Oct. 1975 [T-MTT])
- Double-Layered Slot Line for Millimeter-Wave Integrated Circuits
- Inverted Strip Dielectric Waveguide for Millimeter-Wave Integrated Circuits



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

- ☐ Leaky-Wave Antenna and Band-Reject Filter for Millimeter-Wave Integrated Circuits
- ☐ New Method for Computing the Resonant Frequencies of Dielectric Resonators (Short Papers)
- ☐ New Waveguide Structures for Millimeter-Wave and Optical Integrated Circuits (Oct. 1975 [T-MTT])
- ☐ New Waveguide Structures for Millimeter-Wave Integrated Circuits (1975 [MWSYM])
- ☐ Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides
- ☐ Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides (Short Papers)

Ivanek, F.

- ☐ The System/Circuit Interface in Gunn Diode Applications

Jack, M.A.

- ☐ Real Time Wideband Cepstrum Analysis Based on SAW Devices

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Jacobs, H.

- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ Measurement of Guide Wavelength in Rectangular Dielectric Waveguide
- ☐ Probe Measurements of Guide Wavelength in Rectangular Silicon Dielectric Waveguide

Jager, D.

- ☐ Contributors (Sep. 1976 [T-MTT])
- ☐ Slow-Wave Propagation Along Variable Schottky-Contact Microstrip Line

James, D.S.

- ☐ Aperture Coupling Between Microstrip and Resonant Cavities
- ☐ Contributors (May 1977 [T-MTT])
- ☐ Radiation from Triangular and Circular Resonators in Microstrip

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Jansen, R.

- ☐ [On the Performance of the Least Squares Method for Waveguide Junctions and Discontinuities \(Short Papers\)](#)

Javed, A.

- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [Intermodulation Distortion Analysis of Reflection-Type IMPATT Amplifiers Using Volterra Series Representation](#)

Jeunhomme, L.

- ☐ [Contributors \(Jul. 1977 \[T-MTT\]\)](#)
- ☐ [Numerical Solution of the Coupled-Power Equation in Step-Index Optical Fibers](#)

Johns, P.B.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Jun. 1975 \[T-MTT\]\)](#)
- ☐ [The Design of Coupled Microstrip Lines](#)

Click on title for a paper summary.

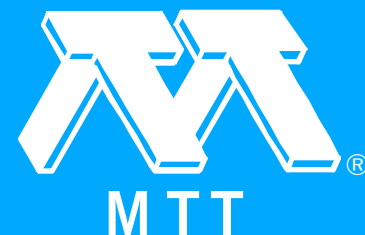


Papers by Author

- ❑ Three-Dimensional Numerical Analysis of Microwave Cavities Using the TLM Method
- ❑ Three-Dimensional Transmission-Line Matrix Computer Analysis of Microstrip Resonators
- ❑ TLMRES--The TLM Computer Program for the Analysis of Microstrip Resonators (Computer Program Descriptions)

Johnson, C.C.

- ❑ Contributors (Feb. 1975 [T-MTT])
- ❑ Contributors (Jan. 1977 [T-MTT])
- ❑ Contributors (Sep. 1975 [T-MTT])
- ❑ Electromagnetic Power Absorption in Anisotropic Tissue Media (Short Papers)
- ❑ Long-Wavelength Analysis of Plane Wave Irradiation of a Prolate Spheroid Model of Man
- ❑ Long-Wavelength Analysis of Plane Wave Irradiation of an Ellipsoidal Model of Man



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author

- ❑ Long-Wavelength Electromagnetic Power Absorption in Ellipsoidal Model of Man and Animals
- ❑ Long-Wavelength Electromagnetic Power Absorption in Prolate Spheroidal Models of Man and Animals

Johnson, F.O.

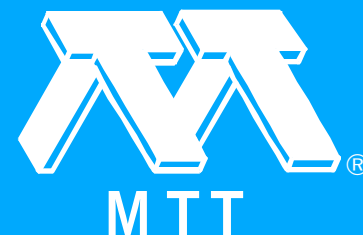
- ❑ The Selection of High-Power Integrated Microwave Components for Military Satellite Communication Terminals

Johnson, J.W.

- ❑ Microwave Scattering from the Ocean Surface
- ❑ Microwave Scattering from the Ocean Surface (Short Papers)

Johnson, K.M.

- ❑ Posttuning Drift of a Transferred-Electron-Device Voltage-Controlled Oscillator (Short Papers)



Contents

Authors

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Joines, W.T.

- ☐ [Microwave-Power Absorption by Rectangular-Shaped Conductive Dielectric Samples in Stripline \(Letters\)](#)

Jolly, S.T.

- ☐ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [Transferred Electron Logic Devices \(TELDs\) for Gigabit Rate Signal Processing \(1976 \[MWSYM\]\)](#)
- ☐ [Transferred Electron Logic Devices for Gigabit-Rate Signal Processing \(Dec. 1976 \[T-MTT\]\)](#)

Jones, G.D.

- ☐ [The Measurement of the Surface Resistivity of Evaporated Gold at 890 GHz](#)

Jones, W.L.

- ☐ [Microwave Scattering from the Ocean Surface](#)

Click on title for a paper summary.



Papers by Author

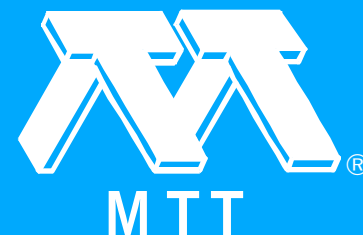
- ❑ [Microwave Scattering from the Ocean Surface \(Short Papers\)](#)

Jordan, L.

- ❑ [Instrument Landing System Performance Prediction](#)

Joshi, J.S.

- ❑ [Analysis of a Waveguide Mounting Configuration for Electronically Tuned Transferred-Electron-Device Oscillators and its Circuit Application](#)
- ❑ [Analysis of Waveguide Post Configurations: Part I--Gap Immittance Matrices](#)
- ❑ [Analysis of Waveguide Post Configurations: Part II--Dual-Gap Cases](#)
- ❑ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)
- ❑ [Contributors \(Sep. 1976 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Jouys, J.C.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

Kadowaki, Y.

- ☐ [Broad-Band 180° Phase Shift Section in X Band \(Short Papers\)](#)

Kahn, D.

- ☐ [Instrument Landing System Performance Prediction](#)

Kainer, S.

- ☐ [Submillimeter-Wave Production by Upshifted Reflection from a Moving Ionization Front](#)

Kaji, E.

- ☐ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [High Power GaAs IMPATT Amplifier \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [High Power GaAs IMPATT Amplifiers \(1977 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kajiwara, Y.

- ☐ [High Power Microwave Static Induction Transistor](#)

Kalafus, R.M.

- ☐ [Microwave Technology in the Microwave Landing System](#)

Kallianteris, S.

- ☐ [Low Loss Linear Phase Filters](#)

Kamal, A.A.

- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part I: Full-Height Ferrite Configuration](#)
- ☐ [General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part II: Two-Disk Ferrite Configuration](#)

Kamal, A.K.

- ☐ [Propagation and Radiation Behaviour of Dielectric Coated E-Plane Sectoral Horn](#)

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Kaminow, I.P.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Optical Waveguide Modulators](#)

Kanda, M.

- ☐ [A Measure for the Stability of Solid State Noise Sources](#)
- ☐ [A Millimeter-Wave Reflection-Beam Isolator \(Short Papers\)](#)
- ☐ [A Statistical Measure for the Stability of Solid State Noise Sources](#)
- ☐ [An Improved Solid State Noise Source](#)
- ☐ [An Improved Solid-State Noise Source \(Short Papers\)](#)
- ☐ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)

Kane, L.

- ☐ [A System for Developing Microwave Induced Hyperthermia in Small Animals \(1977 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kaneko, Y.

- ☐ [A Half-Micron Gate Low Noise GaAs MESFET and Amplifiers](#)

Kanmuri, N.

- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [Design and Performance of a 60-90-GHz Broad-Band Mixer \(Short Papers\)](#)
- ☐ [Highly Reliable High-Power 86-GHz Components and Transmitter--Receiver Modules](#)

Kantor, G.

- ☐ [The Design and Performance of a Circularly Polarized Direct Contact Applicator for Microwave Diathermy](#)

Kaplan, G.S.

- ☐ [Dual-Mode Automobile Collision Avoidance Radar](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Karbowiak, A.E.

- ☐ [Rebuttal of "Dispersion of Nonlinear Elements as a Source of Electromagnetic Shock Structure" \(Letters\)](#)

Karekar, R.N.

- ☐ [Effect of Thin-Film Bi/sub 2/O/sub 3/ Overlay on the Quality Factor of a Microstrip Resonator \(Short Papers\)](#)
- ☐ [MIC Coupler with Improved Directivity Using Thin-Film Bi/sub 2/O/sub 3/ Overlay \(Letters\)](#)

Karp, A.

- ☐ [Further Advances in High-Power Electronically Tuned Resonators](#)
- ☐ [Recent Advances in Binary-Programmed Electronically-Tunable Bandpass Filters of the "Flauto" Type](#)

Kasahara, T.

- ☐ [A New Temperature Stabilized Waveguide Circulator](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kashyap, S.C.

- ☐ [Slant Dielectric Interface Discontinuity in a Waveguide \(Short Papers\)](#)

Kashyap, S.G.

- ☐ [A Waveguide Applicator for Sheet Materials \(Letters\)](#)

Kato, F.

- ☐ [Computer-Aided Synthesis of Planar Circuits](#)
- ☐ [Contributors \(Oct. 1977 \[T-MTT\]\)](#)

Kato, H.

- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [Highly Reliable High-Power 86-GHz Components and Transmitter--Receiver Modules](#)
- ☐ [Oscillation Characteristics of Millimeter-Wave IMPATT Diodes Mounted in Low-Impedance Waveguide Mounts \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Katoh, H.

- ☐ Contributors (Aug. 1975 [T-MTT])
- ☐ New Edge-Guided Mode Isolator Using Ferromagnetic Resonance Absorption (1976 [MWSYM])
- ☐ Temperature-Stabilized 1.7-GHz Broad-Band Lumped-Element Circulator
- ☐ Temperature-Stabilized 1.7-GHz Broad-Band Lumped-Element Circulator (Correction)

Kaurs, A.R.

- ☐ A Tunable Bandpass Ring Filter for Rectangular Dielectric Waveguide Integrated Circuits (Short Papers)
- ☐ A V-Band Communication Transmitter and Receiver System Using Dielectric Waveguide Integrated Circuits
- ☐ Contributors (Nov. 1976 [T-MTT])

Kawamoto, H.

- ☐ Integrated TRAPATT Diode Arrays (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kawamura, M.

- ☐ Influence of Longitudinal Magnetic Field on the CW Submillimeter Waves Output from HCN Gas Laser

Kawamura, N.

- ☐ Contributors (Jun. 1976 [T-MTT])
- ☐ Submicron Single-Gate and Dual-Gate GaAs MESFET's with Improved Low Noise and High Gain Performance

Kawasaki, R.

- ☐ Design and Performance of a 60-90-GHz Broad-Band Mixer (Short Papers)

Kearns, W.J.

- ☐ Design, Fabrication and Testing of SAW Butterworth Filters

Keen, N.J.

- ☐ An S-Band Radiometer Design with High Absolute Precision (Comments)

Click on title for a paper summary.

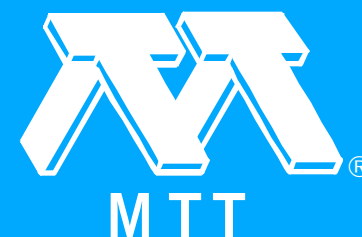


Papers by Author

- ❑ [Avalanche Diode Noise Sources at Short Centimeter and Millimeter Wavelengths \(Short Papers\)](#)

Kelly, A.J.

- ❑ [A Low-Noise Millimeter MIC Mixer \(Short Papers\)](#)
- ❑ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ❑ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)
- ❑ [Electronically-Tunable, Low Noise K/sub a/-Band Paramp-Downconverter Satellite Communications Receiver](#)
- ❑ [Fundamental Limits on Conversion Loss of Double Sideband Resistive Mixers](#)
- ❑ [Low Noise Microwave and Millimeter Wave Integrated Circuit Mixers](#)
- ❑ [Low-Noise Receiver Design Trends Using State-of-the-Art Building Blocks](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kemerley, R.T.

- ❑ [Dynamic Microwave Frequency Division Characteristics of Coplanar Transferred-Electron Devices in a Resistive Circuit \(Letters\)](#)

Kendall, B.R.

- ❑ [Microwave Octave-Band GaAs FET Amplifiers](#)

Kenney, J.E.

- ❑ [A Versatile Millimeter-Wave Imaging System](#)
- ❑ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)

Kenyon, N.D.

- ❑ [Characterization of Microwave Oscillator and Amplifier Circuits Using an IMPATT Diode Biased Below Breakdown \(Comments and Authors' Reply\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Keriakos, M.H.

- ☐ [Computer-Aided Design of Commensurate and Non-Commensurate Networks Using State-Space Techniques](#)

Kerr, A.R.

- ☐ [A New Mixer Design for 140-220 GHz \(Short Papers\)](#)
- ☐ [A Simple Quasi-Optical Mixer for 100-120 GHz](#)
- ☐ [A Technique for Determining the Local Oscillator Waveforms in a Microwave Mixer \(Short Papers\)](#)
- ☐ [Analysis of Noise in Room-Temperature Millimeter-Wave Mixers](#)
- ☐ [Anomalous Noise in Schottky Diode Mixers at Millimeter Wavelengths](#)
- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [Low-Noise Room-Temperature and Cryogenic Mixers for 80-120 GHz](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Keyes, L.

- ☐ [Dual Polarization Antenna System Design and Performance](#)

Khan, P.J.

- ☐ [Contributors \(Feb. 1976 \[T-MTT\]\)](#)
- ☐ [Coupling Between Narrow Transverse Inductive Strips in Waveguide](#)
- ☐ [Equivalent Circuit of a Narrow Axial Strip in Waveguide \(Short Papers\)](#)
- ☐ [Wide-Band Characteristics of a Coaxial-Cavity Solid-State Device Mount \(Short Papers\)](#)

Khoo, G.

- ☐ [Approximation for the Symmetrical Parallel-Strip Transmission Line \(Comments\)](#)
- ☐ [Synthesis of Certain Transmission Lines Employed in Microwave Integrated Circuits \(Letters\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kiehl, R.A.

- ☐ Contributors (Apr. 1976 [T-MTT])
- ☐ Internal Dynamics and Microwave Properties of X-Band Transferred-Electron Devices

Kietzer, J.E.

- ☐ A V-Band Communication Transmitter and Receiver System Using Dielectric Waveguide Integrated Circuits
- ☐ Contributors (Nov. 1976 [T-MTT])

Kihm, R.T.

- ☐ A Broad-Band 40--60-GHz Balanced Mixer (Letters)

Kim, J.H.

- ☐ Selective Heating of Cutaneous Human Tumors at 27.12 MHz (Abstract)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kim, Y.D.

- ☐ [Parametric Frequency Multiplication and Level Control in Broadband Microwave Signal Source](#)

Kimura, K.

- ☐ [Contributors \(Aug. 1975 \[T-MTT\]\)](#)
- ☐ [Design and Performance of X-Band Oscillators with GaAs Schottky-Gate Field-Effect Transistors](#)

King, R.J.

- ☐ [On an Automatic System for Simultaneous Measurement of Amplitude and Phase of Millimeter-Wave Fields \(Short Papers\)](#)

Kirkpatrick, G.R.

- ☐ [A New 34-GHz 3.5-mm Low-Cost Utility Coaxial Connector Featuring Low Leakage, Low Standing-Wave Ratio, and Long Life \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ [New High Performance 3.5 mm, Low Cost, Utility Coaxial Connector with Mode Free Operation Through 34 GHz](#)

Kirton, P.A.

- ☐ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)
- ☐ [Extending the Realizable Bandwidth of Edge-Coupled Stripline Filters](#)

Kitamura, M.

- ☐ [A New Microwave Amplitude Limiter Using GaAs Field Effect Transistor](#)

Kitayama, K.

- ☐ [Contributors \(Jul. 1977 \[T-MTT\]\)](#)
- ☐ [Theory and Applications of Coupled Optical Waveguides Involving Anisotropic or Gyrotropic Materials](#)

Kitazawa, S.

- ☐ [Computer Analysis of Short-Boundary Planar Circuits](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Contributors \(Mar. 1975 \[T-MTT\]\)](#)

Kitazawa, T.

- ❑ [A Coplanar Waveguide with Thick Metal-Coating \(Short Papers\)](#)

Kitazume, S.

- ❑ [Waveguide Components for Millimeter-Wave Communications at 40-90GHz](#)

Klatskin, J.

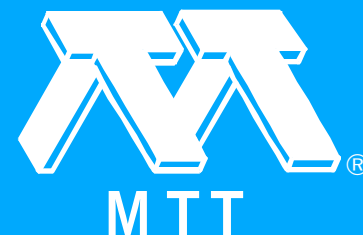
- ❑ [Integrated TRAPATT Diode Arrays \(Short Papers\)](#)

Kmetovicz, R.E.

- ❑ [Parametric Frequency Multiplication and Level Control in Broadband Microwave Signal Source](#)

Kneppo, I.

- ❑ [Basic Parameters of Nonsymmetrical Coplanar Line](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)
[Authors](#)

- ☐ Comparison Method of Measurement Q of Microwave Resonators (Short Papers)
- ☐ Contributors (May 1977 [T-MTT])
- ☐ Measurement of Microwave Loss Tangent by Means of Microwave Resonator Bridge (Short Papers)

Knerr, R.H.

- ☐ A Low Noise MIC GaAsFET Amplifier for 4 GHz Radio
- ☐ An Annotated Bibliography of Microwave Circulators and Isolators: 1968-1975
- ☐ Contributors (Oct. 1975 [T-MTT])
- ☐ Millimeterwave Integrated Circuit Technologies (Panel Discussion)

Knochel, R.

- ☐ Components for Microwave Integrated Circuits with Evanescent Mode Resonators (1977 [MWSYM])

Click on title for a paper summary.



Papers by Author

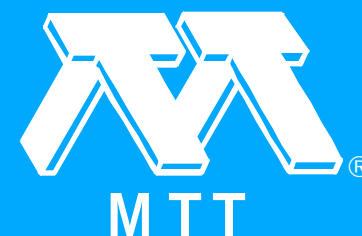
- ❑ Components for Microwave Integrated Circuits with Evanescent-Mode Resonators (Dec. 1977 [T-MTT])
- ❑ Contributors (Dec. 1977 [T-MTT])

Knorr, J.B.

- ❑ Analysis of Coupled Slots and Coplanar Strips on Dielectric Substrate
- ❑ Contributors (Jul. 1975 [T-MTT])
- ❑ Contributors (Sep. 1975 [T-MTT])
- ❑ Spectral-Domain Calculation of Microstrip Characteristic Impedance

Knox, R.M.

- ❑ Contributors (Nov. 1976 [T-MTT])
- ❑ Dielectric Waveguide Microwave Integrated Circuits--An Overview



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kobayashi, M.

- ☐ General Form of Green's Function for Multilayer Microstrip Line with Rectangular Side Walls (Letters)
- ☐ Green's Function in a Region with Inhomogeneous, Isotropic Dielectric Media (Short Papers)
- ☐ Reciprocity Theorem for a Region with Inhomogeneous Bianisotropic Media and Surface Impedance (Short Papers)

Kobayashi, Y.

- ☐ Numerical Analysis of Eigenvalue Solution of Disk Resonator (Short Papers)

Kobe, L.

- ☐ A System for Developing Microwave Induced Hyperthermia in Small Animals (1977 [MWSYM])

Kodera, H.

- ☐ A Half-Micron Gate Low Noise GaAs MESFET and Amplifiers

Click on title for a paper summary.



Papers by Author



Contents
Authors

- ❑ Contributors (Aug. 1975 [T-MTT])
- ❑ Design and Performance of X-Band Oscillators with GaAs Schottky-Gate Field-Effect Transistors

Kogelnik, H.

- ❑ An Introduction to Integrated Optics
- ❑ Contributors (Jan. 1975 [T-MTT])

Kohiyama, K.

- ❑ 20G-400M Digital Radio-Relay System
- ❑ 400-Mb/s QPSK Repeater for 20-GHz Digital Radio-Relay System
- ❑ Contributors (Apr. 1975 [T-MTT])

Kohler, J.

- ❑ A Method for Broad-Band Matching of Microstrip Differential Phase Shifters
- ❑ An Improved Microstrip-to-Microslot Transition (Letters)

Click on title for a paper summary.



Papers by Author

- ❑ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)

Kohzu, H.

- ❑ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ❑ [Reliability Study of GaAs MESFET's](#)

Kollberg, E.L.

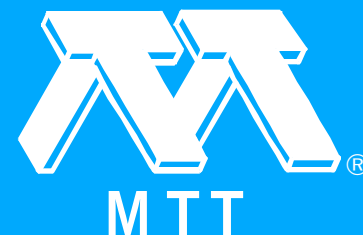
- ❑ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ❑ [Traveling-Wave Masers for Radio Astronomy in the Frequency Range 20-40 GHz](#)

Komaki, S.

- ❑ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ❑ [GaAs MESFET Regenerator for Phase-Shift Keying Signals at the Carrier Frequency](#)

Komarek, E.L.

- ❑ [An Application of the Six-Port Reflectometer to Precision Measurement of Microwave One-Port Parameters](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Performance Characteristics of an Automated Broad-Band Bolometer Unit Calibration System

Komiak, J.

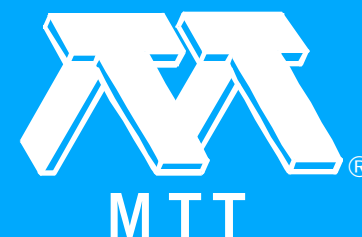
- ❑ Improved Accuracy for Commensurate-Line Synthesis (Short Papers)

Komizo, H.

- ❑ A 6-GHz Four-Stage GaAs MESFET Power Amplifier (Short Papers)
- ❑ A 7 GHz FM Transmitter Utilizing GaAs Power MESFETs
- ❑ A New Temperature Stabilized Waveguide Circulator

Kondoh, H.

- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Theoretical Analysis of a Ridged-Waveguide Mounting Structure



Contents
Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ Theoretical Analysis of a Ridged-Waveguide Mounting Structure (Short Papers)

Kong, J.A.

- ☐ Contributors (Jan. 1977 [T-MTT])
- ☐ Modal Theory of Spatially Periodic Media
- ☐ Theory for Electrooptical Grating Modulators

Konishi, Y.

- ☐ Resonant Frequency of a TE//sub 01delta/° Dielectric Resonator

Konrad, A.

- ☐ Contributors (May 1977 [T-MTT])
- ☐ Contributors (Sep. 1976 [T-MTT])
- ☐ High-Order Triangular Finite Elements for Electromagnetic Waves in Anisotropic Media
- ☐ Planar Network Analysis Programs-- PNAP1 and PNAP2 (Computer Program Descriptions)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ [Vector Variational Formulation of Electromagnetic Fields in Anisotropic Media](#)

Koopman, D.W.

- ☐ [Experimental Development of Simulated Biomaterials for Dosimetry Studies of Hazardous Microwave Radiation \(Short Papers\)](#)

Kopeika, N.S.

- ☐ [Commercial Glow Discharge Tubes As Detectors of X-Band Radiation \(Short Papers\)](#)

Kornhauser, E.T.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Modal Analysis of Coupling Problems in Optical Fibers](#)

Kosta, S.P.

- ☐ [Analysis of Straight Tapered Microstrip Transmission Lines---ASTMIC \(Computer Program Descriptions\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kotsuka, Y.

- ☐ [Microwave Applications of Thin Magnetic Resistive Sheets](#)

Kotzebue, K.L.

- ☐ [A Quasi-Linear Approach to the Design of Microwave Transistor Power Amplifiers](#)
- ☐ [A Quasi-Linear Approach to the Design of Microwave Transistor Power Amplifiers \(Short Papers\)](#)
- ☐ [Computer-Aided Time and Frequency Domain Measurements of TRAPATT Diode Oscillators](#)

Kouno, T.

- ☐ [A 6-GHz Four-Stage GaAs MESFET Power Amplifier \(Short Papers\)](#)

Koyama, J.

- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

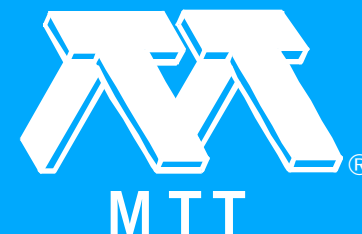
- ❑ Propagation Losses of Guided Modes in an Optical Graded-Index Slab Waveguide with Metal Cladding

Koyama, M.

- ❑ A 4, 6, 20 and 30 GHz Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (1976 [MWSYM])
- ❑ A 4-, 6-, 20-, and 30-GHz-Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (Dec. 1976 [T-MTT])
- ❑ Contributors (Dec. 1976 [T-MTT])
- ❑ Contributors (Jul. 1975 [T-MTT])
- ❑ Randomly Imperfect Waveguides for Millimeter and Submillimeter Wavelengths for Long-Distance Transmission Applications

Koyama, T.

- ❑ A New Type of Isolator Using the Edge-Guided Mode (Letters)



Contents

Authors

Click on title for a paper summary.



Papers by Author

- ❑ Contributors (Aug. 1976 [T-MTT])
- ❑ New Edge Guided Mode Devices
- ❑ Reflection Problems in a Ferrite Stripline

Kraemer, E.

- ❑ Varactor Frequency Doublers and Triplers for the 200 to 300 GHz Range

Kramar, P.O.

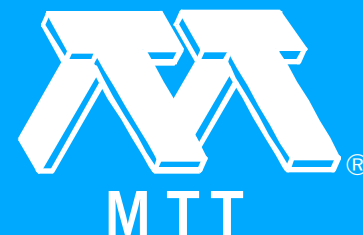
- ❑ Contributors (Jun. 1975 [T-MTT])
- ❑ Effect of 2450-MHz Radiation on the Rabbit Eye

Kramer, B.M.

- ❑ High-Efficiency Frequency Multiplication with GaAs Avalanche Diodes (Short Papers)

Kramer, N.B.

- ❑ Contributors (Nov. 1976 [T-MTT])
- ❑ High Power W-Band Pulsed IMPATT Oscillators



Contents

Authors

Click on title for a paper summary.



Papers by Author

- ❑ [Millimeter-Wave Semiconductor Devices](#)

Krauss, H.L.

- ❑ [A Wide-Band Rotating Coupler for VHF Use \(Short Papers\)](#)

Kritikos, H.N.

- ❑ [Effect of Surface Cooling and Blood Flow on the Electromagnetic Heating of Tissue](#)

Krowne, C.M.

- ❑ [Ku-Band Receiver Front-End Using MIC Technology](#)

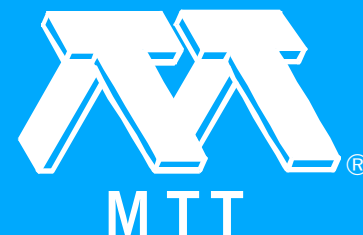
Kruger, J.B.

- ❑ [X-Band Silicon Power Transistor](#)

Ku, W.H.

- ❑ [A Study of Nonlinearities and Intermodulation Characteristics of 3-Port Distributed Circulators](#)

- ❑ [Contributors \(Feb. 1976 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ Contributors (Oct. 1977 [T-MTT])
- ❑ Gain-Bandwidth Limitations and Synthesis of Single-Stub Bandpass Transmission-Line Structures
- ❑ Microwave Octave-Band GaAs FET Amplifiers
- ❑ Transfer Function Approximations for a New Class of Bandpass Distributed Network Structures

Kuchler, K.-D.

- ❑ Analysis of Coupled Slots and Coplanar Strips on Dielectric Substrate
- ❑ Contributors (Jul. 1975 [T-MTT])

Kudo, T.

- ❑ 4 GHz 8x8 Switch Matrix for SDMA System

Kuester, E.F.

- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Contributors (Jan. 1975 [T-MTT])

Click on title for a paper summary.

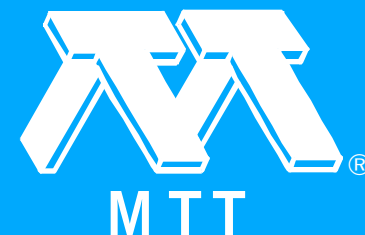


Papers by Author

- ❑ Contributors (Nov. 1975 [T-MTT])
- ❑ Nondegenerate Surface-Wave Mode Coupling Between Dielectric Waveguides
- ❑ Propagating Modes Along a Thin Wire Located Above a Grounded Dielectric Slab (Dec. 1977 [T-MTT])
- ❑ Propagating Modes Along a Thin Wire Located Near a Grounded Dielectric Slab (1977 [MWSYM])
- ❑ Propagation, Attenuation, and Dispersion Characteristics of Inhomogeneous Dielectric Slab Waveguides
- ❑ Single-Mode Pulse Dispersion in Optical Waveguides

Kuhlman, Jr., L.J.

- ❑ Broad-Band Medium-Power Amplification in the 2-12.4-GHz Range with GaAs MESFET's
- ❑ Contributors (Jun. 1976 [T-MTT])



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kulasza, N.

- ☐ Inductance of Nonstraight Conductors Close to a Ground Return Plane (Short Papers)

Kumagai, N.

- ☐ Analysis of Optical Waveguide Consisting of a Square-Law Lenslike Medium and its Analogies to Circular TE/sub 01/ waveguide
- ☐ Behavior of the Magnetostatic Wave in a Periodically Corrugated YIG Slab (Short Papers)
- ☐ Contributors (Jan. 1977 [T-MTT])
- ☐ Contributors (Jul. 1976 [T-MTT])
- ☐ Contributors (Jul. 1977 [T-MTT])
- ☐ Contributors (Mar. 1977 [T-MTT])
- ☐ Contributors (Sep. 1976 [T-MTT])
- ☐ Effect of the Magnetic Perturbation on Magnetostatic Surface-Wave Propagation

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ The Piezoelectric-Magnetoelastic Wave Propagation through the Conducting Plate in a Composite Medium (Short Papers)
- ☐ Theory and Applications of Coupled Optical Waveguides Involving Anisotropic or Gyrotropic Materials
- ☐ Unified Approach to the Derivation of Variational Expression for Electromagnetic Fields

Kumar, A.

- ☐ Waveguide Interferometer for Measuring Electric Susceptibility in Gases (Short Papers)

Kumar, M.

- ☐ Contributors (Jan. 1977 [T-MTT])
- ☐ Coupled Transmission Lines
- ☐ Coupled Transmission Lines (Correction)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kumazawa, H.

- ☐ 30-GHz-Band Periodic Branching Filter Using a Traveling-Wave Resonator for Satellite Applications
- ☐ Contributors (Aug. 1977 [T-MTT])

Kuno, H.J.

- ☐ A Solid-State 94 GHz Doppler Radar
- ☐ Contributors (Jun. 1975 [T-MTT])
- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ Foreword (Nov. 1976 [T-MTT])
- ☐ High Data-Rate Solid-State Millimeter-Wave Transmitter Module
- ☐ High Power W-Band Pulsed IMPATT Oscillators
- ☐ Millimeter-Wave IMPATT Power Amplifier/Combiner
- ☐ Millimeter-Wave Power Amplifier and Combiner
- ☐ Nonlinear and Intermodulation Characteristics of Millimeter-Wave IMPATT Amplifiers

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ [Wideband Electronically Tuned Millimeter-Wave IMPATT Oscillators](#)

Kurita, O.

- ☐ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ☐ [GaAs MESFET Regenerator for Phase-Shift Keying Signals at the Carrier Frequency](#)
- ☐ [Microwave MESFET Mixer](#)

Kurokawa, K.

- ☐ [Laser Fiber Coupling with a Hyperbolic Lens \(Short Papers\)](#)

Kut, W.H.

- ☐ [Exact Synthesis of Interstage Matching Networks for Broadband Microwave GaAs FET Amplifiers](#)

Kuwabara, N.

- ☐ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



Contents

Authors

- ☐ Theoretical Analysis of a Ridged-Waveguide Mounting Structure
- ☐ Theoretical Analysis of a Ridged-Waveguide Mounting Structure (Short Papers)

Kuwahara, H.

- ☐ A Semi-Transparent Mirror-Type Directional Coupler for Optical Fiber Applications (Letters)
- ☐ Power Transfer of a Parallel Optical Fiber Directional Coupler (Letters)

Kwok, S.P.

- ☐ Low Cost X-Band MIC BARITT Doppler Sensor (Abstract)

Kyogoku, M.

- ☐ 4 GHz 8x8 Switch Matrix for SDMA System

Ladbroke, P.H.

- ☐ Contributors (Nov. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Author

- ❑ Microwave Measurement of the Temperature Coefficient of Permittivity for Sapphire and Alumina (Short Papers)
- ❑ Some Effects of Field Perturbation Upon Cavity-Resonance and Dispersion Measurements on MIC Dielectrics

Laker, K.R.

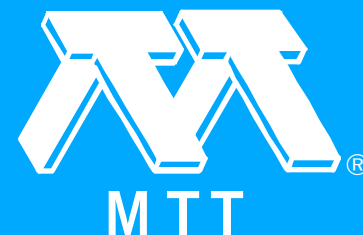
- ❑ Periodic Frequency Response SAW Filters for a Tree Approach to Many-Tone Frequency Synthesis

Lamain, H.

- ❑ Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front

Lampariello, P.

- ❑ The ZEPLS Program for Solving Characteristic Equations of Electromagnetic Structures (Computer Program Descriptions)



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Lampe, M.

- ☐ [Submillimeter-Wave Production by Upshifted Reflection from a Moving Ionization Front](#)

Lance, A.L.

- ☐ [Phase Noise Measurements in the Frequency Domain](#)

Landauer, R.

- ☐ [Dispersion of Nonlinear Elements as a Source of Electromagnetic Shock Structure \(Letters\)](#)

Lane, W.R.

- ☐ [High Power W-Band Pulsed IMPATT Oscillators](#)

Langmann, U.

- ☐ [Clocked Diode Pulse Amplifiers for Microwave Bit Rates](#)

Langmann, U.K.

- ☐ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Diode Circuits for Pulse Regeneration and Multiplexing at Ultrahigh Bit Rates

LaRiviere, H.J.A.

- ❑ The Solution of Electromagnetic Eigenvalue Problems by Least Squares Boundary Residuals (Short Papers)

Larrick, R.B.

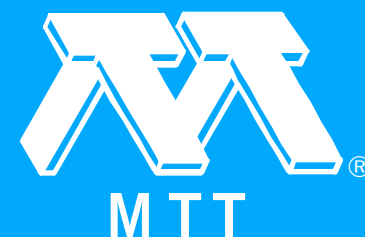
- ❑ Performance of GaAs MESFET's at Low Temperatures (Short Papers)

Lassiter, E.M.

- ❑ NAVSTAR Global Positioning System: A Satellite Based Microwave Navigation System

LaTourrette, P.M.

- ❑ Multi-Octave Compline-Filter Multiplexer



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Laughlin, G.J.

- ☐ [A New Impedance-Matched Wide-Band Balun and Magic Tee](#)
- ☐ [Contributors \(Mar. 1976 \[T-MTT\]\)](#)

Laura, P.A.A.

- ☐ [An Application of Conformal Mapping to the Determination of the Characteristic Impedance of a Class of Coaxial Systems \(Letters\)](#)
- ☐ [Approximate Determination of the Characteristic Impedance of the Coaxial System Consisting of a Regular Polygon Concentric with a Circle \(Letters\)](#)

Lawrence, J.P.

- ☐ [CIA \(Circulator Analysis\) \(Computer Program Descriptions\)](#)

Lazarus, M.J.

- ☐ [Bias Frequency Modulation of GaAs Millimeter-Wave Diode Oscillators \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Le-Ngoc, S.

- ☐ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)
- ☐ [Dispersion Characteristics of the Dipolar Modes in a Waveguide Partially Filled with a Magnetized Ferrite Column](#)
- ☐ [Field and Power Density Distributions of the Dipolar Modes in a Partially Filled Cylindrical Plasma Waveguide \(Short Papers\)](#)

Leber, A.

- ☐ [Passive L-Band Radiometer for Remote Sensing of Earth Resources](#)

Lee, C.C.

- ☐ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)
- ☐ [Traveling Waves in Coupled Yagi Structures](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Lee, D.H.

- ☐ Contributors (Dec. 1977 [T-MTT])
- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ Millimeter IMPATT Sources for the 130-170-GHz Range
- ☐ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (1977 [MWSYM])
- ☐ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (Dec. 1977 [T-MTT])

Lee, DL.

- ☐ Theory for Electrooptical Grating Modulators

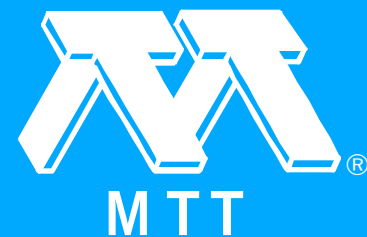
Lee, K.J.

- ☐ A 1.2 Kw L-Band Solid State Power Amplifier for Space-Borne Synthetic Aperture Radars

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Lee, L.-s.

- ☐ [Reduction of Rain-Crosspolarization by its Dependence on Polarization Directions](#)

Lee, R.E.

- ☐ [Contributors \(May 1976 \[T-MTT\]\)](#)
- ☐ [High-Power C-Band Multiple-IMPATT-Diode Amplifiers](#)

Lenox, R.H.

- ☐ [A Microwave Applicator for In Vivo Rapid Inactivation of Enzymes in the Central Nervous System \(Short Papers\)](#)

Leskela, M.

- ☐ [Precision Subnanosecond Delay Measurements of High Speed Digital Integrated Circuits](#)

Levin, B.J.

- ☐ [A V-Band Communication Transmitter and Receiver System Using Dielectric Waveguide Integrated Circuits](#)

Click on title for a paper summary.



Papers by Author

- ❑ Contributors (Nov. 1976 [T-MTT])

Levis, C.A.

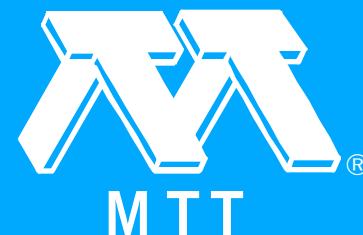
- ❑ Contributors (Apr. 1977 [T-MTT])
- ❑ System Implications of Large Radiometric Array Antennas

Levy, R.

- ❑ Contributors (Apr. 1976 [T-MTT])
- ❑ Filters with Single Transmission Zeros at Real or Imaginary Frequencies
- ❑ Microwave Filters with Single Attenuation Poles at Real or Imaginary Frequencies
- ❑ Reflection Coefficient of Unequal Displaced Rectangular Waveguides (Letters)

Lewin, L.

- ❑ A Method for the Calculation of the Radiation-Pattern and Mode-Conversion Properties of a Solid-State Heterojunction Laser



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ☐ Contributors (Jul. 1975 [T-MTT])
- ☐ Radiation from Curved Dielectric Slabs and Fibers (Correction)

Lewin, P.T.

- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ Traveling-Wave Masers for Radio Astronomy in the Frequency Range 20-40 GHz

Li, R.C.M.

- ☐ The Physics and Equivalent Circuit of the Basic SAW Resonator

Liao, S.Y.

- ☐ Light Transmittance and Microwave Attenuation of a Gold-Film Coating on a Plastic Substrate (Short Papers)

Liebe, H.J.

- ☐ Contributors (Apr. 1975 [T-MTT])

Click on title for a paper summary.



Papers by Author

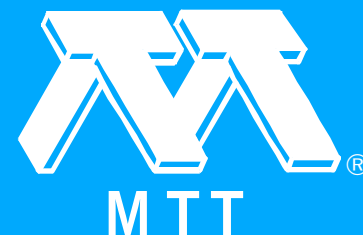
- ❑ [Molecular Transfer Characteristics of Air Between 40 and 140 GHz](#)

Liechti, C.A.

- ❑ [Contributors \(Jun. 1975 \[T-MTT\]\)](#)
- ❑ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ❑ [Foreword \(Jun. 1976 \[T-MTT\]\)](#)
- ❑ [Microwave Field-Effect Transistors--1976](#)
- ❑ [Performance of Dual-Gate GaAs MESFET's as Gain-Controlled Low-Noise Amplifiers and High-Speed Modulators](#)
- ❑ [Performance of GaAs MESFET's at Low Temperatures \(Short Papers\)](#)

Lin, F.-L.C.

- ❑ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ❑ [Modal Characteristics of Crossed Rectangular Waveguides](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Lin, H.-C.

- ☐ Contributors (Apr. 1977 [T-MTT])
- ☐ System Implications of Large Radiometric Array Antennas

Lin, J.C.

- ☐ Contributors (Jul. 1977 [T-MTT])
- ☐ Contributors (Jun. 1975 [T-MTT])
- ☐ Contributors (Nov. 1977 [T-MTT])
- ☐ Contributors (Oct. 1975 [T-MTT])
- ☐ Contributors (Oct. 1977 [T-MTT])
- ☐ Effect of 2450-MHz Radiation on the Rabbit Eye
- ☐ Further Studies on the Microwave Auditory Effect
- ☐ Microwave Effect on Rabbit Superior Cervical Ganglion (Oct. 1975 [T-MTT])
- ☐ Microwave Measurement of Respiration
- ☐ On Microwave-Induced Hearing Sensation

Click on title for a paper summary.



Papers by Author

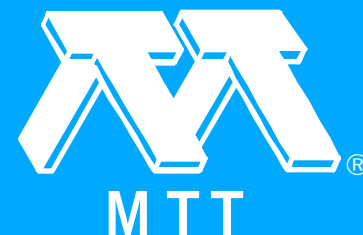
- ❑ Power Deposition in a Spherical Model of Man Exposed to 1-20 MHz Electromagnetic Fields (Correction)
- ❑ Scattering of Microwaves by Dielectric Materials Used in Laboratory Animal Restraints
- ❑ Thermographic and Behavioral Studies of Rats in the Near Field of 918-MHz Radiations

Lindley, W.T.

- ❑ Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes

Linn, D.F.

- ❑ A Dielectric Resonator Oscillator with 5 PPM Long Term Frequency Stability at 4 GHz
- ❑ Microwave Dielectric Resonator Filters Utilizing Ba/sub 2/Ti/sub 9/O/sub 20/ Ceramics



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Lint, B.C.S.

- ☐ Characterization of Magnetic Materials in the Millimeter-Wave Range (60-90 GHz) (Short Papers)
- ☐ Longitudinally Magnetized Ferrite Phase Shifters Using a Reduced Height Rectangular Waveguide

Lint, Z.C.S.

- ☐ Y Junction Circulator Analysis

Linville, J.G.

- ☐ A Complete Computer Program for the Synthesis of Matching Networks for Microwave Amplifiers
- ☐ Contributors (Dec. 1975 [T-MTT])
- ☐ Synthesis of Interstage Networks of Prescribed Gain Versus Frequency Slopes

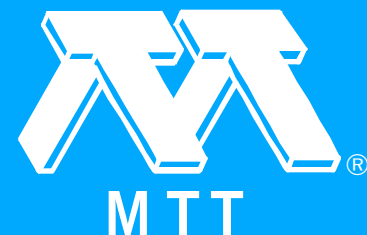
Lippencott, G.

- ☐ Implementation of a Military Digital Microwave System

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Liu, L.M.

- ☐ Electric-Field Distribution Along Finite Length Lossy Dielectric Slabs in Waveguide
- ☐ The Relation of Teratogenesis in Tenebrio Molitor to the Incidence of Low-Level Microwaves (Short Papers)

Liu, P.C.

- ☐ Contributors (Aug. 1975 [T-MTT])
- ☐ Contributors (Sep. 1976 [T-MTT])
- ☐ Integrated Approach to Microwave Design (1975 [MWSYM])
- ☐ Integrated Approach to Microwave Design (Sep. 1976 [T-MTT])
- ☐ Worst Case Network Tolerance Optimization

LoCascio, C.M.

- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ Measurement of Guide Wavelength in Rectangular Dielectric Waveguide

Click on title for a paper summary.



Papers by Author

- ❑ [Probe Measurements of Guide Wavelength in Rectangular Silicon Dielectric Waveguide](#)

Lohr, Jr., R.F.

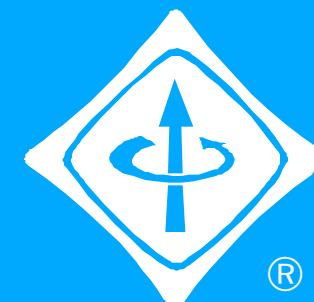
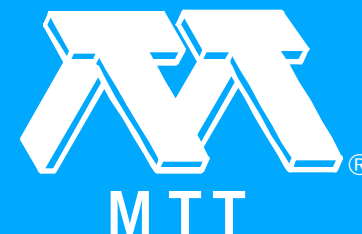
- ❑ [Advanced Solid-State Components for Millimeter Wave Radars](#)

Lomax, R.J.

- ❑ [Bias-Tuning and Modulation Characteristics of Transferred-Electron Oscillators](#)
- ❑ [Contributors \(Sep. 1975 \[T-MTT\]\)](#)

Long, S.I.

- ❑ [Amplifier Applications of Millimeter Wave InP GUNN Devices](#)
- ❑ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ❑ [InP Gunn-Effect Devices for Millimeter-Wave Amplifiers and Oscillators](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Lords, J.L.

- ☐ Contributors (Jan. 1976 [T-MTT])
- ☐ Rate Effects in Isolated Turtle Hearts Induced by Microwave Irradiation

Love, J.D.

- ☐ Contributors (Jan. 1975 [T-MTT])
- ☐ Reflection at a Curved Dielectric Interface -- Electromagnetic Tunneling

Luce, D.A.

- ☐ Time-Domain Measurement of Loss and Dispersion (Short Papers)

Luhmann, Jr., N.C.

- ☐ Development and Applications of Millimeter Wavelength, High Power Optically Pumped Lasers

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Luisoni, L.E.

- ☐ [An Application of Conformal Mapping to the Determination of the Characteristic Impedance of a Class of Coaxial Systems \(Letters\)](#)
- ☐ [Approximate Determination of the Characteristic Impedance of the Coaxial System Consisting of a Regular Polygon Concentric with a Circle \(Letters\)](#)

Luypaert, P.J.

- ☐ [On the Field Energy and Power of Waveguides and Cavities Synthesized with Nonseparable Solutions of Helmholtz Wave Equation](#)
- ☐ [On the Synthesis of Waveguides and Cavities Realized with Nonseparable Solutions of Helmholtz Wave Equation \(Short Papers\)](#)

Maas, S.

- ☐ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ [Multiband Low-Noise Receivers for a Very Large Array](#)

Macksey, H.M.

- ☐ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [Microwave Power GaAs FET Amplifiers](#)
- ☐ [Wide-Band Varactor-Tuned GaAs MESFET Oscillators at X- and Ku-Bands](#)
- ☐ [X-Band MIC GaAs FET Power Amplifier](#)

Madsen, K.

- ☐ [Contributors \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [Efficient Minimax Design of Networks without Using Derivatives](#)
- ☐ [Efficient Minimax Design of Networks without Using Derivatives \(Correction\)](#)

Maeda, M.

- ☐ [Contributors \(Aug. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ❑ [Design and Performance of X-Band Oscillators with GaAs Schottky-Gate Field-Effect Transistors](#)

Maekawa, E.

- ❑ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [New N-Way Hybrid Power Dividers \(1977 \[MWSYM\]\)](#)
- ❑ [New N-Way Hybrid Power Dividers \(Dec. 1977 \[T-MTT\]\)](#)

Magarshack, J.

- ❑ [Microwave Circuit Design by Means of a Simple Simulator With an On-Line Minicomputer](#)

Magin, R.L.

- ❑ [Preliminary In-Vivo Probe Measurements of Electrical Properties of Tumors in Mice](#)

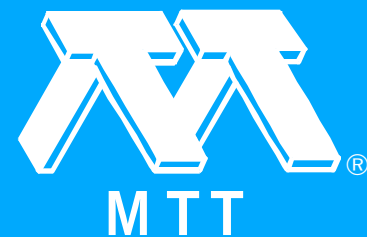
Mahadevan, V.

- ❑ [Analysis of Straight Tapered Microstrip Transmission Lines---ASTMIC \(Computer Program Descriptions\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Mahmoud, S.F.

- ☐ Contributors (Feb. 1975 [T-MTT])
- ☐ Scattering of Surface Waves at a Dielectric Discontinuity on a Planar Waveguide
- ☐ Scattering of Surface Waves by Metallic Obstacles on the Dielectric-Image Line

Maki, D.W.

- ☐ A New "Phased-Type" Image Enhanced Mixer
- ☐ An Integrated-Circuit Balanced Mixer, Image and Sum Enhanced
- ☐ Contributors (Mar. 1975 [T-MTT])

Makimoto, T.

- ☐ Analysis of Guided Waves Along the Cladded Optical Fiber: Parabolic-Index Core and Homogeneous Cladding
- ☐ Contributors (Jan. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Makios, V.

- ☐ [A Microstrip and Stripline Crossover Structure \(Letters\)](#)
- ☐ [An All-Harmonic Coupling-Band Hybrid \(Letters\)](#)

Makiuchi, M.

- ☐ [Influence of Longitudinal Magnetic Field on the CW Submillimeter Waves Output from HCN Gas Laser](#)

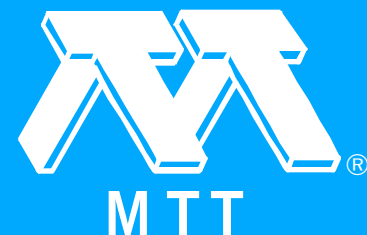
Malherbe, J.A.G.

- ☐ [Contributors \(May 1976 \[T-MTT\]\)](#)
- ☐ [Realization of Elliptic Function Bandstop Filters by Means of a Resonated Prototype](#)
- ☐ [TEM Pseudoelliptic-Function Bandstop Filters Using Noncommensurate Lines](#)
- ☐ [The Locus of Points of Constant VSWR When Renormalized to a Different Characteristic Impedance \(Letters\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Maltese, U.

- ☐ [Asymmetric Coupled Transmission Lines in an Inhomogeneous Medium \(Comments\)](#)

Mammel, W.

- ☐ [Application of a Property of the Airy Function to Fiber Optics \(Short Papers\)](#)

Manheimer, W.M.

- ☐ [Submillimeter-Wave Production by Upshifted Reflection from a Moving Ionization Front](#)

Mansour, N.A.

- ☐ [Single Hybrid Tee Frequency Discriminator \(Letters\)](#)

Manus, E.A.

- ☐ [Depolarization Measurements on the ATS-6 20 GHz Downlink: A Description of the VPI&SU Experiment and Some Initial Results \(1975 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Depolarization Measurements on the ATS-6 20-GHz Downlink: A Description of the VPI & SU Experiment and Some Initial Results (Short Papers)

Marcuse, D.

- ❑ Editorial (Jan. 1975 [T-MTT])

Marki, F.A.

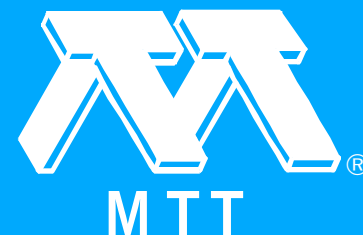
- ❑ Ku-Band Receiver Front-End Using MIC Technology

Marquardt, J.

- ❑ Computer-Aided Tuning of Microwave Circuits

Marshall, R.E.

- ❑ Depolarization Measurements on the ATS-6 20 GHz Downlink: A Description of the VPI&SU Experiment and Some Initial Results (1975 [MWSYM])
- ❑ Depolarization Measurements on the ATS-6 20-GHz Downlink: A Description of the VPI & SU Experiment and Some Initial Results (Short Papers)



Contents

Authors

Click on title for a paper summary.



Papers by Author



Marshall, T.C.

- ☐ [Relativistic Electron-Beam-Generated Coherent Submillimeter Wavelength Cerenkov Radiation](#)

Martin, R.J.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Radiation Fields of a Tapered Film and a Novel Film-to-Fiber Coupler](#)

Masaki, S.

- ☐ [Analysis of the Transient Temperature Distribution in a Stripline with Triple-Layer Dielectric \(Short Papers\)](#)

Masnari, N.A.

- ☐ [Harmonic Tuning Effects of TRAPATT Oscillators](#)
- ☐ [The Operation of S-Band TRAPATT Oscillators with Tuning at Multiple Harmonic Frequencies \(Short Papers\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Masse, C.F.

- ☐ [High-Efficiency Frequency Multiplication with GaAs Avalanche Diodes \(Short Papers\)](#)

Masse, D.

- ☐ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ☐ [Performance of GaAs MESFET Mixers at X Band](#)

Massoudi, H.

- ☐ [Contributors \(Feb. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Sep. 1975 \[T-MTT\]\)](#)
- ☐ [Electromagnetic Power Absorption in Anisotropic Tissue Media \(Short Papers\)](#)
- ☐ [Long-Wavelength Analysis of Plane Wave Irradiation of a Prolate Spheroid Model of Man](#)
- ☐ [Long-Wavelength Analysis of Plane Wave Irradiation of an Ellipsoidal Model of Man](#)

Click on title for a paper summary.



Papers by Author



Contents

Authors

- ☐ Long-Wavelength Electromagnetic Power Absorption in Ellipsoidal Model of Man and Animals
- ☐ Long-Wavelength Electromagnetic Power Absorption in Prolate Spheroidal Models of Man and Animals

Masuda, M.

- ☐ Contributors (Sep. 1977 [T-MTT])
- ☐ Propagation Losses of Guided Modes in an Optical Graded-Index Slab Waveguide with Metal Cladding

Mather, J.R.

- ☐ Insertion Loss of 3-Port Circulator with One Port Terminated in Variable Short Circuit (Short Papers)

Mathews, D.

- ☐ Contributors (Sep. 1977 [T-MTT])
- ☐ Transient Analysis of Systems with Exponential Transmission Lines

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Mathur, P.G.

- ☐ [Waveguide Interferometer for Measuring Electric Susceptibility in Gases \(Short Papers\)](#)

Matsuo, Y.

- ☐ [A Compact 60-GHz Transmitter--Receiver](#)
- ☐ [A Frequency-Independent Large-Signal Equivalent Circuit for a BARITT Diode and Its Application to an Amplifier \(Short Papers\)](#)
- ☐ [Contributors \(Jul. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [Energy Analysis for the Amplification Phenomena of Magnetostatic Surface Waves in a YIG-Semiconductor Coupled System](#)

Mattauch, R.J.

- ☐ [A New Mixer Design for 140-220 GHz \(Short Papers\)](#)
- ☐ [A Simple Quasi-Optical Mixer for 100-120 GHz](#)

Click on title for a paper summary.



Papers by Author



Contents
Authors

- ❑ Contributors (May 1977 [T-MTT])

Matthaei, G.L.

- ❑ Acoustic-Surface-Wave Resonators for Band-Pass Filter Applications
- ❑ Contributors (Jan. 1976 [T-MTT])
- ❑ Synthesis of Acoustic-Surface-Wave-Resonator Filters Using any of Various Coupling Mechanisms
- ❑ Synthesis of Two Classes of Acoustic Surface-Wave Filter Tap Weights

Matthews, E.W.

- ❑ Foreword (1975 [MWSYM])
- ❑ PSK and QPSK Modulators for Gigabit Data Rates
- ❑ Variable Power Dividers in Satellite Systems

Matz, J.E.

- ❑ A Passive Electrodeless Method for Determining the Interior Field of Biological Materials

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ☐ [Contributors \(Aug. 1976 \[T-MTT\]\)](#)

Mause, K.

- ☐ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [Multiplexing and Demultiplexing Techniques with Gunn Devices in the Gigabit-Per-Second Range](#)
- ☐ [Multiplexing- and Demultiplexing-Techniques with Gunn Devices in the Gbit/s Range](#)

May, R.E.

- ☐ [Characteristics and Effects of CW High Power Breakdown in Waveguide](#)

May, W.G.

- ☐ [A Millimeter-Wave Reflection-Beam Isolator \(Short Papers\)](#)

McAulay, Al.D.

- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Variational Finite-Element Solution for Dissipative Waveguides and Transportation Application

McCleer, P.J.

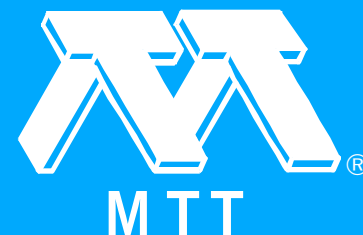
- ❑ K-Band BARITT Doppler Detectors

McColl, M.

- ❑ Contributors (Apr. 1977 [T-MTT])
- ❑ Contributors (Jan. 1977 [T-MTT])
- ❑ Conversion Loss Limitations on Schottky-Barrier Mixers (Short Papers)
- ❑ Submillimeter-Wave Detection with Submicron-Size Schottky-Barrier Diodes
- ❑ The Super-Schottky Diode

McCoy, G.L.

- ❑ Dynamic Microwave Frequency Division Characteristics of Coplanar Transferred-Electron Devices in a Resistive Circuit (Letters)



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

McCulloch, D.

- ☐ [A Bolusing Technique for Batch Microwave Irradiation of Tumors in the Far Field](#)

McDermott, E.C.

- ☐ [Microstrip Varactor-Tuned Millimeter Wave IMPATT Diode Oscillators \(1975 \[MWSYM\]\)](#)

McDermott, Jr., E.C.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Microstrip Varactor-Tuned Millimeter-Wave IMPATT Diode Oscillators \(Dec. 1975 \[T-MTT\]\)](#)

McDonald, B.H.

- ☐ [Variational Solution of Integral Equations \(Correction\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

McDonald, D.G.

- ☐ [Results, Potentials, and Limitations of Josephson-Mixer Receivers at Millimeter and Long Submillimeter Wavelengths](#)

McDonald, N.A.

- ☐ [Measurements of Intercavity Couplings \(Letters\)](#)
- ☐ [Resonant Cavities Used as Frequency Selective Phase Shifters](#)

McGoogan, J.T.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Satellite Altimetry Applications \(1975 \[MWSYM\]\)](#)
- ☐ [Satellite Altimetry Applications \(Dec. 1975 \[T-MTT\]\)](#)

McGovern, P.A.

- ☐ [Fields in Nonuniform Transmission Lines](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

McIntosh, J.

- ☐ [A Solid-State 94 GHz Doppler Radar](#)

McIsaac, P.R.

- ☐ [Bidirectionality in Gyrotropic Waveguides \(Short Papers\)](#)
- ☐ [Contributors \(May 1975 \[T-MTT\]\)](#)
- ☐ [Symmetry-Induced Modal Characteristics of Uniform Waveguides -- I: Summary of Results](#)
- ☐ [Symmetry-Induced Modal Characteristics of Uniform Waveguides -- II: Theory](#)

McLevige, W.V.

- ☐ [Contributors \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [New Waveguide Structures for Millimeter-Wave and Optical Integrated Circuits \(Oct. 1975 \[T-MTT\]\)](#)

McMaster, T.F.

- ☐ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ☐ Millimeter-Wave Downconverter with Subharmonic Pump
- ☐ Millimeter-Wave Receivers with Subharmonic Pump
- ☐ Subharmonically Pumped Millimeter-Wave Mixers Built with Notch-Front and Beam-Lead Diodes

McMillan, R.W.

- ☐ Calculations of Antenna Temperature, Horizontal Path Attenuation, and Zenith Attenuation Due to Water Vapor in the Frequency Band 150-700 GHz

Mecklenbrauker, W.F.G.

- ☐ Contributors (Feb. 1975 [T-MTT])
- ☐ Wide-Band Network Modeling of Interacting Inductive Irises and Steps

Meier, P.J.

- ☐ New Developments with Integrated Fin-Line and Related Printed Millimeter Circuits
- ☐ Planar Multiport Millimeter Integrated Circuits

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Meixner, R.P.

- ☐ [CIA \(Circulator Analysis\) \(Computer Program Descriptions\)](#)

Mellor, D.J.

- ☐ [A Complete Computer Program for the Synthesis of Matching Networks for Microwave Amplifiers](#)
- ☐ [Calculator-Based Synthesis Routine Speeds Microwave Amplifier Design](#)
- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [On the Design of Matched Equalizers of Prescribed Gain Versus Frequency Profiles](#)
- ☐ [Synthesis of Interstage Networks of Prescribed Gain Versus Frequency Slopes](#)

Melngailis, J.

- ☐ [Surface-Acoustic-Wave Device for Doppler Filtering of Radar Burst Waveforms](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Memita, T.

- ☐ Contributors (Jun. 1976 [T-MTT])
- ☐ GaAs MESFET Regenerator for Phase-Shift Keying Signals at the Carrier Frequency

Mendoza, F.G.

- ☐ Phase Noise Measurements in the Frequency Domain

Menzel, W.

- ☐ A Method for Calculating the Frequency-Dependent Properties of Microstrip Discontinuities
- ☐ Contributors (Feb. 1977 [T-MTT])
- ☐ The Microstrip Double-Ring Resonator (Short Papers)

Mercer, P.

- ☐ Contributors (Dec. 1977 [T-MTT])
- ☐ Low Noise and Linear FET Amplifiers for Satellite Communications

Click on title for a paper summary.



Papers by Author

- ❑ [Low-Noise and Linear FET Amplifiers for Satellite Communications](#)

Meyer, J.H.

- ❑ [The Evolution of Automated Microwave Measurements](#)

Meyer, W.

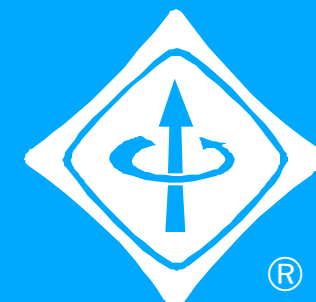
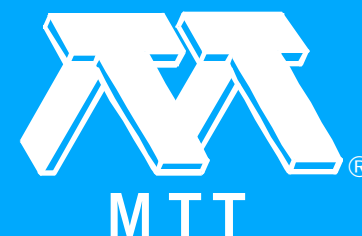
- ❑ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [Dielectric Measurements on Polymeric Materials by Using Superconducting Microwave Resonators](#)
- ❑ [Measurement of Dielectric Properties with Superconducting Resonators: Theory and Practice](#)

Meyerhoff, J.L.

- ❑ [A Microwave Applicator for In Vivo Rapid Inactivation of Enzymes in the Central Nervous System \(Short Papers\)](#)

Midford, T.A.

- ❑ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ High Power Pulsed UHF and L-Band p⁺-n-n⁺ Silicon TRAPATT Diode Oscillators
- ❑ High-Power Pulsed UHF and L Band p⁺-n-n⁺ Silicon TRAPATT Diode Lasers
- ❑ High-Power Pulsed UHF and L Band p⁺-n-n⁺ Silicon TRAPATT Diode Lasers (Correction)

Millea, M.F.

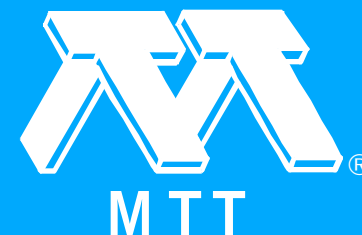
- ❑ Contributors (Apr. 1977 [T-MTT])
- ❑ The Super-Schottky Diode

Miller, C.K.S.

- ❑ Frontiers of Microwave Noise Measurements at NBS

Miller, R.L.

- ❑ Commercial Application of a Surface Wave Television IF Filter



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Miller, S.E.

- ☐ [Review of the Status of Optical Fiber Transmission and Integrated Optics](#)

Milligan, T.A.

- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)
- ☐ [Dimensions of Microstrip Coupled Lines and Interdigital Structures \(Short Papers\)](#)
- ☐ [Transmission-Line Transformation Between Arbitrary Impedances \(Letters\)](#)

Mindock, R.M.

- ☐ [Diode Structures for a Millimeter Wave Phase Shifter](#)

Ming, K.J.

- ☐ [Microwave Integrated Circuit Receivers at Millimetric Wavelengths](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Mirshekar-Syahkal, D.

- ☐ Contributors (Feb. 1977 [T-MTT])
- ☐ Spectral Domain Solution of Arbitrary Coplanar Transmission Line with Multilayer Substrate (Short Papers)

Mitchell, J.L.

- ☐ Microwave Scattering from the Ocean Surface (Short Papers)

Mitchell, P.G.

- ☐ Time-Domain Measurement of Loss and Dispersion (Short Papers)

Mitsui, S.

- ☐ Contributors (Dec. 1977 [T-MTT])
- ☐ Design of GaAs MESFET Oscillator Using Large Signal S-Parameters (1977 [MWSYM])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ Design of GaAs MESFET Oscillator Using Large-Signal S-Parameters (Dec. 1977 [T-MTT])
- ❑ High Power GaAs IMPATT Amplifier (Dec. 1977 [T-MTT])
- ❑ High Power GaAs IMPATT Amplifiers (1977 [MWSYM])

Mitsui, Y.

- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Design of GaAs MESFET Oscillator Using Large Signal S-Parameters (1977 [MWSYM])
- ❑ Design of GaAs MESFET Oscillator Using Large-Signal S-Parameters (Dec. 1977 [T-MTT])

Mitra, R.

- ❑ A Method for Measuring the Refractive Index Profile of Thin-Film Waveguides (Letters)
- ❑ Contributors (Oct. 1975 [T-MTT])
- ❑ New Waveguide Structures for Millimeter-Wave and Optical Integrated Circuits (Oct. 1975 [T-MTT])

Click on title for a paper summary.



Papers by Author

- ❑ [New Waveguide Structures for Millimeter-Wave Integrated Circuits \(1975 \[MWSYM\]\)](#)

Miyakawa, T.

- ❑ [Wideband Tunable and Highly Stabilized Millimeterwave IMPATT Diode Oscillators](#)

Miyauchi, K.

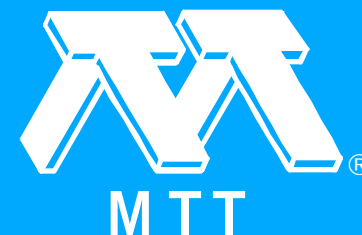
- ❑ [W-40G Guided Millimeter-Wave Transmission System](#)

Miyoshi, T.

- ❑ [Contributors \(Jul. 1977 \[T-MTT\]\)](#)
- ❑ [Ferrite Planar Circuit in Microwave IC](#)
- ❑ [Ferrite Planar Circuits in Microwave Integrated Circuits](#)

Mizuno, K.

- ❑ [Design of Printed Resonant Antennas for Monolithic-Diode Detectors](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Mizushina, S.

- ☐ Contributors (Dec. 1977 [T-MTT])
- ☐ The Ridged-Waveguide-Cavity Gunn Oscillator for Wide-Band Tuning (Short Papers)
- ☐ Theoretical Analysis of a Ridged-Waveguide Mounting Structure
- ☐ Theoretical Analysis of a Ridged-Waveguide Mounting Structure (Short Papers)

Mohr, H.J.

- ☐ The Selection of High-Power Integrated Microwave Components for Military Satellite Communication Terminals

Mok, C.K.

- ☐ All GFEC Dual Mode Quasi Elliptic Multiplexers for Satellite Transponders

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Mokari-Bolhassan, M.E.

- ☐ Contributors (Oct. 1977 [T-MTT])
- ☐ Gain-Bandwidth Limitations and Synthesis of Single-Stub Bandpass Transmission-Line Structures
- ☐ Microwave Octave-Band GaAs FET Amplifiers
- ☐ Transfer Function Approximations for a New Class of Bandpass Distributed Network Structures

Moll, N.J.

- ☐ Contributors (Nov. 1977 [T-MTT])
- ☐ Coupling of Circuit Structures to Magnetostatic Modes of Ferromagnetic Resonators

Moore, B.D.

- ☐ A Millimeter-Wave Directional Filter Cavity
- ☐ Contributors (Nov. 1976 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Moore, J.M.

- ☐ [A TV Satellite Broadcast System for the Public Broadcasting Service](#)

Moose, L.F.

- ☐ [Millimeterwave Integrated Circuit Technologies \(Panel Discussion\)](#)

Morgan, L.A.

- ☐ [Determination of Complex Dielectric and Magnetic Properties of Materials](#)

Mori, T.

- ☐ [Application of MIC Formulas to a Class of Integrated-Optics Modulator Analyses: A Simple Transformation \(Short Papers\)](#)
- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Morin, S.

- ☐ [Instrument Landing System Performance Prediction](#)

Morishita, K.

- ☐ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)
- ☐ [Unified Approach to the Derivation of Variational Expression for Electromagnetic Fields](#)

Morita, K.

- ☐ [400-Mb/s QPSK Repeater for 20-GHz Digital Radio-Relay System](#)
- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ☐ [Microwave MESFET Mixer](#)

Moroson, H.

- ☐ [Hyperthermia: Healing and Hazard in Tumor Bearing Rats](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Morris, G.E.

- ☐ [RF Burnout of Mixer Diodes as Induced Under Controlled Laboratory Conditions and Correlation to Simulated System Performance](#)

Mosko, J.A.

- ☐ [Design Equations for an Interdigitated Directional Coupler \(Comments\)](#)

Mross, M.R.

- ☐ [Relativistic Electron-Beam-Generated Coherent Submillimeter Wavelength Cerenkov Radiation](#)

Mueller, R.S.

- ☐ [On the Latching of Ferrite Microwave Devices \(Short Papers\)](#)

Muller, G.

- ☐ [Computer-Aided Tuning of Microwave Circuits](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Murphy, B.T.

- ☐ [Technology Forecasting and Assessment \(1975 \[MWSYM\]\)](#)

Murphy, R.A.

- ☐ [Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes](#)

Murray, R.W.

- ☐ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)
- ☐ [Waveguide Subsidiary Resonance Ferrite Limiters](#)

Myers, P.C.

- ☐ [Microwave Thermography as a Diagnostic Tool for the Detection of Cancer \(Abstract\)](#)

Mykietyn, E.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Microstrip Varactor-Tuned Millimeter Wave IMPATT Diode Oscillators \(1975 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ❑ [Microstrip Varactor-Tuned Millimeter-Wave IMPATT Diode Oscillators \(Dec. 1975 \[T-MTT\]\)](#)

Nadan, J.S.

- ❑ [Surface Electromagnetic Modes of a Ferrite Slab \(Correction\)](#)

Naditch, G.H.

- ❑ [A Scattering Variable Approach to the Volterra Analysis of Nonlinear Systems](#)
- ❑ [Contributors \(Jul. 1976 \[T-MTT\]\)](#)

Nagai, N.

- ❑ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [New N-Way Hybrid Power Dividers \(1977 \[MWSYM\]\)](#)
- ❑ [New N-Way Hybrid Power Dividers \(Dec. 1977 \[T-MTT\]\)](#)

Nagao, T.

- ❑ [Broad-Band Operation of Stripline Y Circulators](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Contributors (Mar. 1977 [T-MTT])
- ❑ Diplexer and Broadbanding Operations of Stripline Y-Junction Circulators
- ❑ Double Circulation Frequency Operation of Stripline Y-Junction Circulators
- ❑ Possibility of Double Circulation Frequency Operation of Stripline Y-Junction Circulator

Nagasako, I.

- ❑ Contributors (Jun. 1976 [T-MTT])
- ❑ Reliability Study of GaAs MESFET's

Nahas, J.J.

- ❑ Contributors (Dec. 1975 [T-MTT])
- ❑ Modeling and Computer Simulation of a Microwave-to-DC Energy Conversion Element (1975 [MWSYM])

Click on title for a paper summary.



Papers by Author

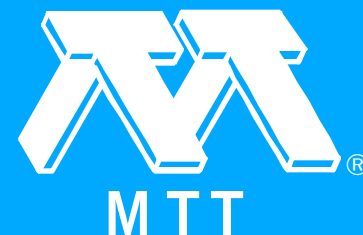
- ❑ Modeling and Computer Simulation of a Microwave-to-DC Energy Conversion Element (Dec. 1975 [T-MTT])

Nair, R.A.

- ❑ Propagation and Radiation Behaviour of Dielectric Coated E-Plane Sectoral Horn

Naito, Y.

- ❑ A New Type of Isolator Using the Edge-Guided Mode (Letters)
- ❑ Canonical Representation and Figure of Merit of Circulator
- ❑ Contributors (Aug. 1976 [T-MTT])
- ❑ Field Distribution of a New Type of E.G. Mode Isolator
- ❑ Microwave Permeability Tensor of Partially Magnetized Ferrites
- ❑ New Edge Guided Mode Devices
- ❑ Reflection Problems in a Ferrite Stripline



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Nakagami, T.

- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ High-Power 50-GHz Double-Drift-Region IMPATT Oscillators with Improved Bias Circuits for Eliminating Low-Frequency Instabilities
- ☐ Low-Loss Bandpass Filters at 80 GHz Using Cylindrical TE/sub 111/ -Mode Cavities
- ☐ Wideband Tunable and Highly Stabilized Millimeterwave IMPATT Diode Oscillators

Nakaji, E.M.

- ☐ Contributors (Dec. 1977 [T-MTT])
- ☐ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (1977 [MWSYM])
- ☐ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (Dec. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Nakajima, N.

- ☐ 80-GHz-Band Low-Loss Ring-Type Channel Diplexer Using a Semicircular Electric Mode
- ☐ Contributors (Nov. 1976 [T-MTT])

Nakamura, Y.

- ☐ 20G-400M Digital Radio-Relay System

Nakatani, M.

- ☐ Contributors (Dec. 1977 [T-MTT])
- ☐ Design of GaAs MESFET Oscillator Using Large Signal S-Parameters (1977 [MWSYM])
- ☐ Design of GaAs MESFET Oscillator Using Large-Signal S-Parameters (Dec. 1977 [T-MTT])

Nakayama, Y.

- ☐ Contributors (Jun. 1976 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ [Power GaAs MESFET with a High Drain-Source Breakdown Voltage](#)

Nalbandoglu, A.H.

- ❑ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)
- ❑ [Modeling Rectangular Waveguide Junctions by the Eigenfunction Method](#)

Nanbu, S.

- ❑ [A Stabilized MIC Oscillator Using a Germanium Avalanche Diode \(Short Papers\)](#)

Nanda, V.P.

- ❑ [A New Form of Ferrite Device for Millimeter-Wave Integrated Circuits \(Short Papers\)](#)

Napier, P.J.

- ❑ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ❑ [Multiband Low-Noise Receivers for a Very Large Array](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Nation, J.A.

- ☐ [Microwave Generation Using Sheet Relativistic Electron Beams](#)

Navarro, M.S.

- ☐ [Propagation in a Rectangular Waveguide Periodically Loaded with Resonant Irises \(1976 \[MWSYM\]\)](#)

Nayfeh, A.H.

- ☐ [Circular Waveguide with Sinusoidally Perturbed Walls](#)
- ☐ [Contributors \(Sep. 1975 \[T-MTT\]\)](#)

Neelakantaswamy, P.S.

- ☐ [A Gaussian-Beam Launcher for Microwave Exposure Studies \(Short Papers\)](#)
- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)

Neidert, R.E.

- ☐ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ [Wide-Band Gallium Arsenide Power MESFET Amplifiers](#)

Nemoto, S.

- ❑ [Analysis of Guided Waves Along the Cladded Optical Fiber: Parabolic-Index Core and Homogeneous Cladding](#)
- ❑ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)
- ❑ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)
- ❑ [Dispersion Characteristics of the Dipolar Modes in a Waveguide Partially Filled with a Magnetized Ferrite Column](#)
- ❑ [The Relations Between Scalar Modes in a Lenslike Medium and Vector Modes in a Self-Focusing Optical Fiber \(Short Papers\)](#)

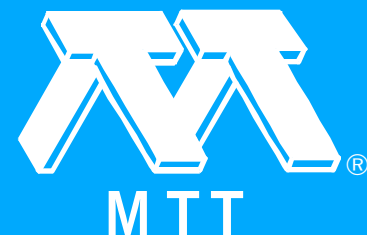
Nemoto, T.

- ❑ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)
- ❑ [High-Efficiency Millimeter-Wave Bolometer Mount](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ness, J.B.

- ☐ Hall Field and Magnetoresistance Effects in Rectangular Waveguide Completely Filled with Semiconductor (Short Papers)
- ☐ Microwave Propagation in Rectangular Waveguide Containing a Semiconductor Subject to a Transverse Magnetic Field (Short Papers)

Neuf, D.

- ☐ MIC Modulator with Electronically Variable Carrier Cancellation Circuit

Neumann, E.-G.

- ☐ Contributors (Jan. 1975 [T-MTT])
- ☐ Radiation from Bends in Dielectric Rod Transmission Lines

Newman, B.A.

- ☐ Analysis and Design of a Low-Noise X-Band MIC Mixer 1-GHz IF Amplifier

Click on title for a paper summary.



Papers by Author

- ❑ Contributors (Apr. 1975 [T-MTT])
- ❑ Contributors (Aug. 1975 [T-MTT])
- ❑ Harmonic Mixing with an Antiparallel Diode Pair (Aug. 1975 [T-MTT])

Ng, E.

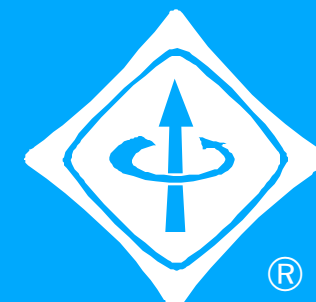
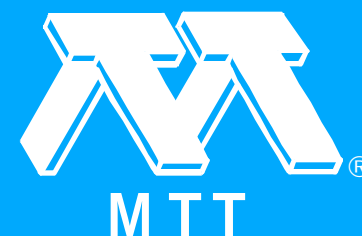
- ❑ Ultra Low Noise, Ku-Band Parametric Amplifier Assembly

Nguyen-Ba, H.

- ❑ BARITT Devices for Self-Mixed Doppler Radar Applications
- ❑ Contributors (Dec. 1976 [T-MTT])
- ❑ Design, Fabrication, and Evaluation of BARITT Devices for Doppler System Applications

Niehenke, E.C.

- ❑ An Environmentalized Low-Noise Parametric Amplifier (1977 [MWSYM])
- ❑ An Environmentalized Low-Noise Parametric Amplifier (Dec. 1977 [T-MTT])



Contents

Authors

Click on title for a paper summary.



Papers by Author

- ❑ Contributors (Dec. 1977 [T-MTT])

Nielsen, O.

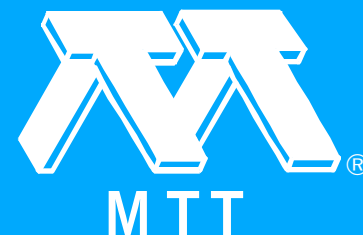
- ❑ An Experimental Evaluation of X-Band GaAs FET Mixers Using Single and Dual-Gate Devices
- ❑ Contributors (Oct. 1975 [T-MTT])
- ❑ Efficient Minimax Design of Networks without Using Derivatives
- ❑ Efficient Minimax Design of Networks without Using Derivatives (Correction)

Nigrin, J.

- ❑ Single Hybrid Tee Frequency Discriminator (Letters)

Nihei, F.

- ❑ Measurement of Surface Resistance in Oversized Circular Waveguide at Millimeter Wavelengths (Short Papers)



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Nishikawa, T.

- ☐ [Microwave Bandpass Filters Containing Dielectric Resonators with Improved Temperature Stability and Spurious Response](#)

Nishimura, M.

- ☐ [High-Quality Image Reconstruction from Double Microwave Holograms \(Short Papers\)](#)

Nishitani, K.

- ☐ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [High Power GaAs IMPATT Amplifier \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [High Power GaAs IMPATT Amplifiers \(1977 \[MWSYM\]\)](#)

Noguchi, M.

- ☐ [4-W IMPATT Amplifiers for 6 - 8 GHz 1800CH FM Radio Systems](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Noguchi, T.

- ☐ Contributors (Feb. 1977 [T-MTT])
- ☐ New Edge-Guided Mode Isolator Using Ferromagnetic Resonance Absorption (1976 [MWSYM])
- ☐ New Edge-Guided Mode Isolator Using Ferromagnetic Resonance Absorption (Feb. 1977 [T-MTT])

Noonan, J.P.

- ☐ Design, Fabrication and Testing of SAW Butterworth Filters

Nordgard, J.D.

- ☐ Contributors (Feb. 1976 [T-MTT])
- ☐ Contributors (Feb. 1977 [T-MTT])
- ☐ The Capacitances and Surface Charge Distributions of a Shielded Unbalanced Pair (Short Papers)
- ☐ The Capacitances and Surface-Charge Distributions of a Shielded Balanced Pair

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Novak, S.

- ☐ [Bias Frequency Modulation of GaAs Millimeter-Wave Diode Oscillators \(Short Papers\)](#)

Novick, G.

- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [Measurement of Guide Wavelength in Rectangular Dielectric Waveguide](#)
- ☐ [Probe Measurements of Guide Wavelength in Rectangular Silicon Dielectric Waveguide](#)

Ntake, P.L.

- ☐ [Contributors \(Jun. 1975 \[T-MTT\]\)](#)
- ☐ [Frequency Multiplication by a P-I-N Diode when Driven into Avalanche Breakdown](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Nudd, G.R.

- ❑ [Real-Time Fourier Analysis of Spread Spectrum Signals Using Surface-Wave-Implemented Chirp-Z Transformation \(Short Papers\)](#)

Nussbaum, S.

- ❑ [Broadbanding an Electronically Switched Two-Channel Ka-Band Parametric Amplifier](#)
- ❑ [Varactor Frequency Doublers and Triplers for the 200 to 300 GHz Range](#)

O'Shaughnessy, B.P.

- ❑ [Contributors \(Jan. 1976 \[T-MTT\]\)](#)
- ❑ [Synthesis of Two Classes of Acoustic Surface-Wave Filter Tap Weights](#)

Oakes, J.G.

- ❑ [A Power Silicon Microwave MOS Transistor](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ Contributors (Jun. 1976 [T-MTT])

Obah, C.O.G.

- ☐ Contributors (Dec. 1975 [T-MTT])
- ☐ High Power Pulsed UHF and L-Band p/sup +/-n-n/sup +/- Silicon TRAPATT Diode Oscillators
- ☐ High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers
- ☐ High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers (Correction)

Ogasawara, N.

- ☐ Contributors (Nov. 1975 [T-MTT])

Ogawa, M.

- ☐ Contributors (Jun. 1976 [T-MTT])
- ☐ Submicron Single-Gate and Dual-Gate GaAs MESFET's with Improved Low Noise and High Gain Performance

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ogusu, K.

- ☐ Contributors (Nov. 1977 [T-MTT])
- ☐ Numerical Analysis of the Rectangular Dielectric Waveguide and its Modifications

Ohata, K.

- ☐ Contributors (Jun. 1976 [T-MTT])
- ☐ Submicron Single-Gate and Dual-Gate GaAs MESFET's with Improved Low Noise and High Gain Performance

Ohi, K.

- ☐ Advanced Loss-Reduction Techniques in Millimeter Waveguide Instruments

Ohmori, M.

- ☐ 150 GHz Band IMPATT Oscillators, Frequency Converters and Doublers

Click on title for a paper summary.



Papers by Author

- ❑ [200-GHz 50-mW CW Oscillation with Silicon SDR IMPATT \(Short Papers\)](#)

Ohnishi, K.

- ❑ [A Nonlinear Analysis of Schottky-Barrier Diode Upconverters](#)
- ❑ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)

Ohshita, M.

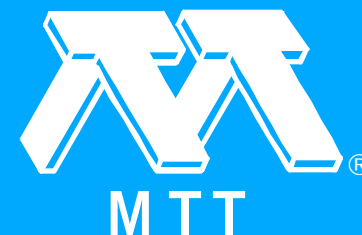
- ❑ [A Variable Directional Coupler Using InSb Thin Films \(Short Papers\)](#)

Ohsuka, T.

- ❑ [The Ridged-Waveguide-Cavity Gunn Oscillator for Wide-Band Tuning \(Short Papers\)](#)

Ohtomo, I.

- ❑ [30-GHz-Band Periodic Branching Filter Using a Traveling-Wave Resonator for Satellite Applications](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.

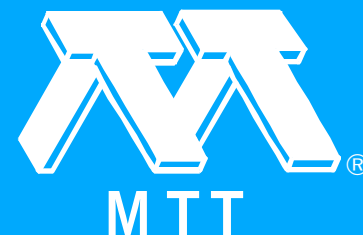


Papers by Author

- ❑ 80-GHz-Band Low-Loss Ring-Type Channel Diplexer Using a Semicircular Electric Mode
- ❑ A 4, 6, 20 and 30 GHz Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (1976 [MWSYM])
- ❑ A 4-, 6-, 20-, and 30-GHz-Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (Dec. 1976 [T-MTT])
- ❑ Contributors (Aug. 1977 [T-MTT])
- ❑ Contributors (Dec. 1976 [T-MTT])
- ❑ Contributors (Nov. 1976 [T-MTT])

Okamoto, H.

- ❑ Injection Locking of an IMPATT Diode Oscillator by Using a Low-Frequency Signal Parametric Injection Locking



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Okamoto, K.

- ☐ [Analysis of Wave Propagation in Optical Fibers Having Core with alpha-Power Refractive-Index Distribution and Uniform Cladding](#)
- ☐ [Computer-Aided Synthesis of the Optimum Refractive-Index Profile for a Multimode Fiber](#)
- ☐ [Contributors \(Jul. 1976 \[T-MTT\]\)](#)
- ☐ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)

Okamura, S.

- ☐ [UHF-Band Lumped-Element Circulator for Medium-Power Applications](#)

Okata, T.

- ☐ [UHF-Band Lumped-Element Circulator for Medium-Power Applications](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Okazaki, K.

- ❑ [A Frequency-Independent Large-Signal Equivalent Circuit for a BARITT Diode and Its Application to an Amplifier \(Short Papers\)](#)

Okean, H.C.

- ❑ [A Low-Noise Millimeter MIC Mixer \(Short Papers\)](#)
- ❑ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ❑ [Electronically-Tunable, Low Noise K/sub a/-Band Paramp-Downconverter Satellite Communications Receiver](#)
- ❑ [Low Noise Microwave and Millimeter Wave Integrated Circuit Mixers](#)
- ❑ [Low-Noise Receiver Design Trends Using State-of-the-Art Building Blocks](#)
- ❑ [Ultra Low Noise, Ku-Band Parametric Amplifier Assembly](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Okoshi, T.

- ☐ Analysis of Wave Propagation in Optical Fibers Having Core with alpha-Power Refractive-Index Distribution and Uniform Cladding
- ☐ Computer Analysis of Short-Boundary Planar Circuits
- ☐ Computer-Aided Synthesis of Planar Circuits
- ☐ Computer-Aided Synthesis of the Optimum Refractive-Index Profile for a Multimode Fiber
- ☐ Contributors (Jul. 1976 [T-MTT])
- ☐ Contributors (Mar. 1975 [T-MTT])
- ☐ Contributors (Mar. 1977 [T-MTT])
- ☐ Contributors (Oct. 1977 [T-MTT])
- ☐ The Segmentation Method--An Approach to the Analysis of Microwave Planar Circuits (Short Papers)

Okwit, S.

- ☐ Technology Forecasting and Assessment (1975 [MWSYM])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Oliner, A.A.

- ☐ Acoustic Surface Waveguides and Comparisons with Optical Waveguides
- ☐ Acoustic Surface Waveguides, with Similarities in Optics
- ☐ Contributors (Dec. 1976 [T-MTT])

Oliva, S.A.

- ☐ A Multiple-Animal Array for Equal Power Density Microwave Irradiation (Short Papers)
- ☐ Contributors (May 1977 [T-MTT])

Olsen, R.G.

- ☐ A Microwave Irradiation Chamber for Scientific Studies on Agricultural Products (Short Papers)
- ☐ Contributors (May 1977 [T-MTT])

Omori, M.

- ☐ Contributors (Nov. 1976 [T-MTT])

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ☐ InP Gunn-Effect Devices for Millimeter-Wave Amplifiers and Oscillators

Ondria, J.

- ☐ A New Look at Noise in Transferred Electron Oscillators (1977 [MWSYM])
- ☐ A New Look at Noise in Transferred Electron Oscillators (Dec. 1977 [T-MTT])
- ☐ Contributors (Dec. 1977 [T-MTT])

Ono, K.

- ☐ Contributors (Dec. 1977 [T-MTT])
- ☐ New N-Way Hybrid Power Dividers (1977 [MWSYM])
- ☐ New N-Way Hybrid Power Dividers (Dec. 1977 [T-MTT])

Ono, S.

- ☐ Design of Printed Resonant Antennas for Monolithic-Diode Detectors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Osepchuk, J.M.

- ☐ [Microwave Engineering Problems in the Microwave Oven](#)

Otoshi, T.Y.

- ☐ [Effect of Discontinuities on the Group Delay of a Microwave Transmission Line \(Short Papers\)](#)

Ott, E.

- ☐ [Submillimeter-Wave Production by Upshifted Reflection from a Moving Ionization Front](#)

Otto, O.W.

- ☐ [Real-Time Fourier Analysis of Spread Spectrum Signals Using Surface-Wave-Implemented Chirp-Z Transformation \(Short Papers\)](#)

Ou, W.P.

- ☐ [Design Equations for an Interdigitated Directional Coupler \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Owen, B.

- ☐ [Mechanically Tuneable, Cavity-Stabilized, Millimeter-Wave IMPATT Oscillators](#)

Owens, J.M.

- ☐ [Microwave Devices Based on Magnetostatic Wave Reflecting Arrays](#)

Owens, R.P.

- ☐ [2-18-GHz Dispersion Measurements on 10-100-Omega Microstrip Lines on Sapphire](#)
- ☐ [Contributors \(Aug. 1976 \[T-MTT\]\)](#)
- ☐ [Quasi-Static Characteristics of Microstrip on an Anisotropic Sapphire Substrate](#)

Oxley, T.H.

- ☐ [Microwave Integrated Circuit Receivers at Millimetric Wavelengths](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Paczkowski, J.P.

- ☐ Contributors (Dec. 1976 [T-MTT])
- ☐ Transferred Electron Logic Devices (TELDs) for Gigabit Rate Signal Processing (1976 [MWSYM])
- ☐ Transferred Electron Logic Devices for Gigabit-Rate Signal Processing (Dec. 1976 [T-MTT])

Paik, S.F.

- ☐ C-Band Solid State TWT Replacement

Painchaud, G.R.

- ☐ Aperture Coupling Between Microstrip and Resonant Cavities
- ☐ Contributors (May 1977 [T-MTT])

Pande, M.K.

- ☐ Effect of Thin-Film Bi/sub 2/O/sub 3/ Overlay on the Quality Factor of a Microstrip Resonator (Short Papers)

Click on title for a paper summary.



Papers by Author

- ❑ [MIC Coupler with Improved Directivity Using Thin-Film Bi/sub 2/O/sub 3/ Overlay \(Letters\)](#)

Pang, K.K.

- ❑ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)
- ❑ [Extending the Realizable Bandwidth of Edge-Coupled Stripline Filters](#)

Panish, M.B.

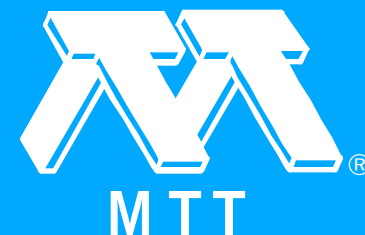
- ❑ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ❑ [Heterostructure Injection Lasers](#)

Papiernik, A.

- ❑ [Theoretical Analysis of Open Ring Line](#)

Parisot, M.

- ❑ [Microwave Circuit Design by Means of a Simple Simulator With an On-Line Minicomputer](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Parker, C.D.

- ☐ [Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes](#)

Parker, D.

- ☐ [An Experimental Evaluation of X-Band GaAs FET Mixers Using Single and Dual-Gate Devices](#)
- ☐ [Comments from the Editor \(Mar. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(May 1976 \[T-MTT\]\)](#)
- ☐ [Design and Performance of a Broadband MIC Low Noise K-Band Balanced Mixer, Polar Discriminator and Related Components](#)
- ☐ [High-Power C-Band Multiple-IMPATT-Diode Amplifiers](#)
- ☐ [New Editorial Policy \(Announcement\) \(May 1977 \[T-MTT\]\)](#)

Parriaux, O.

- ☐ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Propagation in Circular Waveguide Loaded with an Azimuthally Magnetized Ferrite Tube (Short Papers)

Partain, L.D.

- ❑ Absolute Load Detection with Microwave Gunn Oscillators (Short Papers)

Passchier, W.F.

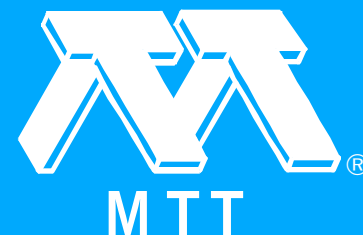
- ❑ Dispersive Fourier Transform Spectrometry with Variable-Thickness Variable-Temperature Liquid Cells

Patterson, J.T.

- ❑ General Noise Analysis for Bias- and RF-Voltage-Dependent Transferred-Electron Devices (Short Papers)

Paul, C.R.

- ❑ Useful Matrix Chain Parameter Identities for the Analysis of Multiconductor Transmission Lines (Short Papers)



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Paul, J.A.

- ☐ [Millimeter-Wave IMPATT Sources for Communication Applications](#)

Pavlidis, D.

- ☐ [Contributors \(Oct. 1976 \[T-MTT\]\)](#)
- ☐ [Dielectric Waveguides for Underwater Transmission of High Microwave Power](#)
- ☐ [The Design and Performance of Three-Line Microstrip Couplers](#)

Pedersen, R.J.

- ☐ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ☐ [The Super-Schottky Diode](#)

Pedler, W.F.

- ☐ [Contributors \(Nov. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Fundamental- and Harmonic-Frequency Circuit-Model Analysis of Interdigital Transducers with Arbitrary Metallization Ratios and Polarity Sequences

Peng, S.T.

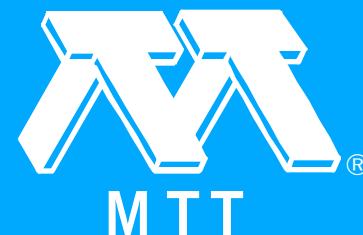
- ❑ Contributors (Jan. 1975 [T-MTT])
- ❑ Network Methods for Dielectric-Grating Applications
- ❑ Theory of Periodic Dielectric Waveguides
- ❑ Theory of Periodic Dielectric Waveguides (Correction)

Perkowitz, S.

- ❑ Reflectivity of Common Materials in the Submillimeter Region

Perlman, B.S.

- ❑ Computer-Controlled Infrared Microscope for Thermal Analysis of Microwave Transistors



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Perlow, S.M.

- ☐ [Automated Third-Order Distortion Measurements](#)

Petelin, M.I.

- ☐ [The Gyrotron](#)

Petersen, O.G.

- ☐ [Switching Performance of mm-Wave PIN Diodes for Ultra High Data Rates](#)

Petersen, W.C.

- ☐ [Microwave Octave-Band GaAs FET Amplifiers](#)

Pettersson, L.

- ☐ [On the Theory of Coupling Between Finite Dielectric Resonators \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Peugnet, C.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

Peyrat, A.

- ☐ [X Band Bulk-Wave Delay Line Stabilized Oscillator](#)

Pfitzenmaier, G.

- ☐ [An Exact Solution for a Six-Cavity Dual-Mode Elliptic Bandpass Filter](#)

Phillips, T.L.

- ☐ [A System for Developing Microwave Induced Hyperthermia in Small Animals \(1977 \[MWSYM\]\)](#)

Pickard, W.F.

- ☐ [Electric-Field Distribution Along Finite Length Lossy Dielectric Slabs in Waveguide](#)

Click on title for a paper summary.



Papers by Author

- ❑ [The Relation of Teratogenesis in Tenebrio Molitor to the Incidence of Low-Level Microwaves \(Short Papers\)](#)

Pierro, J.

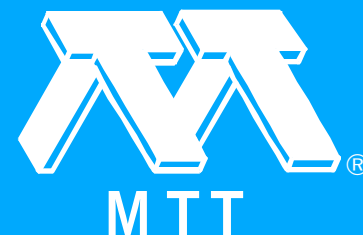
- ❑ [Cryogenically Cooled GaAs FET Amplifier with a 1.1-dB Noise Figure at 5.0 GHz](#)
- ❑ [Cryogenically Cooled GaAs FET Amplifier with a Noise Temperature Under 70 K at 5.0 GHz \(Short Papers\)](#)

Pierson, L.G.

- ❑ [Calculator-Based Synthesis Routine Speeds Microwave Amplifier Design](#)

Piotrowski, W.S.

- ❑ [Low Loss Broadband EHF Circulator](#)
- ❑ [Low-Loss Broad-Band EHF Circulator \(Short Papers\)](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Pivnichny, J.

- ☐ Inductance of Nonstraight Conductors Close to a Ground Return Plane (Short Papers)

Plambeck, R.L.

- ☐ A 230-GHz Radiometer System Employing a Second-Harmonic Mixer (Short Papers)

Plourde, J.K.

- ☐ A Dielectric Resonator Oscillator with 5 PPM Long Term Frequency Stability at 4 GHz
- ☐ Microwave Dielectric Resonator Filters Utilizing Ba/sub 2/Ti/sub 9/O/sub 20/ Ceramics

Podell, A.F.

- ☐ Microwave Octave-Band GaAs FET Amplifiers

Pompei, D.

- ☐ Characteristics and Applications of Coupled Microstrip Lines

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ❑ Variation of the Electrical Characteristics of an Inhomogeneous Microstrip Line with the Dielectric Constant of the Substrate and with the Geometrical Dimensions (Short Papers)

Posner, R.S.

- ❑ Contributors (Jul. 1976 [T-MTT])
- ❑ Power Amplification of Microwave FM Communication Signals Using a Phase-Locked Voltage-Tuned Oscillator

Pospieszalski, M.W.

- ❑ Contributors (Mar. 1977 [T-MTT])
- ❑ On the Theory and Application of the Dielectric Post Resonator (Short Papers)

Potok, M.H.N.

- ❑ Microwave Measurement of the Temperature Coefficient of Permittivity for Sapphire and Alumina (Short Papers)

Click on title for a paper summary.



Papers by Author

- ❑ [Transmission-Line Transformation Between Arbitrary Impedances \(Comments\)](#)

Potter, B.R.

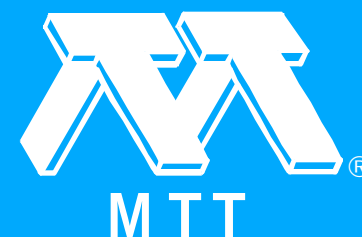
- ❑ [Surface Acoustic Wave Slanted Correlators for Linear FM Pulse-Compressors](#)
- ❑ [Weighted Unidirectional Transducer SAW Filter at 328 MHz](#)

Pozar, D.M.

- ❑ [Contributors \(Jul. 1977 \[T-MTT\]\)](#)
- ❑ [Resonant Frequency and Q of an Open-Ended Rectangular Cavity](#)

Predmore, C.R.

- ❑ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ❑ [Helical Coupler from Rectangular-to-Circular Waveguide](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Premoli, A.

- ☐ [A New Fast and Accurate Algorithm for the Computation of Microstrip Capacitances](#)
- ☐ [Contributors \(Aug. 1975 \[T-MTT\]\)](#)

Presser, A.

- ☐ [Graceful Degradation Properties of Matched N-Port Power Amplifier Combiners](#)

Priou, A.

- ☐ [Characterization of Magnetic Materials in the Millimeter-Wave Range \(60-90 GHz\) \(Short Papers\)](#)
- ☐ [Longitudinally Magnetized Ferrite Phase Shifters Using a Reduced Height Rectangular Waveguide](#)
- ☐ [Non-Perturbing Microprobes for Measurement in Electromagnetic Fields](#)
- ☐ [Y Junction Circulator Analysis](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Priou, A.C.

- ☐ [Contributors \(Nov. 1975 \[T-MTT\]\)](#)

Providakes, G.

- ☐ [Microwave Generation Using Sheet Relativistic Electron Beams](#)

Pucci, F.

- ☐ [Contributors \(Jan. 1976 \[T-MTT\]\)](#)
- ☐ [Symmetrical Four-Port Edge-Guided Wave Circulators](#)
- ☐ [The Edge-Guided-Wave Circulator \(Short Papers\)](#)

Pucel, R.A.

- ☐ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ☐ [Performance of GaAs MESFET Mixers at X Band](#)

Quate, C.F.

- ☐ [Scanning Acoustic Microscope \(Abstract\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Raczy, L.

- ☐ [The Elliptical Dielectric Waveguide a Very Useful Model for Some Microwave and Millimeter Wave Integrated Circuits and Components](#)

Rae, K.N.S.

- ☐ [Analysis of Straight Tapered Microstrip Transmission Lines---ASTMIC \(Computer Program Descriptions\)](#)

Ragan, L.H.

- ☐ [Surface Acoustic Wave Resonator Filters](#)

Rahmat-Samii, Y.

- ☐ [On the Question of Computation of the Dyadic Green's Function at the Source Region in Waveguides and Cavities \(Short Papers\)](#)

Rakosi, F.

- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Improved Microwave Repeaters for Hungarian All-Solid-State Communications Systems

Ramachandraiah, M.S.

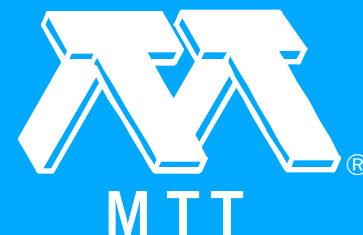
- ❑ Non Destructive Resonant Technique for the Measurement of Complex Permittivity -- Theoretical Analysis and Experimental Results
- ❑ Nondestructive Measurement of Complex Permittivity for Dielectric Slabs (Short Papers)

Rast, Jr., G.J.

- ❑ Automated Spectral Analysis of Microwave Oscillator Noise
- ❑ Contributors (Apr. 1977 [T-MTT])
- ❑ The Measurement of Noise in Microwave Transmitters

Raue, J.E.

- ❑ A V-Band Network Analyzer/Reflection Test Unit
- ❑ Design, Implementation, and Performance Analysis of a Broad-Band V-Band Network Analyzer (Short Papers)



Contents

Authors

Click on title for a paper summary.



Papers by Author

- ☐ Ka-Band Solid State Power Amplifier
- ☐ Large Signal Device Characterization for Broadband Ka-Band IMPATT Amplifier Design
- ☐ Low Loss Broadband EHF Circulator
- ☐ Low-Loss Broad-Band EHF Circulator (Short Papers)

Read, M.E.

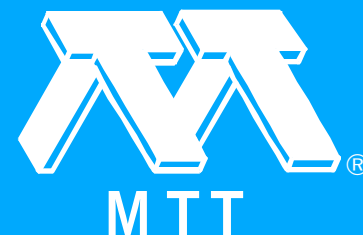
- ☐ Microwave Generation Using Sheet Relativistic Electron Beams

Reeder, T.M.

- ☐ Real Time Discrete Fourier Transforms Using a Programmable Diode-Convolver Module

Regier, R.D.

- ☐ Contributors (Dec. 1975 [T-MTT])
- ☐ High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author

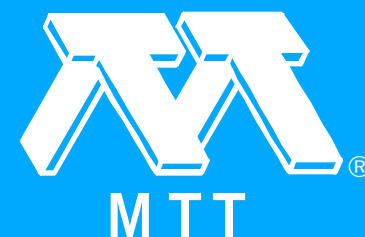
- ❑ High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers (Correction)

Rehnmark, S.

- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Contributors (Oct. 1977 [T-MTT])
- ❑ High Directivity CTL-Couplers and a New Technique for the Measurement of CTL-Coupler Parameters (1977 [MWSYM])
- ❑ High Directivity CTL-Couplers and a New Technique for the Measurement of CTL-Coupler Parameters (Dec. 1977 [T-MTT])
- ❑ Wide-Band Balanced Line Microwave Hybrids

Reiter, G.

- ❑ Contributors (Apr. 1975 [T-MTT])
- ❑ Improved Microwave Repeaters for Hungarian All-Solid-State Communications Systems



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ren, C.-L.

- ☐ 2 GHz Feed for Horn-Reflector Antenna Utilizing Evanescent Mode Filter
- ☐ A Class of Waveguide Filters for Over-Moded Applications (Correction)

Reudink, D.O.

- ☐ Problems and Challenges in Satellite Communications Frequency Reuse - Antennas and Components

Rhodes, J.D.

- ☐ Contributors (Aug. 1975 [T-MTT])
- ☐ Contributors (Oct. 1977 [T-MTT])
- ☐ Design Formulas for Bandpass Channel Diplexers
- ☐ Direct Design Formulas for Asymmetric Bandpass Channel Diplexers
- ☐ Explicit Design Formulas for Waveguide Single-Sided Filters

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Riblet, G.

- ☐ [The Phase Shift Through Symmetrical 3-Port Circulators \(Short Papers\)](#)

Riblet, G.P.

- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)
- ☐ [Insertion Loss of 3-Port Circulator with One Port Terminated in Variable Short Circuit \(Short Papers\)](#)
- ☐ [The Measurement of the Equivalent Admittance of 3-Port Circulators Via an Automated Measurement System \(Short Papers\)](#)

Riblet, H.J.

- ☐ [A Lower Limit on the Interaction Between Symmetrical Odd-Mode Fringing Capacitances \(Letters\)](#)
- ☐ [A Transformer Cascade, Optimally Matched to a Conductance Shunted by a Stub, Exhibiting Reflection Coefficient Zeros \(Letters\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

- ❑ [An Accurate Determination of the Characteristic Impedance of the Coaxial System Consisting of a Square Concentric with a Circle \(Letters\)](#)
- ❑ [An Alternate Derivation of Lewin's Formula \(Letters\)](#)
- ❑ [Asymmetric Even-Mode Fringing Capacitance \(Short Papers\)](#)
- ❑ [Asymmetric Odd-Mode Fringing Capacitances \(Letters\)](#)
- ❑ [Contributors \(May 1977 \[T-MTT\]\)](#)
- ❑ [Synthesis of an Optimum Impedance Transformer](#)

Richings, J.G.

- ❑ [Measured Odd- and Even-Mode Dispersion of Coupled Microstrip Lines \(Short Papers\)](#)

Risch, C.O.

- ❑ [A Low-Cost Multiple-Channel 12-GHz Receiver for Satellite Television Broadcasting](#)
- ❑ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Rivier, E.

- ☐ Characteristics and Applications of Coupled Microstrip Lines
- ☐ Influence a of Solid Elastic Properties on the Scattering of Rayleigh Wave by Normal Discontinuities
- ☐ Variation of the Electrical Characteristics of an Inhomogeneous Microstrip Line with the Dielectric Constant of the Substrate and with the Geometrical Dimensions (Short Papers)

Rizk, M.R.M.

- ☐ Contributors (Apr. 1976 [T-MTT])
- ☐ Efficient Calculation of Exact Group Delay Sensitivities
- ☐ Efficient Calculation of Exact Group Delay Sensitivities (Correction)

Rizzoli, V.

- ☐ A Unified Variational Solution to Microstrip Array Problems
- ☐ Contributors (Feb. 1975 [T-MTT])

Click on title for a paper summary.



Papers by Author

- ❑ Contributors (Feb. 1977 [T-MTT])
- ❑ Resonance Measurement of Even and Odd Mode Propagation Constants in Coupled Microstrips
- ❑ Resonance Measurement of Single- and Coupled-Microstrip Propagation Constants

Roberts, R.G.

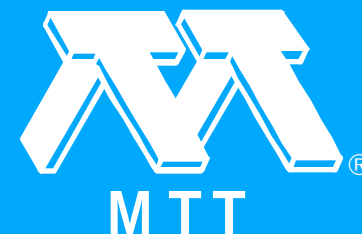
- ❑ Contributors (Nov. 1975 [T-MTT])

Robinson, J.E.

- ❑ A Bolusing Technique for Batch Microwave Irradiation of Tumors in the Far Field

Robinson, J.M.

- ❑ Design of Direct Phase Modulators for High Speed Digital Radio Systems Using MIC Techniques



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Roche, M.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

Rochelle, J.M.

- ☐ [Approximations for the Symmetrical Parallel-Strip Transmission Line \(Letters\)](#)

Rodrigue, G.P.

- ☐ [President's Message--A Quarter Century of Progress](#)

Roe, K.C.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios \(1975 \[MWSYM\]\)](#)
- ☐ [Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios \(Dec. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Rogai, S.

- ☐ Contributors (Nov. 1977 [T-MTT])
- ☐ Random Discrete Imperfections in Millimeter Waveguide Systems

Rogers, R.G.

- ☐ A Dual Mode Tuning Circuit for Microwave Transistor Oscillators
- ☐ Contributors (Feb. 1977 [T-MTT])

Rolland, P.-A.

- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ New Modes of Operation for Avalanche Diodes: Frequency Multiplication and Upconversion

Ronchi, L.

- ☐ Field Propagation in an Open-Beam Waveguide (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ros, A.

- ☐ Characteristics and Applications of Coupled Microstrip Lines
- ☐ Variation of the Electrical Characteristics of an Inhomogeneous Microstrip Line with the Dielectric Constant of the Substrate and with the Geometrical Dimensions (Short Papers)

Rosatelli, C.

- ☐ Contributors (Nov. 1977 [T-MTT])
- ☐ Solutions of the Vector Wave Equation for Inhomogeneous Dielectric Cylinders--Scattering in Waveguide

Rosen, A.

- ☐ Integrated TRAPATT Diode Arrays (Short Papers)

Rosen, J.

- ☐ Contributors (Dec. 1975 [T-MTT])

Click on title for a paper summary.

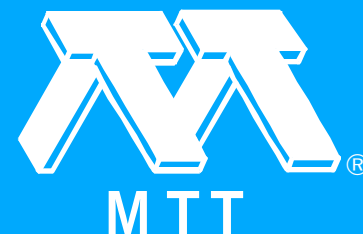


Papers by Author

- ❑ Microstrip Varactor-Tuned Millimeter Wave IMPATT Diode Oscillators (1975 [MWSYM])
- ❑ Microstrip Varactor-Tuned Millimeter-Wave IMPATT Diode Oscillators (Dec. 1975 [T-MTT])

Rosenbaum, F.J.

- ❑ A Low-Cost Multiple-Channel 12-GHz Receiver for Satellite Television Broadcasting
- ❑ Contributors (Apr. 1975 [T-MTT])
- ❑ Editor's Note (Mar. 1975 [T-MTT])
- ❑ Electric-Field Distribution Along Finite Length Lossy Dielectric Slabs in Waveguide
- ❑ On the Latching of Ferrite Microwave Devices (Short Papers)
- ❑ The Relation of Teratogenesis in Tenebrio Molitor to the Incidence of Low-Level Microwaves (Short Papers)
- ❑ X-Band Microstrip-Inserted Puck Circulator Using Arc-Plasma-Sprayed Ferrite (Short Papers)



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Rosenthal, S.W.

- ☐ [Review and State of the Art Biological Effects and Hazards of Microwave Radiation](#)

Ross, G.F.

- ☐ [The Accurate Measurement of Range by the Use of Microwave Delay Line Techniques](#)
- ☐ [The Accurate Measurement of Range by the Use of Microwave Delay Line Techniques \(Short Papers\)](#)

Rosztoczy, F.E.

- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)
- ☐ [Gunn-Effect Amplifiers for Microwave Communication Systems in X, Ku, and Ka Bands](#)

Rouille, C.

- ☐ [Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Rousseau, M.

- ☐ Contributors (Jul. 1977 [T-MTT])
- ☐ Numerical Solution of the Coupled-Power Equation in Step-Index Optical Fibers

Rowbotham, T.R.

- ☐ Contributors (Jun. 1975 [T-MTT])
- ☐ The Design of Coupled Microstrip Lines

Rowe, H.E.

- ☐ Contributors (May 1975 [T-MTT])
- ☐ Minimum-Phase Behavior of Random Media

Rozenfeld, P.

- ☐ Contributors (Sep. 1976 [T-MTT])
- ☐ Different Representations of Dyadic Green's Functions for a Rectangular Cavity

Click on title for a paper summary.



Papers by Author

- ❑ Different Representations of Dyadic Green's Functions for a Rectangular Cavity (Correction)

Rozzell, T.C.

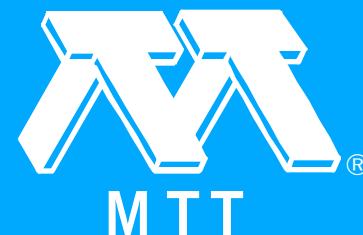
- ❑ A Nonperturbing Liquid Crystal Fiberoptic Microwave Power Probe

Rozzi, T.E.

- ❑ Contributors (Feb. 1975 [T-MTT])
- ❑ Network Modelling of Interacting Capacitive Irises and Steps in Waveguide
- ❑ Propagation in a Rectangular Waveguide Periodically Loaded with Resonant Irises (1976 [MWSYM])
- ❑ Wide-Band Network Modeling of Interacting Inductive Irises and Steps

Rubin, D.

- ❑ Foreword (1977 [MWSYM])
- ❑ The 1977 Microwave Symposium (Dec. 1977 [T-MTT])



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



Contents
Authors

- ☐ [Varactor-Tuned Millimeter-Wave MIC Oscillator \(Short Papers\)](#)
- ☐ [Wide-Bandwidth Millimeter-Wave Gunn Amplifier in Reduced-Height Waveguide \(Short Papers\)](#)

Rucker, C.T.

- ☐ [Series Interconnection of Six TRAPATT Devices on a Diamond Substrate](#)
- ☐ [Symmetry Experiments with Four-Mesa IMPATT Diodes \(Letters\)](#)

Rudge, A.W.

- ☐ [Millimetre-Wave Insular Guide Frequency Scanned Array](#)

Rudokas, R.

- ☐ [Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides](#)
- ☐ [Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Rudokas, R.S.

- ☐ Contributors (Jan. 1977 [T-MTT])
- ☐ New Method for Computing the Resonant Frequencies of Dielectric Resonators (Short Papers)

Rudolph, H.-D.

- ☐ Contributors (Jan. 1975 [T-MTT])
- ☐ Radiation from Bends in Dielectric Rod Transmission Lines

Ruehli, A.E.

- ☐ Inductance of Nonstraight Conductors Close to a Ground Return Plane (Short Papers)

Ruella, P.

- ☐ A High Power Waveguide IMPATT Amplifier

Rulf, B.

- ☐ Scattering of Surface Waves at a Dielectric Discontinuity on a Planar Waveguide (Comments)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ruscio, J.T.

- ☐ Contributors (Apr. 1975 [T-MTT])
- ☐ Guidance of 100-GHz Beams by Cylindrical Mirrors

Ruttan, T.

- ☐ X-Band--GaAs FET YIG-Tuned Oscillator

Ryan, C.

- ☐ Bi-Polar IC's for Microwave Signal Processing
- ☐ Precision Subnanosecond Delay Measurements of High Speed Digital Integrated Circuits

Ryken, Jr., M.L.

- ☐ Computer-Aided Time and Frequency Domain Measurements of TRAPATT Diode Oscillators

Saad, S.S.

- ☐ Computer Analysis of Gradually Tapered Waveguide with Arbitrary Cross Sections (Short Papers)

Click on title for a paper summary.



Papers by Author

- ❑ Contributors (May 1977 [T-MTT])

Safi, M.

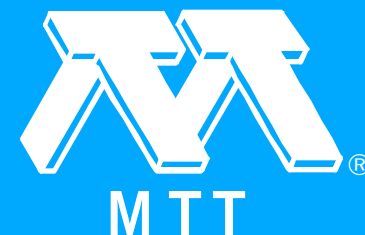
- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ The Design of a Class of Microwave Filters Using Lumped and Distributed Elements
- ❑ The Design of Ladder Networks Containing Lumped and Distributed Elements

Saha, P.K.

- ❑ Contributors (Nov. 1977 [T-MTT])
- ❑ Dispersion in Shielded Planar Transmission Lines on Two-Layer Composite Substrate

Saito, M.

- ❑ Computer-Aided Synthesis of Planar Circuits
- ❑ Contributors (Oct. 1977 [T-MTT])



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Saito, S.

- ☐ [A Semi-Transparent Mirror-Type Directional Coupler for Optical Fiber Applications \(Letters\)](#)
- ☐ [Power Transfer of a Parallel Optical Fiber Directional Coupler \(Letters\)](#)

Saito, T.

- ☐ [A 7 GHz FM Transmitter Utilizing GaAs Power MESFETs](#)

Sakaguchi, Y.

- ☐ [Behavior of the Magnetostatic Wave in a Periodically Corrugated YIG Slab \(Short Papers\)](#)
- ☐ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)

Sakamoto, K.

- ☐ [4-W IMPATT Amplifiers for 6 - 8 GHz 1800CH FM Radio Systems](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Salinger, J.

- ☐ [Microwave Measurement of Respiration](#)

Salmer, G.

- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [New Modes of Operation for Avalanche Diodes: Frequency Multiplication and Upconversion](#)

Salsano, A.

- ☐ [Power Generation and Efficiency in GaAs Traveling-Wave Amplifiers \(Short Papers\)](#)

Samaras, G.M.

- ☐ [A Bolusing Technique for Batch Microwave Irradiation of Tumors in the Far Field](#)

Samardzija, N.

- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Double-Layered Slot Line for Millimeter-Wave Integrated Circuits

Sannino, M.

- ❑ Analysis of Frequency-Conversion Techniques in Measurements of Microwave Transistor Noise Temperatures
- ❑ Contributors (Nov. 1977 [T-MTT])

Sard, E.

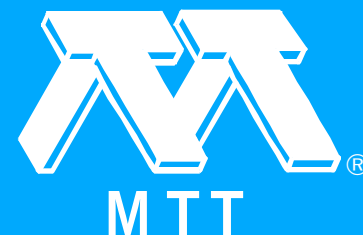
- ❑ Broadbanding an Electronically Switched Two-Channel Ka-Band Parametric Amplifier

Sato, H.

- ❑ A Half-Micron Gate Low Noise GaAs MESFET and Amplifiers

Sauter, E.

- ❑ Comparison of Methods for Sensitivity Determination of Point-Contact Diodes at Submillimeter Wavelength



IEEE

Contents

Authors

Click on title for a paper summary.



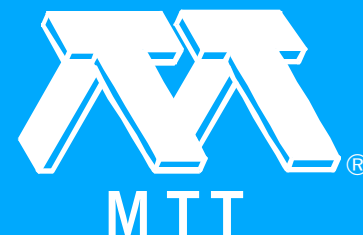
Papers by Author

Savage, E.B.

- ☐ [Acoustic-Surface-Wave Resonators for Band-Pass Filter Applications](#)
- ☐ [Synthesis of Acoustic-Surface-Wave-Resonator Filters Using any of Various Coupling Mechanisms](#)

Sawa, S.

- ☐ [A Theoretical Study of Light Beams Guided Along Tapered Lenslike Media, and Their Applications](#)
- ☐ [Analysis of Optical Waveguide Consisting of a Square-Law Lenslike Medium and its Analogies to Circular TE/sub 01/ waveguide](#)
- ☐ [Contributors \(Feb. 1976 \[T-MTT\]\)](#)
- ☐ [Contributors \(Jul. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Jul. 1976 \[T-MTT\]\)](#)
- ☐ [Propagation of Light Beam through Lens-Like Media with Complex Permittivity](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Sawano, H.

- ☐ Contributors (Dec. 1977 [T-MTT])
- ☐ High Power GaAs IMPATT Amplifier (Dec. 1977 [T-MTT])
- ☐ High Power GaAs IMPATT Amplifiers (1977 [MWSYM])

Schaffner, G.

- ☐ Editor's Overview (Dec. 1977 [T-MTT])
- ☐ The 1977 Microwave Symposium (Dec. 1977 [T-MTT])

Schechter, M.

- ☐ Hyperthermia: Healing and Hazard in Tumor Bearing Rats

Schiek, B.

- ☐ A Method for Broad-Band Matching of Microstrip Differential Phase Shifters
- ☐ An Improved Microstrip-to-Microslot Transition (Letters)
- ☐ Contributors (Aug. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Schjaer-Jacobsen, H.

- ☐ [Contributors \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [Efficient Minimax Design of Networks without Using Derivatives](#)
- ☐ [Efficient Minimax Design of Networks without Using Derivatives \(Correction\)](#)

Schlesinger, S.P.

- ☐ [Foreword - Part II \(Jun. 1977 \[T-MTT\]\)](#)
- ☐ [Relativistic Electron-Beam-Generated Coherent Submillimeter Wavelength Cerenkov Radiation](#)

Schlomann, E.

- ☐ [Contributors \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [Nonreciprocal Delay Line for Use in S Band Tubes](#)

Schneider, M.V.

- ☐ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.

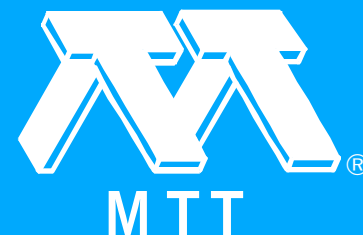


Papers by Author

- ❑ Contributors (Mar. 1975 [T-MTT])
- ❑ Contributors (Nov. 1976 [T-MTT])
- ❑ Harmonically Pumped Stripline Down-Converter
- ❑ Local-Oscillator Noise Cancellation in the Subharmonically Pumped Down-Converter (Short Papers)
- ❑ Millimeter-Wave Downconverter with Subharmonic Pump
- ❑ Millimeter-Wave Receivers with Subharmonic Pump
- ❑ Millimeter-Wave Thin-Film Downconverter
- ❑ Subharmonically Pumped Millimeter-Wave Mixers Built with Notch-Front and Beam-Lead Diodes

Schneider, S.

- ❑ Application of Stimulated Electromagnetic Shock Radiation to the Generation of Intense Submillimeter Waves



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Schoonaert, D.H.

- ☐ On the Field Energy and Power of Waveguides and Cavities Synthesized with Nonseparable Solutions of Helmholtz Wave Equation
- ☐ On the Synthesis of Waveguides and Cavities Realized with Nonseparable Solutions of Helmholtz Wave Equation (Short Papers)

Schott, F.W.

- ☐ Contributors (May 1977 [T-MTT])
- ☐ Radiation Losses of Planar Circuit Resonators and the R/Q Parameter (Short Papers)

Schott, W.

- ☐ Measurement of the Electromagnetic-Field Components in a Rectangular Drift Tube-Loaded Cavity Using Various Perturbing Objects (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Schrader, D.H.

- ☐ [A Microwave Irradiation Chamber for Scientific Studies on Agricultural Products \(Short Papers\)](#)
- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)

Schroeder, L.C.

- ☐ [Microwave Scattering from the Ocean Surface](#)
- ☐ [Microwave Scattering from the Ocean Surface \(Short Papers\)](#)

Schroeder, W.E.

- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)
- ☐ [IMPATT Diode Circuit Design for Parametric Stability](#)

Schultz, G.V.

- ☐ [Comparison of Methods for Sensitivity Determination of Point-Contact Diodes at Submillimeter Wavelength](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Schunemann, K.

- ☐ Components for Microwave Integrated Circuits with Evanescent Mode Resonators (1977 [MWSYM])
- ☐ Components for Microwave Integrated Circuits with Evanescent-Mode Resonators (Dec. 1977 [T-MTT])
- ☐ Contributors (Dec. 1977 [T-MTT])

Schwan, H.P.

- ☐ Effect of Surface Cooling and Blood Flow on the Electromagnetic Heating of Tissue

Schwartz, P.M.

- ☐ Advanced Solid-State Components for Millimeter Wave Radars

Schwering, F.

- ☐ Scattering by Periodic Metal Surfaces with Sinusoidal Height Profile - A New Theoretical Approach

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Sciambi, Jr., A.F.

- ☐ [High Power Monopulse Tracking Feed](#)

Seal, W.D.

- ☐ [Phase Noise Measurements in the Frequency Domain](#)

Seals, J.

- ☐ [Preliminary In-Vivo Probe Measurements of Electrical Properties of Tumors in Mice](#)

Seaman, R.L.

- ☐ [Microwave-Power Absorption by Rectangular-Shaped Conductive Dielectric Samples in Stripline \(Letters\)](#)

Sebring, J.R.

- ☐ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [MLS--A Practical Application of Microwave Technology \(1976 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [MLS--A Practical Application of Microwave Technology \(Dec. 1976 \[T-MTT\]\)](#)

Sechi, F.N.

- ❑ [Computer-Controlled Infrared Microscope for Thermal Analysis of Microwave Transistors](#)

Sekido, K.

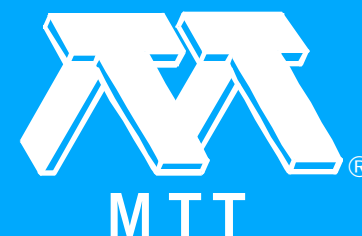
- ❑ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ❑ [Reliability Study of GaAs MESFET's](#)

Selim, J.D.

- ❑ [Infrared Detection of Surface Charge and Current Distributions](#)

Semet, A.

- ❑ [Development and Applications of Millimeter Wavelength, High Power Optically Pumped Lasers](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Senise, J.T.

- ☐ [Some Aspects of Microwave Development in a Developing Country](#)

Sethares, J.

- ☐ [Band Stop Filter Using LPE-YIG Films](#)

Shafai, L.

- ☐ [Contributors \(Nov. 1975 \[T-MTT\]\)](#)
- ☐ [Numerical Solution of Coupling Between Two Collinear Parallel-Plate Waveguides](#)

Shamasundara, S.D.

- ☐ [Design of Coupled Microstrip Lines \(Letters\)](#)

Shanley, J.F.

- ☐ [A Traveling-Wave Maser Amplifier for 85-90 GHz Using a Slot-Fed Image-Guide Slow-Wave Circuit](#)
- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ☐ [Low Noise Traveling-Wave Maser Receiver for Three Millimeter Wavelength](#)

Shen, L.C.

- ☐ [Contributors \(Nov. 1977 \[T-MTT\]\)](#)
- ☐ [Traveling Waves in Coupled Yagi Structures](#)

Shiau, Y.

- ☐ [Dielectric Rod Antennas for Millimeter-Wave Integrated Circuits \(Short Papers\)](#)

Shigesawa, H.

- ☐ [High-Quality Image Reconstruction from Double Microwave Holograms \(Short Papers\)](#)

Shimizu, Y.

- ☐ [Microwave Applications of Thin Magnetic Resistive Sheets](#)

Shin, S.-Y.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ❑ Rays, Beams, and Modes Pertaining to the Excitation of Dielectric Waveguides

Shindo, S.

- ❑ A 4, 6, 20 and 30 GHz Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (1976 [MWSYM])
- ❑ A 4-, 6-, 20-, and 30-GHz-Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (Dec. 1976 [T-MTT])
- ❑ Contributors (Dec. 1976 [T-MTT])
- ❑ Multiple Branch-Guide Directional Coupler Using TE/sub 01/-Mode Semicircular Waveguide (Short Papers)

Shirahata, K.

- ❑ Broad-Band 180° Phase Shift Section in X Band (Short Papers)
- ❑ High Power Microwave Static Induction Transistor

Click on title for a paper summary.



Papers by Author

Shrubb, S.J.W.

- ☐ [A Low Noise FET Amplifier in Coplanar Waveguide](#)

Shuch, H.P.

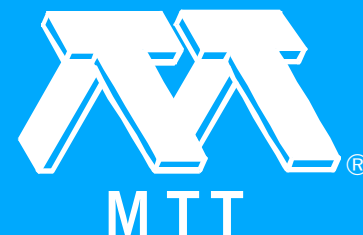
- ☐ [A Cost-Effective Modular Down Converter for S-Band WEFAX Reception](#)
- ☐ [A Cost-Effective Modular Downconverter for S-Band WEFAX Reception \(Short Papers\)](#)
- ☐ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)

Siegel, P.H.

- ☐ [A Simple Quasi-Optical Mixer for 100-120 GHz](#)

Silver, A.H.

- ☐ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ☐ [The Super-Schottky Diode](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Silvester, P.

- ☐ [Microstrip Discontinuity Capacitances for Right-Angle Bends, T Junctions, and Crossings \(Correction\)](#)
- ☐ [Planar Network Analysis Programs-- PNAP1 and PNAP2 \(Computer Program Descriptions\)](#)

Simpson, T.L.

- ☐ [Dielectric Loss in Microstrip Lines \(Short Papers\)](#)

Singh, D.N.

- ☐ [Interdependence of Gain and Idler Conversion Loss in Parametric Amplifiers \(Letters\)](#)

Singh, J.P.

- ☐ [A Low-Cost Multiple-Channel 12-GHz Receiver for Satellite Television Broadcasting](#)
- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Singh, N.

- ☐ [Design of Coupled Microstrip Lines \(Letters\)](#)

Sirles, C.W.

- ☐ [A 3.5 Watt High Efficiency Frequency Quadrupler for X-Band Applications](#)

Sivo, J.N.

- ☐ [Communications Technology Satellite Systems, Space and Ground Segments](#)

Skeie, H.

- ☐ [Problems in the Realization of Flat Delay, Narrow-Band Surface Wave Filters at UHF and Microwave Frequencies](#)

Sladek, N.J.

- ☐ [A New 34-GHz 3.5-mm Low-Cost Utility Coaxial Connector Featuring Low Leakage, Low Standing-Wave Ratio, and Long Life \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [New High Performance 3.5 mm, Low Cost, Utility Coaxial Connector with Mode Free Operation Through 34 GHz](#)

Slaymaker, N.A.

- ❑ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ❑ [GaAs MESFET Small-Signal X-Band Amplifiers](#)

Slobodnik, Jr., A.J.

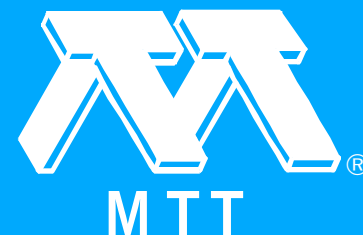
- ❑ [Design, Fabrication and Testing of SAW Butterworth Filters](#)
- ❑ [Periodic Frequency Response SAW Filters for a Tree Approach to Many-Tone Frequency Synthesis](#)

Smith, Jr., C.V.

- ❑ [Microwave Devices Based on Magnetostatic Wave Reflecting Arrays](#)

Smith, R.E.

- ❑ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ Transferred Electron Logic Devices (TELDs) for Gigabit Rate Signal Processing (1976 [MWSYM])
- ❑ Transferred Electron Logic Devices for Gigabit-Rate Signal Processing (Dec. 1976 [T-MTT])

Smith, V.

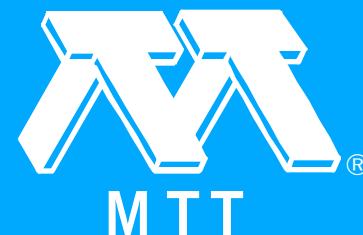
- ❑ A System for Developing Microwave Induced Hyperthermia in Small Animals (1977 [MWSYM])

Smith, W.R.

- ❑ Contributors (Nov. 1975 [T-MTT])
- ❑ Fundamental- and Harmonic-Frequency Circuit-Model Analysis of Interdigital Transducers with Arbitrary Metallization Ratios and Polarity Sequences

Smolinsky, G.

- ❑ Contributors (Jan. 1975 [T-MTT])
- ❑ Radiation Fields of a Tapered Film and a Novel Film-to-Fiber Coupler



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Snapp, C.P.

- ☐ [Process Technology and Modeling of a Low-Noise Silicon Bipolar Transistor with Sub-Micron Emitter Widths](#)

Snell, Jr., W.W.

- ☐ [A Discriminator-Stabilized Microstrip Oscillator \(Short Papers\)](#)
- ☐ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [Contributors \(Mar. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [Harmonically Pumped Stripline Down-Converter](#)
- ☐ [Millimeter-Wave Downconverter with Subharmonic Pump](#)
- ☐ [Millimeter-Wave Receivers with Subharmonic Pump](#)
- ☐ [Millimeter-Wave Thin-Film Downconverter](#)

Snyder, A.W.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ❑ [Reflection at a Curved Dielectric Interface -- Electromagnetic Tunneling](#)

Snyder, R.V.

- ❑ [An Improved Low-Pass Harmonic Absorber](#)
- ❑ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [New Application of Evanescent Mode Wave-Guide to Filter Design \(Dec. 1977 \[T-MTT\]\)](#)
- ❑ [New Application of Evanescent Mode Waveguide to Filter Design \(1977 \[MWSYM\]\)](#)

Soares, R.A.

- ❑ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)
- ❑ [GaAs MESFET Small-Signal X-Band Amplifiers](#)

Sobhy, M.I.

- ❑ [Computer-Aided Design of Commensurate and Non-Commensurate Networks Using State-Space Techniques](#)
- ❑ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ☐ The Design of a Class of Microwave Filters Using Lumped and Distributed Elements
- ☐ The Design of Ladder Networks Containing Lumped and Distributed Elements

Sobol, H.

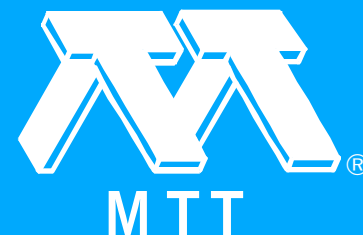
- ☐ Digital Radio: Systems, Markets and Trends

Sodha, M.S.

- ☐ Differential Phase Shift at Microwave Frequencies Using Planar Ferrites (Short Papers)

Sokolov, V.

- ☐ Contributors (Dec. 1976 [T-MTT])
- ☐ Microwave Power GaAs FET Amplifiers
- ☐ X-Band MIC GaAs FET Power Amplifier



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Sokullu, A.M.

- ☐ [Bias Frequency Modulation of GaAs Millimeter-Wave Diode Oscillators \(Short Papers\)](#)

Solbach, K.

- ☐ [The Electromagnetic Fields and the Phase Constants of Dielectric Image Lines \(1977 \[MWSYM\]\)](#)
- ☐ [The Fabrication of Dielectric Image Lines Using Casting Resins and the Properties of the Lines in the Millimeter-Wave Range \(Short Papers\)](#)

Solie, L.P.

- ☐ [A SAW Pulse Compression Filter Using the Reflective Dot Array](#)
- ☐ [The Surface Acoustic Wave Reflective Dot Array \(RDA\)](#)

Solomon, A.H.

- ☐ [Future Microwave Markets in Telecommunications and Aviation](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Somlo, P.I.

- ☐ [Transmission Line Impedance Matching Using the Smith Chart \(Comments\)](#)

Sorrentino, R.

- ☐ [Contributors \(Apr. 1976 \[T-MTT\]\)](#)
- ☐ [Effects of the Surroundings on Electromagnetic-Power Absorption in Layered-Tissue Media \(Short Papers\)](#)
- ☐ [Exact Analysis of Rectangular Waveguides Inhomogeneously Filled with a Transversely Magnetized Semiconductor](#)
- ☐ [The ZEPLS Program for Solving Characteristic Equations of Electromagnetic Structures \(Computer Program Descriptions\)](#)

Sparks, R.A.

- ☐ [Design and Performance of an Integrated Three Channel Tracking YIG Preselector](#)

Click on title for a paper summary.



Papers by Author

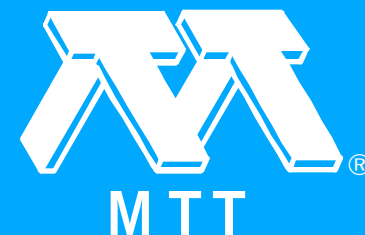
- ❑ Premature Decline Limiting in X-Band YIG Filters

Speciale, R.A.

- ❑ A Generalization of the TSD Network-Analyzer Calibration Procedure, Covering n-Port Scattering-Parameter Measurements, Affected by Leakage Errors
- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Contributors (Nov. 1975 [T-MTT])
- ❑ Even- and Odd-Mode Waves for Nonsymmetrical Coupled Lines in Nonhomogeneous Media
- ❑ Super - TSD: A Generalization of the TSD Network Analyzer Calibration Procedure, Covering n-Port Measurements with Leakage
- ❑ Wideband, Totally Coupled Directional Transformers

Speiser, J.M.

- ❑ Real Time Discrete Fourier Transforms Using a Programmable Diode-Convolver Module



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Spencer, N.W.

- ☐ [Tapered Asymmetric Microstrip Magic Tee](#)
- ☐ [Tapered Asymmetric Microstrip Magic Tee \(Short Papers\)](#)

Spielman, B.E.

- ☐ [Analysis of Dispersion in Arbitrarily Configured Dielectric-Loaded Transmission Structures](#)
- ☐ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [Dispersion Characteristics for Arbitrarily Configured Transmission Media \(Short Papers\)](#)
- ☐ [Dissipation Loss Effects in Isolated and Coupled Transmission Lines](#)

Spitzer, R.

- ☐ [Application of Stimulated Electromagnetic Shock Radiation to the Generation of Intense Submillimeter Waves](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Sprangle, P.

- ☐ [Mechanisms for Coherent Scattering of Electromagnetic Waves from Relativistic Electron Beams](#)
- ☐ [The Linear and Self-Consistent Nonlinear Theory of the Electron Cyclotron Maser Instability](#)

Srivastava, G.P.

- ☐ [Waveguide Interferometer for Measuring Electric Susceptibility in Gases \(Short Papers\)](#)

Srivastava, N.C.

- ☐ [Differential Phase Shift at Microwave Frequencies Using Planar Ferrites \(Short Papers\)](#)

Staelin, D.H.

- ☐ [Passive Microwave Sensing of the Earth](#)

Starski, J.P.

- ☐ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Optimization of the Matching Network for a Hybrid Coupler Phase Shifter

Steele, S.R.

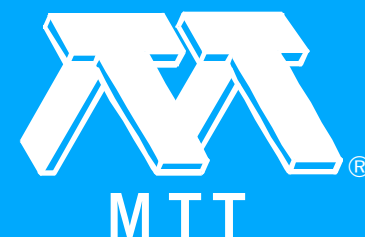
- ❑ A 60-W CW Solid-State Oscillator at C Band (Letters)

Steffek, L.J.

- ❑ Electronically-Tunable, Low Noise K/sub a/-Band Paramp-Downconverter Satellite Communications Receiver

Steinberg, R.

- ❑ Contributors (Jan. 1975 [T-MTT])
- ❑ Contributors (Sep. 1975 [T-MTT])
- ❑ Optical Fibers with Coupled Dispersive Modes
- ❑ Pulse Propagation in Multimode Fibers with Frequency-Dependent Coupling



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Stempler, D.

- ☐ [Commercial Glow Discharge Tubes As Detectors of X-Band Radiation \(Short Papers\)](#)

Stephenson, D.T.

- ☐ [A Passive Method for Monitoring Non-Ionizing Radiation](#)

Stephenson, I.M.

- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)
- ☐ [Equivalent Circuit Parameters of Microstrip Step Change in Width and Cross Junctions \(Short Papers\)](#)
- ☐ [Experimental Measurement of Microstrip Transistor-Package Parasitic Reactances](#)

Stern, R.A.

- ☐ [Antenna Array for Limited Scan Applications](#)

Sterzer, F.

- ☐ [Dual-Mode Automobile Collision Avoidance Radar](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Microwave Technology in the Department of Defense \(Panel Discussion\)](#)
- ❑ [The 1976 S-MTT National Lectureship](#)

Stette, G.R.

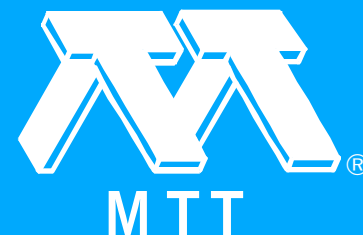
- ❑ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)
- ❑ [Evaluation of Linearity by Transformation of the Amplitude Characteristic](#)

Stillings, C.J.

- ❑ [The Selection of High-Power Integrated Microwave Components for Military Satellite Communication Terminals](#)

Stinehelfer, H.E.

- ❑ [Analysis of Microwave Network Circuits by Time and Frequency-Domain Comparisons](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Stitzer, S.N.

- ☐ [A High Power X-Band Frequency Selective Passive YIG Limiter](#)
- ☐ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)
- ☐ [Frequency Selective High Power YIG Limiters](#)
- ☐ [Interaction of Signals in Ferromagnetic Microwave Limiters](#)

Stowe, S.

- ☐ [Hyperthermia: Healing and Hazard in Tumor Bearing Rats](#)

Strid, E.

- ☐ [A S-Band High Power Feedback Amplifier](#)

Stuchly, S.S.

- ☐ [Microwave YIG-Tuned Elements as Transducers for Monitoring of EHV AC and HVDC Transmission Systems](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Stutzman, W.L.

- ❑ Depolarization Measurements on the ATS-6 20 GHz Downlink: A Description of the VPI&SU Experiment and Some Initial Results (1975 [MWSYM])
- ❑ Depolarization Measurements on the ATS-6 20-GHz Downlink: A Description of the VPI & SU Experiment and Some Initial Results (Short Papers)

Suematsu, Y.

- ❑ An Ideal Refractive-Index-Distribution and Mode Filter for Band Broadening of Multimode Optical Fiber
- ❑ Contributors (Jan. 1975 [T-MTT])
- ❑ Quasi-Guided Modes and Related Radiation Losses in Optical Dielectric Waveguides with External Higher Index Surroundings
- ❑ The Progress of Integrated Optics in Japan

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Suetake, K.

- ☐ [Microwave Applications of Thin Magnetic Resistive Sheets](#)

Sugiura, T.

- ☐ [Analysis of Distributed-Lumped Strip Transmission Lines](#)
- ☐ [Contributors \(Aug. 1977 \[T-MTT\]\)](#)

Sullivan, D.B.

- ☐ [Results, Potentials, and Limitations of Josephson-Mixer Receivers at Millimeter and Long Submillimeter Wavelengths](#)

Susman, L.

- ☐ [A Six-Port Automatic Network Analyzer \(1977 \[MWSYM\]\)](#)
- ☐ [A Six-Port Automatic Network Analyzer \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Suttie, R.A.

- ☐ Contributors (Mar. 1977 [T-MTT])
- ☐ Waveguide Subsidiary Resonance Ferrite Limiters

Sutton, C.H.

- ☐ Changes in Tumor Blood Flow Produced by Microwave Induced Hyperthermia (Abstract)

Suyama, K.

- ☐ Contributors (Jun. 1976 [T-MTT])
- ☐ Power GaAs MESFET with a High Drain-Source Breakdown Voltage

Suzuki, H.

- ☐ Contributors (Jun. 1976 [T-MTT])
- ☐ Power GaAs MESFET with a High Drain-Source Breakdown Voltage

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Suzuki, M.

- ☐ [A Coplanar Waveguide with Thick Metal-Coating \(Short Papers\)](#)

Suzuki, N.

- ☐ [A New Band-Splitting Filter for Guided-Millimeter-Wave Transmission Systems](#)
- ☐ [Contributors \(May 1976 \[T-MTT\]\)](#)

Swan, C.B.

- ☐ [A Dielectric Resonator Oscillator with 5 PPM Long Term Frequency Stability at 4 GHz](#)
- ☐ [A Low Noise MIC GaAsFET Amplifier for 4 GHz Radio](#)

Sweet, A.A.

- ☐ [Contributors \(Jul. 1976 \[T-MTT\]\)](#)
- ☐ [Power Amplification of Microwave FM Communication Signals Using a Phase-Locked Voltage-Tuned Oscillator](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ [The Circuit/Device Interface in Gunn and IMPATT Diode Applications](#)

Swift, C.T.

- ☐ [Microwave Scattering from the Ocean Surface](#)
- ☐ [Microwave Scattering from the Ocean Surface \(Short Papers\)](#)

Syrett, B.A.

- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [Intermodulation Distortion Analysis of Reflection-Type IMPATT Amplifiers Using Volterra Series Representation](#)

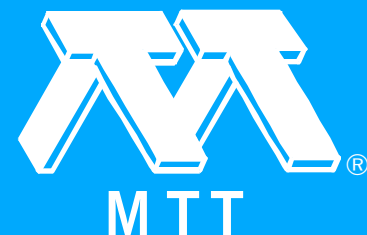
Szenasi, S.

- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)
- ☐ [Improved Microwave Repeaters for Hungarian All-Solid-State Communications Systems](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Taflove, A.

- ☐ [A Passive Electrodeless Method for Determining the Interior Field of Biological Materials](#)
- ☐ [Computation of the Electromagnetic Fields and Induced Temperatures Within a Model of the Microwave-Irradiated Human Eye](#)
- ☐ [Contributors \(Aug. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Aug. 1976 \[T-MTT\]\)](#)
- ☐ [Contributors \(Nov. 1975 \[T-MTT\]\)](#)
- ☐ [Numerical Solution of Steady-State Electromagnetic Scattering Problems Using the Time-Dependent Maxwell's Equations](#)

Tai, C.-T.

- ☐ [Contributors \(Sep. 1976 \[T-MTT\]\)](#)
- ☐ [Different Representations of Dyadic Green's Functions for a Rectangular Cavity](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Takao, I.

- ☐ Contributors (Apr. 1975 [T-MTT])
- ☐ Optimum Modulator Design for a High-Sensitivity Homodyne System--Binary Modulation Method

Takase, I.

- ☐ A Compact 60-GHz Transmitter--Receiver
- ☐ Contributors (Nov. 1976 [T-MTT])

Takayama, Y.

- ☐ A New Load-Pull Characterization Method for Microwave Power Transistors
- ☐ Contributors (Aug. 1975 [T-MTT])
- ☐ Effect of Temperature on Device Admittance of GaAs and Si IMPATT Diodes

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Takenaka, S.

- ☐ [Low-Loss Bandpass Filters at 80 GHz Using Cylindrical TE/sub 111/ -Mode Cavities](#)

Takeuchi, T.

- ☐ [The Segmentation Method--An Approach to the Analysis of Microwave Planar Circuits \(Short Papers\)](#)

Takiyama, K.

- ☐ [High-Quality Image Reconstruction from Double Microwave Holograms \(Short Papers\)](#)

Tamir, T.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Network Methods for Dielectric-Grating Applications](#)
- ☐ [Theory of Periodic Dielectric Waveguides](#)
- ☐ [Theory of Periodic Dielectric Waveguides \(Correction\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tamura, S.

- ☐ [Microwave Bandpass Filters Containing Dielectric Resonators with Improved Temperature Stability and Spurious Response](#)

Tan, F.C.

- ☐ [Contributors \(Mar. 1975 \[T-MTT\]\)](#)
- ☐ [Design Data for Radial-Waveguide Circulators Using Partial-Height Ferrite Resonators](#)

Tan, F.C.F.

- ☐ [Suppression of Higher Order Modes in Waveguide-Junction Circulators Using Coupled Open Dielectric Resonators \(Letters\)](#)

Tanabe, K.

- ☐ [Numerical Analysis of Eigenvalue Solution of Disk Resonator \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tanaka, I.

- ☐ [A Variable Directional Coupler Using InSb Thin Films \(Short Papers\)](#)

Tanaka, K.

- ☐ [Application of the Beam Mode Expansion to the Analysis of Noise Reduction Structure \(Short Papers\)](#)

Tanaka, M.

- ☐ [Application of the Beam Mode Expansion to the Analysis of Noise Reduction Structure \(Short Papers\)](#)

Tanaka, S.

- ☐ [Numerical Analysis of Eigenvalue Solution of Disk Resonator \(Short Papers\)](#)

Tanaka, T.

- ☐ [An Ideal Refractive-Index-Distribution and Mode Filter for Band Broadening of Multimode Optical Fiber](#)

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Tang, D.

- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [Effects of Depletion-Layer Modulation on Spurious Oscillations in IMPATT Diodes](#)

Tang, D.D.

- ☐ [Bias-Tuning and Modulation Characteristics of Transferred-Electron Oscillators](#)
- ☐ [Contributors \(Sep. 1975 \[T-MTT\]\)](#)

Tang, R.

- ☐ [Contributors \(Nov. 1975 \[T-MTT\]\)](#)

Tanji, A.

- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [Propagation Losses of Guided Modes in an Optical Graded-Index Slab Waveguide with Metal Cladding](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tannenwald, P.E.

- ☐ [Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes](#)

Tarassov, V.J.

- ☐ [Control of Manufacturing Distortions in WT4 Millimeter Waveguide Medium](#)

Tarnawecky, M.Z.

- ☐ [Microwave YIG-Tuned Elements as Transducers for Monitoring of EHV AC and HVDC Transmission Systems](#)

Tatsuguchi, I.

- ☐ [A Dielectric Resonator Oscillator with 5 PPM Long Term Frequency Stability at 4 GHz](#)

Taub, J.

- ☐ [Varactor Frequency Doublers and Triplers for the 200 to 300 GHz Range](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Taub, J.J.

- ☐ [Foreword \(Apr. 1977 \[T-MTT\]\)](#)

Tauritz, J.L.

- ☐ [Prototype Networks in Broadband Parametric Amplifier Synthesis](#)

Tearle, C.A.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)
- ☐ [IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature \(1975 \[MWSYM\]\)](#)
- ☐ [IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature \(Dec. 1975 \[T-MTT\]\)](#)

Teh, G.A.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Tapered Optical Directional Coupler](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Temple, S.J.

- ☐ [A Broadband Planar N-Way Combiner/Divider](#)

Terakado, R.

- ☐ [General Form of Green's Function for Multilayer Microstrip Line with Rectangular Side Walls \(Letters\)](#)
- ☐ [The Characteristic Impedance of Rectangular Coaxial Line with Ratio 2:1 of Outer-to-Inner Conductor Side Length \(Letters\)](#)

Thal, Jr., H.L.

- ☐ [Loss Mechanisms in Coupled Cavity Filters](#)

Tham, Q.C.

- ☐ [Contributors \(Jul. 1977 \[T-MTT\]\)](#)
- ☐ [Modes and Cutoff Frequencies of Crossed Rectangular Waveguides](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Thomson, A.F.

- ☐ Calculation of Microstrip Discontinuity Inductances
- ☐ Contributors (Aug. 1975 [T-MTT])
- ☐ Equivalent Circuit Parameters of Microstrip Step Change in Width and Cross Junctions (Short Papers)

Thrane, L.

- ☐ Contributors (Oct. 1975 [T-MTT])
- ☐ Efficient Minimax Design of Networks without Using Derivatives
- ☐ Efficient Minimax Design of Networks without Using Derivatives (Correction)

Tien, P.K.

- ☐ Contributors (Jan. 1975 [T-MTT])
- ☐ Radiation Fields of a Tapered Film and a Novel Film-to-Fiber Coupler

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Tiernan, R.J.

- ☐ [Contributors \(Oct. 1975 \[T-MTT\]\)](#)
- ☐ [Nonreciprocal Delay Line for Use in S Band Tubes](#)

Tinney, C.E.

- ☐ [Contributors \(Jan. 1976 \[T-MTT\]\)](#)
- ☐ [Rate Effects in Isolated Turtle Hearts Induced by Microwave Irradiation](#)

Tippet, J.C.

- ☐ [A New Approximation for the Capacitance of a Rectangular-Coaxial-Strip Transmission Line \(Short Papers\)](#)

Tischer, F.J.

- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [Excess Conduction Losses at Millimeter Wavelengths](#)
- ☐ [Experimental Attenuation of Rectangular Waveguides at Millimeter-Wavelengths \(1977 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Surface Characteristics of Metals and Waveguide Attenuation at Millimeter-Wave Frequencies Between 25 and 160 GHz

Tognazzi, R.

- ❑ Field Propagation in an Open-Beam Waveguide (Short Papers)

Tohyama, H.

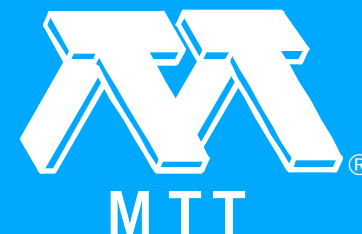
- ❑ 20 GHz Band GaAs-FET Waveguide-Type Amplifier

Tokita, N.

- ❑ Selective Heating of Cutaneous Human Tumors at 27.12 MHz (Abstract)

Tokoyo, N.

- ❑ Wideband Tunable and Highly Stabilized Millimeterwave IMPATT Diode Oscillators



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tokumitsu, Y.

- ☐ [A High Power 50GHz DDR IMPATT Oscillator with Low Side Band Noise](#)
- ☐ [A New Temperature Stabilized Waveguide Circulator](#)

Toler, J.C.

- ☐ [Preliminary In-Vivo Probe Measurements of Electrical Properties of Tumors in Mice](#)

Topuz, E.

- ☐ [E-Type Modes in Cylindrical Dielectric Waveguides with Periodic Boundary Perturbations \(Short Papers\)](#)

Toutain, S.

- ☐ [The Elliptical Dielectric Waveguide a Very Useful Model for Some Microwave and Millimeter Wave Integrated Circuits and Components](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Townes, C.H.

- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ K-Band Traveling-Wave Maser Using Ruby
- ☐ The Challenge of Astronomy to Millimeter-Wave Technology

Toyama, Y.

- ☐ A High Power 50GHz DDR IMPATT Oscillator with Low Side Band Noise
- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ High-Power 50-GHz Double-Drift-Region IMPATT Oscillators with Improved Bias Circuits for Eliminating Low-Frequency Instabilities

Tozer, R.C.

- ☐ Characterization of Microwave Oscillator and Amplifier Circuits Using an IMPATT Diode Biased Below Breakdown (Comments and Authors' Reply)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tremere, D.A.

- ☐ [A Power Silicon Microwave MOS Transistor](#)
- ☐ [Contributors \(Jun. 1976 \[T-MTT\]\)](#)

Trew, R.J.

- ☐ [Harmonic Tuning Effects of TRAPATT Oscillators](#)
- ☐ [The Operation of S-Band TRAPATT Oscillators with Tuning at Multiple Harmonic Frequencies \(Short Papers\)](#)

Tripathi, V.K.

- ☐ [Asymmetric Coupled Transmission Lines in an Inhomogeneous Medium](#)
- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Sep. 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [Equivalent Circuits and Characteristics of Inhomogeneous Nonsymmetrical Coupled-Line Two-Port Circuits \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

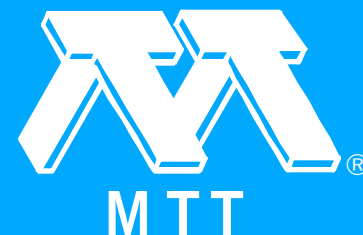
- ❑ [On the Analysis of Symmetrical Three-Line Microstrip Circuits](#)

Tromp, H.

- ❑ [Contributors \(Apr. 1976 \[T-MTT\]\)](#)
- ❑ [Contributors \(Sep. 1976 \[T-MTT\]\)](#)
- ❑ [Efficient Calculation of Exact Group Delay Sensitivities](#)
- ❑ [Efficient Calculation of Exact Group Delay Sensitivities \(Correction\)](#)
- ❑ [Integrated Approach to Microwave Design \(1975 \[MWSYM\]\)](#)
- ❑ [Integrated Approach to Microwave Design \(Sep. 1976 \[T-MTT\]\)](#)

Troy, Jr., B.E.

- ❑ [A Versatile Millimeter-Wave Imaging System](#)
- ❑ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



Contents

Authors

Tsai, C.S.

- ☐ [Signal Processing Using Guided-Wave Acoustooptic Bragg-Diffraction in LiNbO₃ Waveguides](#)

Tsai, L.L.

- ☐ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)
- ☐ [Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue \(Correction\)](#)
- ☐ [Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue \(Short Papers\)](#)

Tsai, T.-L.

- ☐ [Band Stop Filter Using LPE-YIG Films](#)

Tsai, W.C.

- ☐ [A High-Power Solid-State C-Band Transmitter for MIS Applications](#)
- ☐ [C-Band Solid State TWT Replacement](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tsandoulas, G.N.

- ☐ Contributors (May 1975 [T-MTT])
- ☐ Propagation In Dielectric-Lined Square Waveguides

Tseng, B.

- ☐ Dielectric Loss in Microstrip Lines (Short Papers)

Tserng, H.Q.

- ☐ Contributors (Dec. 1976 [T-MTT])
- ☐ Microwave Power GaAs FET Amplifiers
- ☐ Wide-Band Varactor-Tuned GaAs MESFET Oscillators at X- and Ku-Bands
- ☐ X-Band MIC GaAs FET Power Amplifier

Tsui, J.

- ☐ Dynamic Microwave Frequency Division Characteristics of Coplanar Transferred-Electron Devices in a Resistive Circuit (Letters)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tsukamoto, K.

- ☐ [Receiving Part of Satellite Borne Millimeter Wave Transponder](#)

Tsutsumi, M.

- ☐ [Behavior of the Magnetostatic Wave in a Periodically Corrugated YIG Slab \(Short Papers\)](#)
- ☐ [Contributors \(Mar. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Sep. 1976 \[T-MTT\]\)](#)
- ☐ [Effect of the Magnetic Perturbation on Magnetostatic Surface-Wave Propagation](#)
- ☐ [The Piezoelectric-Magnetoelastic Wave Propagation through the Conducting Plate in a Composite Medium \(Short Papers\)](#)

Tucker, R.S.

- ☐ [Low-Noise Design of Microwave Transistor Amplifiers \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tufekcioglu, A.

- ☐ Contributors (Sep. 1975 [T-MTT])
- ☐ Spectral-Domain Calculation of Microstrip Characteristic Impedance

Turner, J.A.

- ☐ An Experimental Evaluation of X-Band GaAs FET Mixers Using Single and Dual-Gate Devices
- ☐ Contributors (Jun. 1976 [T-MTT])
- ☐ GaAs MESFET Small-Signal X-Band Amplifiers
- ☐ Some Aspects of GaAs MESFET Reliability

Uehara, Y.

- ☐ The Segmentation Method--An Approach to the Analysis of Microwave Planar Circuits (Short Papers)

Uhlir, Jr., A.

- ☐ Contributors (Apr. 1977 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ Error Minimization in Network Analyzer Measurement of Varactor Quality (Short Papers)

Upadhyayula, C.L.

- ❑ Contributors (Dec. 1976 [T-MTT])
- ❑ Transferred Electron Logic Devices for Gigabit-Rate Signal Processing (Dec. 1976 [T-MTT])

Upadhyayula, L.C.

- ❑ Transferred Electron Logic Devices (TELDs) for Gigabit Rate Signal Processing (1976 [MWSYM])

Utsumi, Y.

- ❑ Resonant Frequency of a $TE_{01\delta}$ Dielectric Resonator

Valdoni, F.

- ❑ Shuttle Pulse Measurement of Mode Coupling and Conversion (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Van Bladel, J.

- ☐ Contributors (Feb. 1975 [T-MTT])
- ☐ On the Resonances of a Dielectric Resonator of Very High Permittivity
- ☐ The Electric-Dipole Resonances of Ring Resonators of Very High Permittivity (Short Papers)
- ☐ The Excitation of Dielectric Resonators of Very High Permittivity

Van Blaricum, M.L.

- ☐ The Coupling of a Single-Ridge Waveguide to a Fabry-Perot Resonator (Short Papers)

van de Vaart, H.

- ☐ A SAW Pulse Compression Filter Using the Reflective Dot Array

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

van der Heyden, B.F.

- ☐ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ☐ [Design of Stable, Very Low Noise, Cavity-Stabilized IMPATT Oscillators for C Band](#)

Van Der Pauw, L.J.

- ☐ [Contributors \(Sep. 1977 \[T-MTT\]\)](#)
- ☐ [The Radiation of Electromagnetic Power by Microstrip Configurations](#)

van Gelder, H.

- ☐ [Implementation of a Military Digital Microwave System](#)

van Heuven, J.H.C.

- ☐ [A New Integrated Waveguide-Microstrip Transition \(Short Papers\)](#)

Van Hook, H.J.

- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Microwave Properties of Lithium Ferrites \(Short Papers\)](#)

Vanier, G.R.

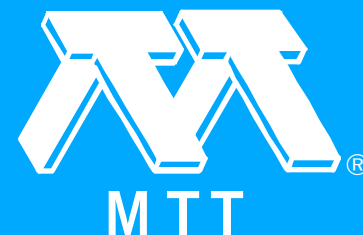
- ❑ [Diode Structures for a Millimeter Wave Phase Shifter](#)

Vassallo, C.

- ❑ [Contributors \(Jul. 1977 \[T-MTT\]\)](#)
- ❑ [Linear Power Responses of an Optical Fiber](#)
- ❑ [On a Direct Use of Edge Condition in Modal Analysis \(Short Papers\)](#)
- ❑ [On the Expansion of Axial Field Components in Terms of Normal Modes in Perturbed Waveguides \(Letters\)](#)

Vaterkowski, J.L.

- ❑ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ❑ [New Modes of Operation for Avalanche Diodes: Frequency Multiplication and Upconversion](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Vaughan, J.R.M.

- ☐ Discussion of "The Resonant Frequency and Tuning Characteristics of a Narrow-Gap Reentrant Cylindrical Cavity" (Letters)

Vendelin, G.D.

- ☐ Feedback Effects in the GaAs MESFET Model (Letters)
- ☐ Feedback Effects on the Noise Performance of GaAs MESFETs

Venema, A.

- ☐ Enhancement of Surface-Acoustic-Wave Piezoelectric Coupling in Three-Layer Substrates (Short Papers)

Vernet, G.

- ☐ The Josephson Self-Oscillator Mixer as a Submillimeter and Far-Infrared Detector

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Vernon, Jr., F.L.

- ☐ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ☐ [The Super-Schottky Diode](#)

Verplanken, M.

- ☐ [The Electric-Dipole Resonances of Ring Resonators of Very High Permittivity \(Short Papers\)](#)

Villasenor, P.

- ☐ [Implementation of a Military Digital Microwave System](#)

Vlaardingerbroek, M.T.

- ☐ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ☐ [On the Circuit-Device Interface in IMPATT-Diode Applications](#)
- ☐ [Theory of Noise and Transfer Properties of IMPATT Diode Amplifiers](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Vokes, J.C.

- ☐ [A Low Noise FET Amplifier in Coplanar Waveguide](#)

Voss, W.A.G.

- ☐ [Single Hybrid Tee Frequency Discriminator \(Letters\)](#)

Wachtel, H.

- ☐ [Microwave-Power Absorption by Rectangular-Shaped Conductive Dielectric Samples in Stripline \(Letters\)](#)

Wahi, P.

- ☐ [Effect of Diode Parameters on Reflection-Type Phase Shifters \(Short Papers\)](#)

Wait, J.R.

- ☐ [Contributors \(May 1975 \[T-MTT\]\)](#)
- ☐ [Contributors \(Sep. 1976 \[T-MTT\]\)](#)
- ☐ [Electromagnetic Theory of the Loosely Braided Coaxial Cable: Part I](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ Influence of Spatial Dispersion of the Shield Transfer Impedance of a Braided Coaxial Cable (Letters)
- ❑ Propagation Along a Braided Coaxial Cable in a Circular Tunnel
- ❑ Propagation Along a Braided Coaxial Cable Located Close to a Tunnel Wall (Short Papers)

Wakino, K.

- ❑ Microwave Bandpass Filters Containing Dielectric Resonators with Improved Temperature Stability and Spurious Response

Walker, M.G.

- ❑ A 12-15 GHz High Gain Amplifier Design Using Submicron Gate GaAs Field Effect Transistors

Wallace, R.N.

- ❑ A 60-W CW Solid-State Oscillator at C Band (Letters)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Walsh, J.E.

- ☐ Relativistic Electron-Beam-Generated Coherent Submillimeter Wavelength Cerenkov Radiation

Walter, R.

- ☐ Probe Measurements of Guide Wavelength in Rectangular Silicon Dielectric Waveguide

Wang, H.-C.

- ☐ 2 GHz Feed for Horn-Reflector Antenna Utilizing Evanescent Mode Filter
- ☐ A Class of Waveguide Filters for Over-Moded Applications (Correction)

Wang, S.-Y.

- ☐ Contributors (Nov. 1976 [T-MTT])
- ☐ K-Band Traveling-Wave Maser Using Ruby

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Wanselow, R.D.

- ☐ [Prototype Characteristics for a Class of Dual-Mode Filters \(Short Papers\)](#)

Warner, J.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [Nonreciprocal Magneto optic Waveguides](#)

Watanabe, K.

- ☐ [Contributors \(Apr. 1975 \[T-MTT\]\)](#)
- ☐ [Optimum Modulator Design for a High-Sensitivity Homodyne System--Binary Modulation Method](#)

Watjen, J.P.

- ☐ [Wide-Band Frequency Discriminator with High Linearity](#)

Webb, D.C.

- ☐ [Contributors \(Dec. 1975 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

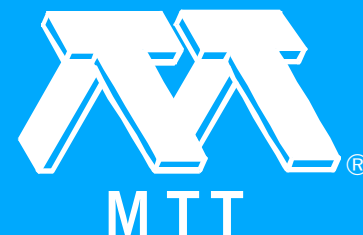
- ❑ Microstrip Excitation of Magnetostatic Surface Waves: Theory and Experiment
- ❑ Radiation Resistance of Microstrip Excited Magnetostatic Surface Waves

Weidman, M.P.

- ❑ A Semi-Automated Sixport for Measuring Millimeter Wave Power and Complex Reflection Coefficient (1977 [MWSYM])
- ❑ A Semiautomated Six Port for Measuring Millimeter-Wave Power and Complex Reflection Coefficient
- ❑ Contributors (Dec. 1977 [T-MTT])

Weiner, D.D.

- ❑ A Scattering Variable Approach to the Volterra Analysis of Nonlinear Systems
- ❑ Contributors (Jul. 1976 [T-MTT])



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Weinreb, S.

- ☐ Contributors (Apr. 1977 [T-MTT])
- ☐ Multiband Low-Noise Receivers for a Very Large Array

Weir, W.B.

- ☐ Recent Advances in Binary-Programmed Electronically-Tunable Bandpass Filters of the "Flauto" Type

Weis, M.

- ☐ Contributors (May 1977 [T-MTT])
- ☐ Measurement of Microwave Loss Tangent by Means of Microwave Resonator Bridge (Short Papers)

Weisberg, L.R.

- ☐ Microwave Technology in the Department of Defense (Panel Discussion)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Weisbrod, S.

- ☐ [Determination of Complex Dielectric and Magnetic Properties of Materials](#)

Wellens, U.

- ☐ [Clocked Diode Pulse Amplifiers for Microwave Bit Rates](#)
- ☐ [Contributors \(Dec. 1976 \[T-MTT\]\)](#)
- ☐ [Diode Circuits for Pulse Regeneration and Multiplexing at Ultrahigh Bit Rates](#)

Weller, J.F.

- ☐ [Actively Controlled SAW Multistrip Coupler](#)

Weller, K.P.

- ☐ [Advanced Solid-State Components for Millimeter Wave Radars](#)
- ☐ [Circuit Characterization of V-Band IMPATT Oscillators and Amplifiers](#)

Click on title for a paper summary.

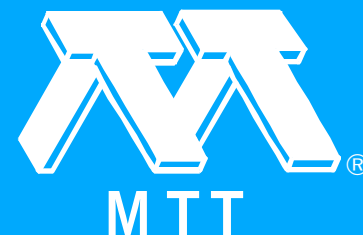


Papers by Author

- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Contributors (Nov. 1976 [T-MTT])
- ❑ Low Cost X-Band MIC BARITT Doppler Sensor (Abstract)
- ❑ Millimeter IMPATT Sources for the 130-170-GHz Range
- ❑ Millimeter-Wave IMPATT Sources for Communication Applications
- ❑ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (1977 [MWSYM])
- ❑ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (Dec. 1977 [T-MTT])

Wenzel, R.J.

- ❑ Exact Design of Wideband Equal-Ripple Bandpass Filters with Non-Adjacent Resonator Couplings
- ❑ Narrowband Contiguous Multiplexing Filters with Arbitrary Amplitude and Delay Response



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author

- ❑ Solving the Approximation Problem for Narrowband Bandpass Filters with Equal-Ripple Passband Response and Arbitrary Phase Response

Westphal, W.B.

- ❑ Dielectric Measurements for the Design of a Phantom Eye

Wexler, A.

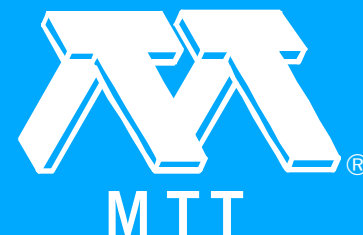
- ❑ Solution of Large, Sparse Systems in Design and Analysis
- ❑ Variational Solution of Integral Equations (Correction)

Wheeler, H.A.

- ❑ Contributors (Aug. 1977 [T-MTT])
- ❑ Transmission-Line Properties of a Strip on a Dielectric Sheet on a Plane

Whelehan, J.

- ❑ Present and Future Capability of Millimeter-Wave Receivers (Abstract)



Contents

Authors

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Whelehan, J.J.

- ☐ [Contributors \(Apr. 1977 \[T-MTT\]\)](#)
- ☐ [Low-Noise Millimeter-Wave Receivers](#)

Whicker, L.R.

- ☐ [Annotated Literature Survey of Microwave Ferrite Control Components and Materials for 1968-1974](#)
- ☐ [Contributors \(Nov. 1975 \[T-MTT\]\)](#)

Whitehouse, H.J.

- ☐ [Real Time Discrete Fourier Transforms Using a Programmable Diode-Convolver Module](#)

Whitman, G.

- ☐ [Scattering by Periodic Metal Surfaces with Sinusoidal Height Profile - A New Theoretical Approach](#)

Wickstrom, R.A.

- ☐ [A Power Silicon Microwave MOS Transistor](#)

Click on title for a paper summary.



Papers by Author

- ❑ Contributors (Jun. 1976 [T-MTT])

Wight, J.S.

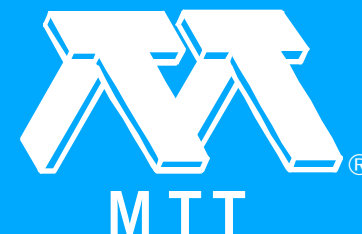
- ❑ A Microstrip and Stripline Crossover Structure (Letters)
- ❑ An All-Harmonic Coupling-Band Hybrid (Letters)

Wiley, P.H.

- ❑ Depolarization Measurements on the ATS-6 20 GHz Downlink: A Description of the VPI&SU Experiment and Some Initial Results (1975 [MWSYM])
- ❑ Depolarization Measurements on the ATS-6 20-GHz Downlink: A Description of the VPI & SU Experiment and Some Initial Results (Short Papers)

Wilhelm, J.F.

- ❑ Contributors (Dec. 1976 [T-MTT])
- ❑ Transferred Electron Logic Devices (TELDs) for Gigabit Rate Signal Processing (1976 [MWSYM])



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ Transferred Electron Logic Devices for Gigabit-Rate Signal Processing (Dec. 1976 [T-MTT])

Williams, A.E.

- ❑ Contributors (Dec. 1977 [T-MTT])
- ❑ Contributors (Oct. 1976 [T-MTT])
- ❑ Dual Mode Canonical Waveguide Filters (1977 [MWSYM])
- ❑ Dual-Mode Canonical Waveguide Filters (Dec. 1977 [T-MTT])
- ❑ General TE/sub 011/-Mode Waveguide Bandpass Filters
- ❑ Generalized TE/sub 011/ Mode Waveguide Bandpass Filters
- ❑ Measurements of Intercavity Couplings (Short Papers)
- ❑ Temperature Compensation of TE/sub 011/-Mode Circular Cavities (Short Papers)

Williams, N.

- ❑ Millimetre-Wave Insular Guide Frequency Scanned Array

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Williamson, A.G.

- ☐ Contributors (Apr. 1976 [T-MTT])
- ☐ The Resonant Frequency and Tuning Characteristics of a Narrow-Gap Reentrant Cylindrical Cavity

Williamson, R.C.

- ☐ Surface-Acoustic-Wave Device for Doppler Filtering of Radar Burst Waveforms
- ☐ The Physics and Equivalent Circuit of the Basic SAW Resonator

Willing, H.A.

- ☐ Contributors (Jun. 1976 [T-MTT])
- ☐ Wide-Band Gallium Arsenide Power MESFET Amplifiers

Wilson, L.K.

- ☐ Contributors (Nov. 1975 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Wilson, M.G.F.

- ☐ Contributors (Jan. 1975 [T-MTT])
- ☐ Tapered Optical Directional Coupler

Wilson, W.J.

- ☐ Contributors (Apr. 1977 [T-MTT])
- ☐ The Aerospace Low-Noise Millimeter-Wave Spectral Line Receiver (Short Papers)

Winn, R.K.

- ☐ Contributors (Jan. 1975 [T-MTT])
- ☐ Coupling from Multimode to Single-Mode Linear Waveguides Using Horn-Shaped Structures

Wisseman, W.R.

- ☐ Contributors (Dec. 1976 [T-MTT])
- ☐ Microwave Power GaAs FET Amplifiers
- ☐ X-Band MIC GaAs FET Power Amplifier

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Witters, D.M.

- ☐ [The Design and Performance of a Circularly Polarized Direct Contact Applicator for Microwave Diathermy](#)

Wolfe, A.R.

- ☐ [Digital Phase Shifter Elements for a K/sub u/-Band Phased Array RADAR](#)

Wolff, E.A.

- ☐ [NASA Microwave Propagation and Interference Studies \(Abstract\)](#)
- ☐ [Public Service Satellite Communications Opportunities](#)

Wolff, I.

- ☐ [A Method for Calculating the Frequency-Dependent Properties of Microstrip Discontinuities](#)
- ☐ [Contributors \(Feb. 1977 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ The Electromagnetic Fields and the Phase Constants of Dielectric Image Lines (1977 [MWSYM])
- ☐ The Microstrip Double-Ring Resonator (Short Papers)

Wong, D.Y.

- ☐ Contributors (Jan. 1976 [T-MTT])
- ☐ Synthesis of Two Classes of Acoustic Surface-Wave Filter Tap Weights

Wong, R.W.

- ☐ Process Technology and Modeling of a Low-Noise Silicon Bipolar Transistor with Sub-Micron Emitter Widths

Wright, D.L.

- ☐ Communications Technology Satellite Systems, Space and Ground Segments

Wrixon, G.T.

- ☐ Contributors (Nov. 1976 [T-MTT])

Click on title for a paper summary.



Papers by Author

- ❑ [Schottky-Diode Realization for Low-Noise Mixing at Millimeter Wavelengths](#)

Wu, C.-L.

- ❑ [Scattering of Microwaves by Dielectric Materials Used in Laboratory Animal Restrainers](#)

Wu, T.-K.

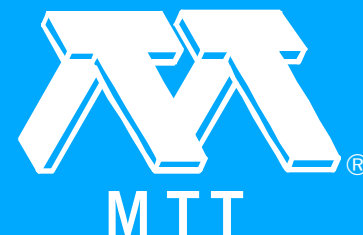
- ❑ [Contributors \(Jan. 1977 \[T-MTT\]\)](#)
- ❑ [Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue \(Short Papers\)](#)

Wu, T.K.

- ❑ [Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue \(Correction\)](#)

Wu, Y.-S.

- ❑ [A Study of Nonlinearities and Intermodulation Characteristics of 3-Port Distributed Circulators](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

❑ Contributors (Feb. 1976 [T-MTT])

❑ X-Band Silicon Power Transistor

Wu, Y.S.

❑ X-Band Microstrip-Inserted Puck Circulator Using Arc-Plasma-Sprayed Ferrite (Short Papers)

Yahara, T.

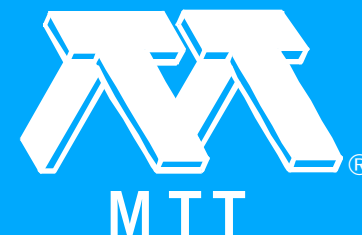
❑ Broad-Band 180° Phase Shift Section in X Band (Short Papers)

Yamada, J.

❑ Influence of Longitudinal Magnetic Field on the CW Submillweter Waves Output from HCN Gas Laser

Yamada, S.

❑ Contributors (Jul. 1977 [T-MTT])



Contents

Authors

Click on title for a paper summary.



Papers by Author

- ❑ Energy Analysis for the Amplification Phenomena of Magnetostatic Surface Waves in a YIG-Semiconductor Coupled System

Yamaguchi, G.M.

- ❑ A V-Band Network Analyzer/Reflection Test Unit
- ❑ Design, Implementation, and Performance Analysis of a Broad-Band V-Band Network Analyzer (Short Papers)

Yamaguchi, M.

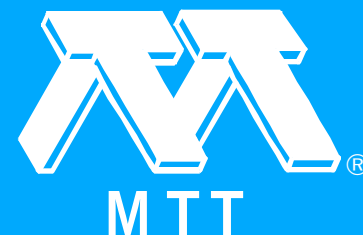
- ❑ 4 GHz 8x8 Switch Matrix for SDMA System

Yamaguchi, S.

- ❑ Contributors (Jul. 1977 [T-MTT])
- ❑ Ferrite Planar Circuits in Microwave Integrated Circuits

Yamamoto, H.

- ❑ 20G-400M Digital Radio-Relay System



Contents

Authors

Click on title for a paper summary.



Papers by Author

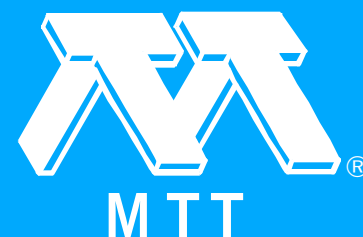
- ❑ 400-Mb/s QPSK Repeater for 20-GHz Digital Radio-Relay System
- ❑ Contributors (Apr. 1975 [T-MTT])

Yamamoto, K.

- ❑ Analysis and Design of a Millimeter-Wave Bandpass Filter with a Stopband in the Specified Higher Frequencies
- ❑ Contributors (Nov. 1976 [T-MTT])

Yamashita, E.

- ❑ Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations
- ❑ Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations (Correction)
- ❑ Application of MIC Formulas to a Class of Integrated-Optics Modulator Analyses: A Simple Transformation (Short Papers)
- ❑ Contributors (Apr. 1976 [T-MTT])



Contents

Authors

Click on title for a paper summary.



Papers by Author



[Contents](#)
[Authors](#)

- ☐ Contributors (Feb. 1977 [T-MTT])
- ☐ Distributed Capacitance of a Thin-Film Electrooptic Light Modulator (Letters)

Yamaura, I.

- ☐ Contributors (Aug. 1977 [T-MTT])
- ☐ Measurements of 1.8--2.7-GHz Microwave Attenuation in the Human Torso
- ☐ The Double-Swept-Frequency Locating Reflectometer (Short Papers)

Yanai, H.

- ☐ Recent Development or Transferred Electron Logic Devices in Japan

Yang, R.F.H.

- ☐ Capacitance of a Circular Disk for Applications in Microwave Integrated Circuits (Short Papers)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Yao, I.W.

- ☐ [Signal Processing Using Guided-Wave Acoustooptic Bragg-Diffraction in LiNbO₃ Waveguides](#)

Yariv, A.

- ☐ [Contributors \(Jan. 1975 \[T-MTT\]\)](#)
- ☐ [GaAs and GaAlAs Devices for Integrated Optics](#)

Yeh, C.

- ☐ [Fiber and Diffused Waveguide Structures for Distributed-Feedback Lasers \(Short Papers\)](#)

Yeh, D.T.

- ☐ [Characteristic Impedance and Field Patterns of the Shielded Microstrip on a Ferrite Substrate \(Short Papers\)](#)

Ying, R.S.

- ☐ [Contributors \(Dec. 1977 \[T-MTT\]\)](#)
- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)

Click on title for a paper summary.

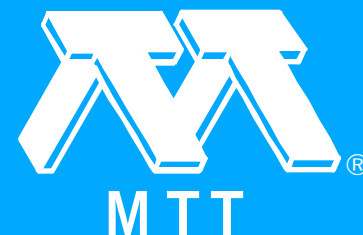


Papers by Author

- ❑ Millimeter IMPATT Sources for the 130-170-GHz Range
- ❑ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (1977 [MWSYM])
- ❑ Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (Dec. 1977 [T-MTT])

Yip, G.L.

- ❑ Contributors (Jan. 1977 [T-MTT])
- ❑ Contributors (Mar. 1977 [T-MTT])
- ❑ Dispersion Characteristics of the Dipolar Modes in a Waveguide Partially Filled with a Magnetized Ferrite Column
- ❑ Field and Power Density Distributions of the Dipolar Modes in a Partially Filled Cylindrical Plasma Waveguide (Short Papers)
- ❑ The Relations Between Scalar Modes in a Lenslike Medium and Vector Modes in a Self-Focusing Optical Fiber (Short Papers)



Contents
Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Yngvesson, K.S.

- ☐ [A Traveling-Wave Maser Amplifier for 85-90 GHz Using a Slot-Fed Image-Guide Slow-Wave Circuit](#)
- ☐ [Contributors \(Nov. 1976 \[T-MTT\]\)](#)
- ☐ [K-Band Traveling-Wave Maser Using Ruby](#)
- ☐ [Low Noise Traveling-Wave Maser Receiver for Three Millimeter Wavelength](#)

Yodokawa, T.

- ☐ [Contributors \(May 1977 \[T-MTT\]\)](#)
- ☐ [Radiation Losses of Planar Circuit Resonators and the R/Q Parameter \(Short Papers\)](#)

Yoshida, N.

- ☐ [Analysis of the Transient Temperature Distribution in a Stripline with Triple-Layer Dielectric \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Young, D.T.

- ☐ Contributors (May 1975 [T-MTT])
- ☐ Minimum-Phase Behavior of Random Media

Young, L.

- ☐ Microwave Technology in the Department of Defense (Panel Discussion)
- ☐ The New Pensions Law and How You Might Benefit from it

Youssef, S.E.

- ☐ Central Metal Post in Stripline Circulators (Short Papers)
- ☐ Contributors (Feb. 1977 [T-MTT])
- ☐ Performance Characteristics of 4-Port Stripline Circulators (Short Papers)

Yuan, H.-T.

- ☐ X-Band Silicon Power Transistor

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Yuan, L.T.

- ☐ A Low Noise Broadband Ka-Band Waveguide Mixer
- ☐ A V-Band Network Analyzer/Reflection Test Unit
- ☐ Contributors (Dec. 1977 [T-MTT])
- ☐ Design and Performance Analysis of an Octave Bandwidth Waveguide Mixer
- ☐ Design, Implementation, and Performance Analysis of a Broad-Band V-Band Network Analyzer (Short Papers)
- ☐ Low Noise Octave Bandwidth Waveguide Mixer

Yuki, S.

- ☐ Oscillation Characteristics of Millimeter-Wave IMPATT Diodes Mounted in Low-Impedance Waveguide Mounts (Short Papers)

Yukimoto, T.

- ☐ High Power Microwave Static Induction Transistor

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Yulpatov, V.K.

- ☐ [The Gyrotron](#)

Yunik, M.

- ☐ [Microwave YIG-Tuned Elements as Transducers for Monitoring of EHV AC and HVDC Transmission Systems](#)

Zimmerman, R.L.

- ☐ [Advanced Solid-State Components for Millimeter Wave Radars](#)

Zimmermann, P.

- ☐ [22-GHz Measurements of Dielectric Constants and Loss Tangents of Castable Dielectrics at Room and Cryogenic Temperatures \(Short Papers\)](#)

Ziolkowski, F.P.

- ☐ [A Dynamic Calibration Method for Biphasic Phase-Shift-Keyed Modulators](#)

Click on title for a paper summary.

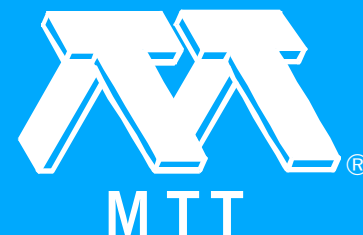


Papers by Author

- ❑ Contributors (Apr. 1975 [T-MTT])
- ❑ Contributors (Nov. 1976 [T-MTT])
- ❑ Generation of Millimeter-Wave Signals of High Spectral Purity

Zuckerman, D.N.

- ❑ Analysis of a Waveguide Hybrid Junction by Rank Reduction
- ❑ Analysis of Waveguide Junctions by Rank Reduction
- ❑ Contributors (Jul. 1977 [T-MTT])
- ❑ Contributors (Sep. 1977 [T-MTT])
- ❑ Rank Reduction of Ill-Conditioned Matrices in Waveguide Junction Problems



IEEE

Contents

Authors

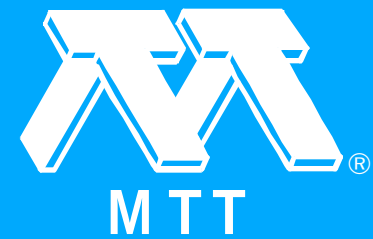
Click on title for a paper summary.



Abstracts

Front Cover (Jan. 1975 [T-MTT])

"Front Cover (Jan. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

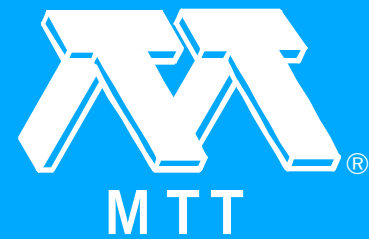
[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Editorial (Jan. 1975 [T-MTT])

D. Marcuse. "Editorial (Jan. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 1-1.

This Special Issue of the IEEE Transactions on Microwave Theory and Techniques is devoted to two closely related fields: integrated optics and optical waveguides. The subject of optical waveguides is pertinent to optical communications by means of glass fibers and to the circuitry of integrated optics. The theory of optical waveguides has reached a stage of relative maturity while integrated optics is still in a relatively early stage of its development. Fiber waveguides seem to have a fairly secure future since the spectacular successes of glass fiber research almost certainly ensure their application in optical communications systems. Already there are examples of experimental military applications of optical fibers and their use in the telephone system is anticipated.

[Click on title for a complete paper.](#)

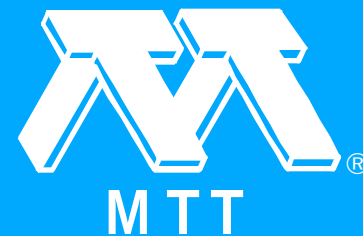


Abstracts

An Introduction to Integrated Optics

H. Kogelnik. "An Introduction to Integrated Optics." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 2-16.

An introduction is given to the principles of integrated optics and optical guided-wave devices. The characteristics of dielectric waveguides are summarized and methods for their fabrication are described. An illustration is given of recent work on devices including directional couplers, filters, modulators, light deflectors, and lasers.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Progress of Integrated Optics in Japan

Y. Suematsu. "The Progress of Integrated Optics in Japan." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 16-20.

Recent progress in the field of integrated optics in Japan is reviewed. The research effort on planar guides, active integrated optics, and microoptics is outlined and pertinent references are given.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Heterostructure Injection Lasers

M.B. Panish. "Heterostructure Injection Lasers." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 20-30.

The utilization of the nearly ideal heterojunction that can be achieved between GaAs and Al/sub x/ Ga/sub 1-x/As to confine both light and electrical carriers has lead to the evolution of several new classes as injection lasers with very low room-temperature current-density thresholds for lasing ($\sim 1000 \text{ A/cm}^2$), and structures whose operation can be more readily understood than the earlier homostructure lasers. These are as follows: the single-heterostructure (SH) laser which utilizes one heterojunction to confine light and carriers on one side of the structure; the double-heterostructure (DH) laser in which both carriers and light are confined to the same region; and the separate-confinement-heterostructure (SCH) laser in which the carriers are separately confined to a narrow region within the optical cavity. A state-of-the-art description of these lasers and some of the mode structures encountered in their operation is presented. Recent work is described which permits the growth of low-strain heterostructures with heterojunctions between GaAs and Al/sub x/Ga/sub 1-x/As/sub 1-y/P/sub y/ strain reduction from mismatch and bonding of contacts has resulted in lasers which, while maintaining very low room-temperature current thresholds, also have very long lifetimes ($> 10^5 \text{ h}$) for continuous operation.

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Integrated Optics at 10.6- μ m Wavelength

W.S.C. Chang. "Integrated Optics at 10.6- μ m Wavelength." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 31-44.

While the major objective of integrated optics at the visible-light and near-infrared wavelength is to provide thin-film components to obtain switching, modulation, source, detection, etc., for fiber-optics communication, the immediate objective of integrated optics at the 10.6- μ m wavelength is to improve the operational characteristics of conventional bulk components via guided-wave technology. This paper will discuss the properties of the waveguides, the modulators, the passive components, and the waveguide laser that have been made to date. The most significant advancement is probably guided-wave modulation. Both the analysis and the initial experimental measurements indicate that pi-phase or 100-percent amplitude UHF-VHF modulation could be obtained with only a few hundred watts of modulation drive power. Microwave modulation has also been experimentally demonstrated. Naturally, this is only an interim report. Many exciting developments will be obtained in the future.

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

GaAs and GaAlAs Devices for Integrated Optics

V. Evtuhov and A. Yariv. "GaAs and GaAlAs Devices for Integrated Optics." 1975 *Transactions on Microwave Theory and Techniques* 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 44-57.

The emergence of a monolithic optical circuit technology depends on the availability of materials capable of performing complex electrooptic functions and on the development of new fabrication techniques. The work done on GaAs and its related alloys is reviewed and summarized, and their feasibility for integrated optical circuits is examined.

[Click on title for a complete paper.](#)

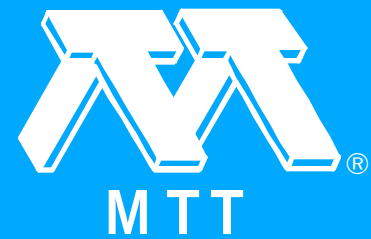


Abstracts

Optical Waveguide Modulators

I.P. Kaminow. "Optical Waveguide Modulators." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 57-70.

A tutorial survey of recent work on optical waveguide modulators in electrooptic, acoustooptic, and magneto-optic materials is presented. Methods for realizing waveguiding layers in modulating materials and various modulator configurations are considered.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Nonreciprocal Magneto-optic Waveguides

J. Warner. "Nonreciprocal Magneto-optic Waveguides." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 70-78.

The longitudinal magneto-optic effect can be used in a unique way to mix TE and TM modes of a planar dielectric waveguide where the strength of mixing is dependent upon propagation direction (forwards or reverse). A detailed study of Faraday effect circulators in optical dielectric waveguides is presented and accurate design data for a practical version are offered. At this writing, experimental confirmation has been hampered by lack of success in optically contacting two dissimilar materials.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Radiation Fields of a Tapered Film and a Novel Film-to-Fiber Coupler

P.K. Tien, G. Smolinsky and R.J. Martin. "Radiation Fields of a Tapered Film and a Novel Film-to-Fiber Coupler." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 79-85.

Light in a tapered thin-film optical waveguide radiates into the substrate because the waveguide mode in the taper becomes cut off. Our measurement of the radiation pattern shows that the light emerges from the taper as a narrow beam with an angular width of only 2°-4°. We have studied the problem based on ray optics and based on a wave theory of radiation modes. We also have demonstrated a film-to-fiber coupler in which an optical fiber collects all the light emerging from the taper.

[Click on title for a complete paper.](#)



Abstracts

Tapered Optical Directional Coupler

M.G.F. Wilson and G.A. Teh. "Tapered Optical Directional Coupler." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 85-92.

Tapered velocity optical directional couplers showing 100-percent coupling have been fabricated in thin film form. A computer analysis shows that this type of coupler has greatly improved tolerance properties and does not, in particular, suffer from the severe tolerance restriction placed on velocity synchronism in conventional uniform couplers.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

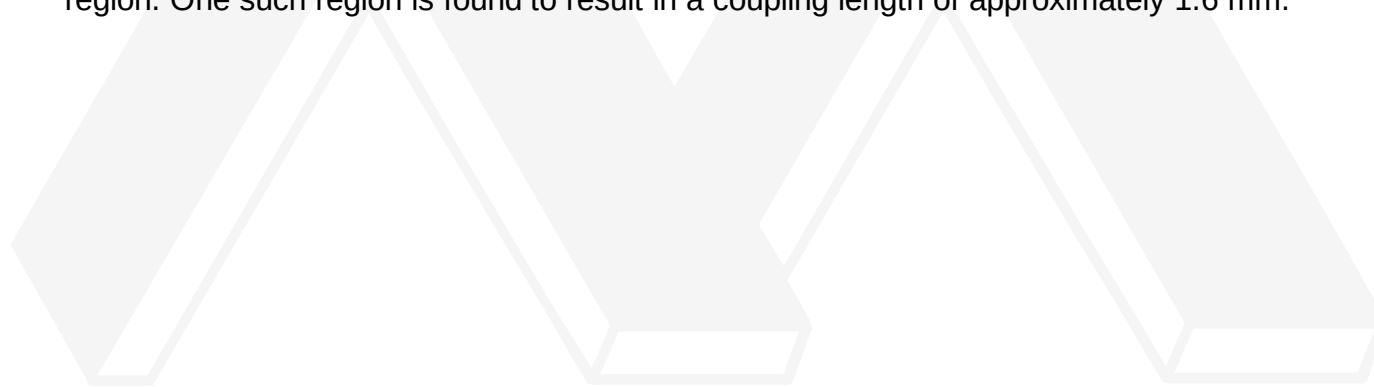
[Papers](#)

[Authors](#)

Coupling from Multimode to Single-Mode Linear Waveguides Using Horn-Shaped Structures

R.K. Winn and J.H. Harris. "Coupling from Multimode to Single-Mode Linear Waveguides Using Horn-Shaped Structures." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 92-97.

Coupling from a multimode to a single-mode linear waveguide using horn-shaped structures is investigated. The approximate coupling efficiency is found by numerical solution of coupled-mode equations that apply to the reciprocal problem, i.e., to the problem of propagation in an expanding horn. A coupling efficiency in excess of 90 percent is calculated when coupling is from the principal mode of a sample 50- μm -wide multimode waveguide to a 3- μm -wide single-mode guide ($\lambda = 0.63 \mu\text{m}$). This efficiency results from a uniformly tapered horn whose length is on the order of 2 mm. The length can be decreased by using a shaped coupling region. One such region is found to result in a coupling length of approximately 1.6 mm.



[Click on title for a complete paper.](#)



Abstracts

Propagation, Attenuation, and Dispersion Characteristics of Inhomogeneous Dielectric Slab Waveguides

E.F. Kuester and D.C. Chang. "Propagation, Attenuation, and Dispersion Characteristics of Inhomogeneous Dielectric Slab Waveguides." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 98-106.

A numerical method based upon invariant imbedding and the transverse impedance concept is applied to the problem of calculating various properties of inhomogeneous slab waveguides. The approach appears not only to be rapidly convergent but is also capable of giving arbitrary accuracy for any given mode. In particular, some interesting properties of a class of asymmetric profiles are pointed out, relating to discussions of lossy structures, temporal pulse distortion, and spatial broadening.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

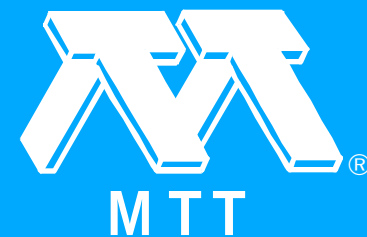


Abstracts

Propagation Effects in Optical Fibers

D. Gloge. "Propagation Effects in Optical Fibers." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 106-120.

The round dielectric waveguide exhibits a surprising variety of characteristics that are not accurately inferable from the slab model. The forceful effort of recent years has greatly extended the knowledge of these structures and added new and exciting modifications. An attempt to unify these results in a simplified picture is made. Specific phenomena relevant to optical fiber design and fabrication are then brought into focus. Some of the problems discussed are cross sectional loss variations, various core index profiles and the tolerances required in their preparation, the necessary cladding thickness, directional changes, and sources of mode coupling affecting signal distortion and loss.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

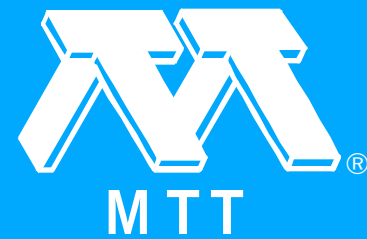


Abstracts

Pulse Propagation in Multimode Fibers with Frequency-Dependent Coupling

R. Steinberg. "Pulse Propagation in Multimode Fibers with Frequency-Dependent Coupling." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 121-122.

Marcuse's time-dependent coupled power equations are rederived so as to include the frequency dependence of the coupling coefficients. For the case of white-noise coupling, the solution is then expressed simply in terms of that for frequency-independent coupling.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theory of Periodic Dielectric Waveguides

S.T. Peng, T. Tamir and H.L. Bertoni. "Theory of Periodic Dielectric Waveguides." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 123-133.

The propagation of electromagnetic waves along open periodic, dielectric waveguides is formulated here as a rigorous and exact boundary-value problem. The characteristic field solutions are shown to be of the surface-wave or leaky-wave type, depending on the ratio of periodicity to wavelength (d/λ). The dispersion curves and the space-harmonic amplitudes of these fields are examined for both TE and TM modes. Specific numerical examples are given for the cases of holographic layers and for rectangularly corrugated gratings; these show the detailed behavior of the principal field components and the dependence of waveguiding and leakage characteristics on the physical parameters of the periodic configuration.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Reflection at a Curved Dielectric Interface -- Electromagnetic Tunneling

A.W. Snyder and J.D. Love. "Reflection at a Curved Dielectric Interface -- Electromagnetic Tunneling." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 134-141.

The reflection of a locally plane wave from a curved interface between two nonabsorbing dielectric media is investigated. Our analysis is applicable to an interface of general shape, defined at each point by the two principal radii of curvature. When the wave is incident from the denser medium at angles greater than the critical angle it is only partially reflected, due to a form of electromagnetic tunneling. Generalized Fresnel transmission coefficients and an extension of Snell's law are derived to account for this transmission into the less dense medium. Ray tracing can then be applied to determine such phenomena as the bending losses in optical slab waveguides, and the curvature loss of skew rays within straight optical waveguides of circular cross section.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Radiation from Bends in Dielectric Rod Transmission Lines

E.-G. Neumann and H.-D. Rudolph. "Radiation from Bends in Dielectric Rod Transmission Lines." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 142-149.

The radiation from the fundamental mode propagating around curved dielectric rod transmission lines is investigated experimentally with microwave frequencies. Three methods are used to determine the attenuation by radiation: measuring the insertion loss of bends, measuring the Q-factor of ring resonators, and measuring the Q-factor of sections of curved dielectric rod transmission lines terminated by large reflecting plates. The attenuation is found to depend mainly on the combination $R\lambda_0^2/r_0^3$, where R is the radius of curvature, λ_0 the free space wavelength and r_0 a measure of the transverse field extent of the HE_{11} mode. The experimental results are compared with theoretical predictions of other authors. The measured values of the attenuation constant are found to be smaller than the theoretical values. The distribution of the electromagnetic field near bends is recorded using a semiautomatic field plotter. From the field pictures, it can be concluded that the curved dielectric waveguide radiates tangentially from the outer side. The results presented will also be useful for understanding the mechanism of radiation from bent optical waveguides.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Rays, Beams, and Modes Pertaining to the Excitation of Dielectric Waveguides

L.B. Felsen and S.-Y. Shin. "Rays, Beams, and Modes Pertaining to the Excitation of Dielectric Waveguides." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 150-161.

The two-dimensional problem of excitation of an inhomogeneous dielectric layer by a Gaussian beam is considered, with emphasis on useful representations that treat the field either in terms of multiple reflections or in terms of guided modes. A recently developed method is employed whereby the beam fields are generated from line source fields by assigning a complex value to the source coordinates. When applied to the asymptotic solution for the line source field, this procedure furnishes a simple and quantitative relation between line-source-excited ray optics and paraxial beam optics. It also clarifies the role of lateral ray and beam shifts for reflection at a boundary with incidence-angle-dependent reflection coefficient, especially when multiply reflected fields are converted into modal form. Results are given for beams which are reflected at both boundaries, reflected at one boundary and refracted before reaching the other boundary, and trapped by refraction without reaching either boundary. In the first case, conversion to modal form is more convenient at large distances whereas in the latter case, paraxial beam tracking is preferable.

[Click on title for a complete paper.](#)



Abstracts

Modal Analysis of Coupling Problems in Optical Fibers

A. Cardama and E.T. Kornhauser. "Modal Analysis of Coupling Problems in Optical Fibers." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 162-169.

A modal analysis of the problems of excitation of the dominant mode in an optical fiber by incident plane waves and Gaussian beams has been carried out, and the results applied to the effect on transmission of misalignment in fiber junctions due to offsets, tilts, and gaps. The results in cases of matched media confirm the accuracy of previous theoretical treatments using the Born approximation, which in turn show good agreement with experimental results. In addition, the modal analysis gives more precise solutions when there is a mismatch of media and makes possible the treatment of some problems to which the Born approximation is not applicable.



IEEE

[Contents](#)

[Publications](#)

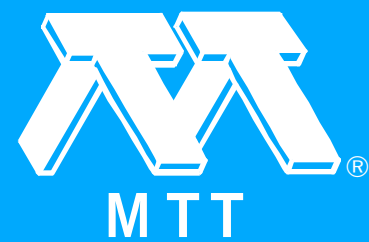
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Quasi-Guided Modes and Related Radiation Losses in Optical Dielectric Waveguides with External Higher Index Surroundings

Y. Suematsu and K. Furuya. "Quasi-Guided Modes and Related Radiation Losses in Optical Dielectric Waveguides with External Higher Index Surroundings." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 170-175.

Mode filter actions are found theoretically in an optical dielectric waveguide consisting of a core and a thin cladding layer which is further surrounded by an external higher index region. The propagating waves, which are usually considered to be cutoff modes, can be guided with a small amount of loss under a certain condition. These waves are defined here as quasi-guided modes. These modes tend to the guided modes of the guide when the cladding thickness increases infinitely. A method is given to estimate the losses. As an example, the radiation losses are formulated for a symmetric slab waveguide, and are found to be approximately proportional to the cube of the mode number of the quasi-guided mode. Therefore, losses of the quasi-guided modes depend strongly on the mode number. It is suggested that fibers with large core diameters can be used as quasi-single mode fibers by covering the clad-type multimode fibers with external higher index surroundings and choosing the parameters properly.



Abstracts

A Method for Measuring the Refractive Index Profile of Thin-Film Waveguides (Letters)

R. Mittra and T. Itoh. "A Method for Measuring the Refractive Index Profile of Thin-Film Waveguides (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 176-177.

A method is described for determining the refractive index profile of an optical waveguide. All optimization algorithm has been employed to obtain the index profile from the measured reflection coefficient data. Several numerical experiments have been performed to prove the accuracy of the present method. Some of the results are included.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Distributed Capacitance of a Thin-Film Electrooptic Light Modulator (Letters)

E. Yamashita and K. Atsuki. "Distributed Capacitance of a Thin-Film Electrooptic Light Modulator (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 177-178.

An analytical method is described which determines the distributed capacitance of a thin-film electrooptic light modulator with parallel-strip electrodes. The capacitance is expressed in a variational form. The anisotropy of the crystal and the presence of surrounding air are considered. Numerical examples for the case of Li-Nb-O/sub 3/ are given.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Power Transfer of a Parallel Optical Fiber Directional Coupler (Letters)

H. Kuwahara, J. Hamasaki and S. Saito. "Power Transfer of a Parallel Optical Fiber Directional Coupler (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 178-179.

This letter describes experimental results of a simple optical fiber directional coupler which picks up a small portion of the transmitted power in a main optical fiber transmission line without affecting the characteristics of the main line. This directional coupler consists of two fibers closely parallel in a certain coupling length; an index matching liquid, Si-oil, fills the coupling region. A 50-dB power coupling and 21-dB directivity are measured. Insertion loss is almost negligible. The measured power coupling is much larger than that expected by the simple coupling theory.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Semi-Transparent Mirror-Type Directional Coupler for Optical Fiber Applications (Letters)

H. Kuwahara, J. Hamasaki and S. Saito. "A Semi-Transparent Mirror-Type Directional Coupler for Optical Fiber Applications (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 179-180.

A directional coupler for optical fiber applications is constructed of two pieces of optical fibers cut obliquely and a thin dielectric film. Coupling coefficient -20 dB to -10 dB depending on the refractive index of the dielectric film, insertion loss 1 dB, and directivity -20 dB are measured. They agree with the analytical results.

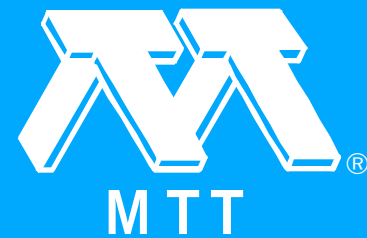
[Click on title for a complete paper.](#)



Abstracts

Contributors (Jan. 1975 [T-MTT])

H.L. Bertoni, A. Cardama, D.C. Chang, W.S.C. Chang, V. Evtuhov, L.B. Felsen, K. Furuya, D. Gloge, J.H. Harris, I.P. Kaminow, H. Kogelnik, E.T. Kornhauser, E.F. Kuester, J.D. Love, R.J. Martin, E.-G. Neumann, M.B. Panish, S.T. Peng, H.-D. Rudolph, S.-Y. Shin, G. Smolinsky, A.W. Snyder, R. Steinberg, Y. Suematsu, T. Tamir, G.A. Teh, P.K. Tien, J. Warner, M.G.F. Wilson, R.K. Winn and A. Yariv. "Contributors (Jan. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): 180-184.



IEEE

Contents

Publications

Issues

Papers

Authors

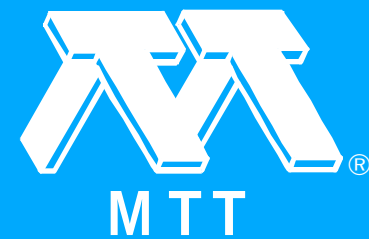
Click on title for a complete paper.



Abstracts

Back Cover (Jan. 1975 [T-MTT])

"Back Cover (Jan. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.1 (Jan. 1975 [T-MTT] (Special Issue on Integrated Optics and Optical Waveguides)): b1-b2.



IEEE

Contents

Publications

Issues

Papers

Authors

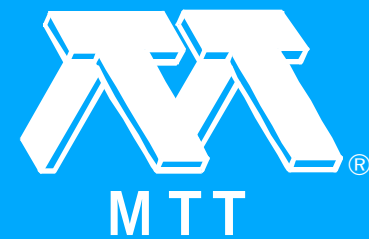
Click on title for a complete paper.



Abstracts

Front Cover (Feb. 1975 [T-MTT])

"Front Cover (Feb. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

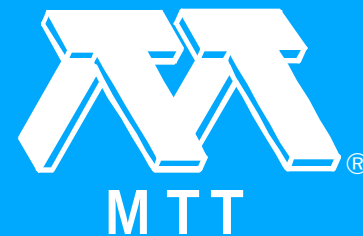


Abstracts

Scattering of Surface Waves by Metallic Obstacles on the Dielectric-Image Line

S.F. Mahmoud and J.C. Beal. "Scattering of Surface Waves by Metallic Obstacles on the Dielectric-Image Line." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 185-192.

A theoretical treatment of scattering of electromagnetic surface waves from thin metallic obstacles of a semiannular shape on the dielectric-image line is presented. The method of treatment relies heavily on the expansion of the total fields of the line in terms of its complete set of discrete and continuous modes which in turn is fully derived.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Scattering of Surface Waves at a Dielectric Discontinuity on a Planar Waveguide

S.F. Mahmoud and J.C. Beal. "Scattering of Surface Waves at a Dielectric Discontinuity on a Planar Waveguide." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 193-198.

A theoretical treatment is presented of the scattering of a surface-wave mode on a planar surface waveguide at an abrupt axial transition. The latter is due to a dielectric obstacle that covers the line completely up to a given height. The analysis involves the matching of the tangential fields, expressed in terms of complete sets of eigenmodes, on the transition plane. The problem arises in certain obstacle detection schemes currently being proposed for guided transportation, which use the principle of guided radar.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

On the Resonances of a Dielectric Resonator of Very High Permittivity

J. Van Bladel. "On the Resonances of a Dielectric Resonator of Very High Permittivity." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 199-208.

It is shown that the modes of a dielectric resonator are of two types: confined and nonconfined. Orthogonality properties and variational principles are derived for these modes, and their radiation pattern and quality factor are investigated. The material of the resonator is assumed lossless and of very high permittivity.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The Excitation of Dielectric Resonators of Very High Permittivity

J. Van Bladel. "The Excitation of Dielectric Resonators of Very High Permittivity." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 208-217.

The response of a dielectric resonator excited by either interior volume sources or incident exterior waves is investigated. Special attention is devoted to phenomena at resonance, and in particular to the induced electric and magnetic dipoles. Simple formulas are obtained for the scattering cross section. The material of the resonator is assumed lossless and of very high permittivity.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

High Order Modes in a Spherical Fabry-Perot Resonator

C.W. Erickson. "High Order Modes in a Spherical Fabry-Perot Resonator." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 218-223.

The accuracy of the approximate solution to the wave equation in the "large aperture" case was investigated. The measured distribution of energy in the various transverse modes corresponded to the Laguerre-Gaussian solutions; resonant frequencies, however, deviated from those predicted by the approximate theory by as much as 2 percent for high radial mode numbers. Two first order perturbation calculations, including a neglected term in the wave equation and the nonsphericity of constant phase surfaces, yielded resonant frequencies in agreement with experiment.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Unified Variational Solution to Microstrip Array Problems

V. Rizzoli. "A Unified Variational Solution to Microstrip Array Problems." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 223-234.

A very general variational procedure is used to compute single or coupled microstrips under the quasi-TEM approximation. The capacitance model is found by means of a unique fundamental cell. The method is essentially an extension of Smith's, but may be used to study a wider variety of problems, such as nonuniform strip arrays, coplanar striplines, and broad-side coupled strips. Moreover, it is also possible to compute the coupling capacitance between nonadjacent strips.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Wide-Band Network Modeling of Interacting Inductive Irises and Steps

T.E. Rozzi and W.F.G. Mecklenbrauker. "Wide-Band Network Modeling of Interacting Inductive Irises and Steps." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 235-245.

Methods of field and network theory are jointly applied to the problem of deriving wide-band models for interacting inductive irises and steps in standard and oversize lossless rectangular guides. The resulting equivalent network is a cascade of lumped multiports, described by means of their reactance matrix, given in the canonical Foster's form, and of several parallel transmission lines, connecting the interacting discontinuities. The required frequency band and the accuracy of the model can be prescribed at will. The features of the approach are: the solution of the field problem yields a reactance matrix with monotonic convergence properties; small matrices only need be manipulated; the frequency dependence is explicit, so that the field analysis need not be repeated at each frequency point; a true network model (and not a "spot frequency" equivalent circuit) is produced, which is prerequisite for exact synthesis.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Long-Wavelength Analysis of Plane Wave Irradiation of a Prolate Spheroid Model of Man

C.H. Durney, C.C. Johnson and H. Massoudi. "Long-Wavelength Analysis of Plane Wave Irradiation of a Prolate Spheroid Model of Man." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 246-253.

An electromagnetic (EM) field perturbation technique is used to find internal electrical fields and the absorbed power of a prolate spheroid being irradiated by a plane wave when the wavelength is long compared to the dimensions of the spheroid. The results show significant differences in the power absorption patterns with changes in the orientation of the spheroid with respect to the incident EM fields. Calculations of the power absorbed by a prolate spheroid model of man are given.

[Click on title for a complete paper.](#)



Abstracts

Design Equations for an Interdigitated Directional Coupler (Short Papers)

W.P. Ou. "Design Equations for an Interdigitated Directional Coupler (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 253-255.

General design equations for an interdigitated directional coupler are derived. The design equations are written in terms of even- and odd-mode admittances for a pair of coupled lines which are identical to any pair of adjacent lines in the coupler. The calculated values of even- and odd-mode admittances can be translated into a physical configuration from published data on coupled lines.



IEEE

Contents

Publications

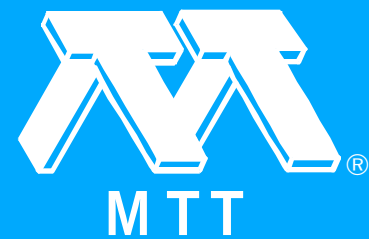
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Intermodulation Distortion and Gain Compression in Varactor Frequency Converters (Short Papers)

S.I. Ghobrial. "Intermodulation Distortion and Gain Compression in Varactor Frequency Converters (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 255-257.

Using the nonlinear theory of Gardiner and Ghobrial gain compression in varactor frequency converters is characterized and related to the distortion performance of the device. It is shown that gain compression results from the generation of a current component at the sideband frequency which is in antiphase with the main sideband current component. It is also shown that under certain conditions, high levels of intermodulation distortion can exist with practically zero gain compression.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Slant Dielectric Interface Discontinuity in a Waveguide (Short Papers)

S.C. Kashyap. "Slant Dielectric Interface Discontinuity in a Waveguide (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 257-260.

The reflection and transmission of electromagnetic waves by a slant interface between two dielectric media is investigated. By using suitable Green's functions and a geometrical optics approximation for the field on the dielectric interface, expressions for the transmitted and reflected fields are derived. The approximate results obtained in this manner are compared with the available numerical data and are shown to be fairly accurate for a number of cases of interest.

[Click on title for a complete paper.](#)



Abstracts

The Relations Between Scalar Modes in a Lenslike Medium and Vector Modes in a Self-Focusing Optical Fiber (Short Papers)

G.L. Yip and S. Nemoto. "The Relations Between Scalar Modes in a Lenslike Medium and Vector Modes in a Self-Focusing Optical Fiber (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 260-263.

The relations are established between the scalar modes in an infinite lenslike medium and the vector modes in a self-focusing optical fiber with a finite homogeneous cladding. It is shown that both the transverse fields and the longitudinal fields of the vector modes can be expressed in terms of the scalar modes, provided the fiber is operated in the core mode region. Otherwise, significant discrepancies could arise. The scalar modes, however, cannot describe the cladding modes which are caused by the index discontinuity at the outer surface of the cladding.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

On the Expansion of Axial Field Components in Terms of Normal Modes in Perturbed Waveguides (Letters)

C. Vassallo. "On the Expansion of Axial Field Components in Terms of Normal Modes in Perturbed Waveguides (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 264-265.

Arguments are proposed according to which, in the Maxwell equations giving the axial field components, the expansion of the transverse field components in terms of unperturbed normal modes could be differentiated term by term. This would be allowed when the perturbed transverse field respects the possible nullity conditions imposed by the boundaries of the unperturbed waveguide and when it has no singularity.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

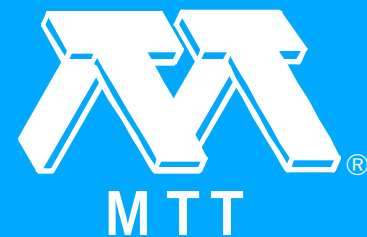
[Click on title for a complete paper.](#)



Power Deposition in a Spherical Model of Man Exposed to 1-20 MHz Electromagnetic Fields (Correction)

J.C. Lin. "Power Deposition in a Spherical Model of Man Exposed to 1-20 MHz Electromagnetic Fields (Correction)." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 265-265.

In the above paper, Fig. 5 on page 794 should be as shown here in Fig. 1. An error occurred in translating the tabulated data into graphic form. The corrected figure is consistent with the results shown in Fig. 3 of the above paper.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

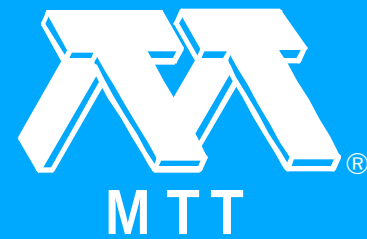


Abstracts

Variational Solution of Integral Equations (Correction)

B.H. McDonald, M. Friedman and A. Wexler. "Variational Solution of Integral Equations (Correction)." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 265-266.

In the above paper, two errors have been noted. First, the proof of positive-definiteness of the integral operator on page 239 requires that the potential vanish at infinity. This condition should have been stated just before (19b). By virtue of mirror image symmetries all the examples presented satisfy this condition.



[Contents](#)

[Publications](#)

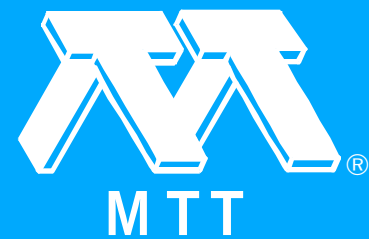
[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Surface Electromagnetic Modes of a Ferrite Slab (Correction)

T.J. Gerson and J.S. Nadan. "Surface Electromagnetic Modes of a Ferrite Slab (Correction)." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 266-266.

In the above paper, (23) is incorrectly referenced. The correct reference should be [4]. A second error appears on page 760 in the second sentence of the paragraph beginning immediately above Fig. 2. In this sentence the words "dynamic" and "magnetostatic" should be interchanged. The authors wish to thank J. Sethares of the Air Force Cambridge Research Laboratories for bringing the latter error to their attention.

[Click on title for a complete paper.](#)



Abstracts

Contributors (Feb. 1975 [T-MTT])

J.C. Beal, J. Van Bladel, C.H. Durney, C.W. Erickson, C.C. Johnson, S.F. Mahmoud, H. Massoudi, W.F.G. Mecklenbrauker, V. Rizzoli and T.E. Rozzi. "Contributors (Feb. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): 267-268.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Feb. 1975 [T-MTT])

"Back Cover (Feb. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.2 (Feb. 1975 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

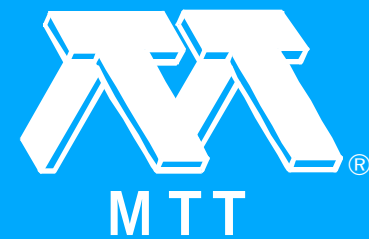
Click on title for a complete paper.



Abstracts

Front Cover (Mar. 1975 [T-MTT])

"Front Cover (Mar. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Editor's Note (Mar. 1975 [T-MTT])

F.J. Rosenbaum. "Editor's Note (Mar. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 269-269.

Beginning with the February 1975 issue, Dr. Don Parker is the Editor of the IEEE Transactions on Microwave Theory and Techniques. Dr. Parker is well known to the MTT community through his technical contributions, his long-standing involvement with MTT Symposia, and as a member of AdCom. I heartily welcome him to his new post and wish him well, knowing that the Transactions is in good hands.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

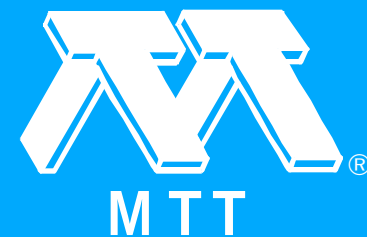


Abstracts

Comments from the Editor (Mar. 1975 [T-MTT])

D. Parker. "Comments from the Editor (Mar. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 270-270.

Although this is the second issue of the Transactions for which I am responsible, I have been intimately involved in the Editorship for about eight months. I appreciate the opportunity to contribute to the exchange of technical information and knowledge among the microwave community in this way.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Harmonically Pumped Stripline Down-Converter

M.V. Schneider and W.W. Snell, Jr.. "Harmonically Pumped Stripline Down-Converter." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 271-275.

A novel thin-film down-converter which is pumped at a submultiple of the local-oscillator frequency has given a conversion loss which is comparable to the performance of conventional balanced mixers. The converter consists of two stripline filters and two Schottky-barrier diodes which are shunt mounted in a strip transmission line. The conversion loss measured at a signal frequency of 3.5 GHz is 3.2 dB for a pump frequency of 1.7 GHz and 4.9 dB for a pump frequency of 0.85 GHz. The circuit looks attractive for use at millimeter-wave frequencies where stable pump sources with low FM noise are not readily available.

[Click on title for a complete paper.](#)



Abstracts

An Integrated-Circuit Balanced Mixer, Image and Sum Enhanced

L.E. Dickens and D.W. Maki. "An Integrated-Circuit Balanced Mixer, Image and Sum Enhanced." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 276-281.

GaAs Schottky-barrier diodes with a zero-bias cutoff frequency of 800 GHz have been used in an integrated-circuit balanced diode mixer operating with a signal frequency centered at 9.3 GHz and a local-oscillator (LO) frequency at 7.8 GHz. For an instantaneous bandwidth of 1.0 GHz, the conversion loss (including all circuits and connector losses) was under 3.15 dB. Over the center 0.5 GHz of the band, the conversion loss was less than or equal to 2.8 dB. The conversion loss at the image-band edges was greater than 25 dB; the loss at the center of the image band was greater than 35 dB.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



In-Line Signal Circuit for Broad-Band Parametric Amplifiers

S. Egami. "In-Line Signal Circuit for Broad-Band Parametric Amplifiers." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 282-287.

A new double-tuned parametric amplifier signal-circuit configuration and a method for its experimental optimization is described. A new in-line signal circuit, which is adapted from a quarter-wave-coupled bandpass filter, is intended for use at higher microwave and millimeter-wave parametric amplifiers (paramps). It is shown that, using this signal circuit, a broader flat-gain response can be obtained as compared with the conventional double-tuned signal circuit with broad-banding stub placed multihalf-wavelength apart from the diode. To suppress the spurious response, a semilumped approximation is applied in the design. Finally, a "cold and hot" test method to optimize the double-tuned signal circuit is introduced.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design Data for Radial-Waveguide Circulators Using Partial-Height Ferrite Resonators

J. Helszajn and F.C. Tan. "Design Data for Radial-Waveguide Circulators Using Partial-Height Ferrite Resonators." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 288-298.

This paper derives the eigennetworks of radial-waveguide circulators using partial-height ferrite resonators with $n=2$ Chebyshev characteristics. To obtain a Chebyshev response with such junctions it is necessary to establish the proper phase angles and admittance levels of the three eigennetworks of the device. This paper derives the phase angles for the eigennetworks but relies on experiments to establish the admittance levels. The configurations dealt with include the standard circulators using either half-wave-long ferrite resonators open circuited (OC) at both ends or coupled quarter-wave-long ferrite resonators OC at one end and short circuited (SQ) at the other. It also includes the design of a new single quarter-wave-long version, which is likely to replace the two more conventional arrangements in common usage. It is observed that the eigennetworks of any one of the geometries is sufficient to characterize the other two.

[Click on title for a complete paper.](#)

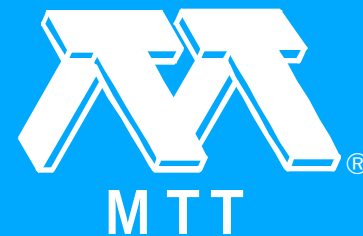


Abstracts

Computer Analysis of Short-Boundary Planar Circuits

T. Okoshi and S. Kitazawa. "Computer Analysis of Short-Boundary Planar Circuits." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 299-306.

A method of computer analysis of planar (two-dimensional) circuits having an arbitrarily shaped short boundary is proposed. The proposed method is based upon the contour integral representation of the two-dimensional wave equation. Results of the computer analyses for simple circuits are compared with analytical solutions to show the validity and accuracy of the proposed method. Some examples of analyses of practical circuits are also presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Broad-Band 180° Phase Shift Section in X Band (Short Papers)

T. Yahara, Y. Kadowaki, H. Hoshika and K. Shirahata. "Broad-Band 180° Phase Shift Section in X Band (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 307-309.

The use of an interdigitated coupler and a pair of switching circuits composed of appropriate diodes and two-stub matching circuits is experimentally shown to produce a broad-band reflection-type 180° phase shift section operating at 8.50-10.50 GHz with $\pm 2^\circ$ error when fabricated using microwave integrated circuit techniques.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Laser Fiber Coupling with a Hyperbolic Lens (Short Papers)

K. Kurokawa and E.E. Becker. "Laser Fiber Coupling with a Hyperbolic Lens (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 309-311.

Substantial improvements in the coupling efficiency from injection lasers to multimode glass fibers have been obtained by spherical lenses melted on the fiber ends. However, the spherical lens has its own drawbacks. It excites high-order modes which are slow and lossy and it becomes less effective when used with graded-index fibers such as Selfoc. This paper proposes a hyperbolic lens which, in principle, is free from these drawbacks. Several samples have been made by first grinding one end of each fiber in a wedge form and then mechanically or flame-polishing the ground surface. These preliminary samples improved the coupling efficiency by a factor of 2-5 over the simple flat-end coupling depending on the difference in the refractive indices of the core and cladding. The improvement is slightly better than that achieved by spherical lenses.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

RF Cavity Irradiation Dosimetry (Short Papers)

W.P. Edwards and H.S. Ho. "RF Cavity Irradiation Dosimetry (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 311-313.

A right circular cylindrical cavity designed to resonate at 380 MHz was developed to irradiate a monkey head with little or no radio frequency exposure to other tissues. The system is used in studies of the behavioral effects of the absorption of radiant power. Dose-rate measurements were made with an electrically equivalent calorimetric load, consisting of a saline-filled plastic cylinder whose geometry and position in the cavity reproduced cavity and transmission line parameters measured with a test animal. Since integral dose rate $P_{\text{sub } m} /$ (total power absorbed) is proportional to the net power transmitted to the cavity $P_{\text{sub } t} /$ the constant of proportionality $K_{\text{sub } m} = P_{\text{sub } m} / P_{\text{sub } t}$ must account for the absorption of field energy by the tissue. $K_{\text{sub } m}$ was determined by comparing the temperature rise produced in a fixed time period by the dissipation of dc power to the temperature rise produced by RF radiation in the same time period. It was found that, at an ambient temperature of $25 \pm 2^\circ\text{C}$ and a relative humidity of 55 ± 5 percent, $K_{\text{sub } m}$ was 0.62.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Behavioral Suppression by 383-MHz Radiation (Short Papers)

R.J. Cunitz, W.D. Galloway and C.M. Berman. "Behavioral Suppression by 383-MHz Radiation (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 313-316.

The heads of two rhesus monkeys were irradiated in a 383-MHz resonant cavity immediately before and during performance of a four-choice forced-choice serial reaction task. CW radiation at integral dose rates of 0.001 -17.5 W were delivered to the head. No effects were observed below a critical dose level (≈ 23 W/kg) derived from integral dose rate and body mass. Above this level, behavioral suppression occurred, i.e., correct response rate was profoundly altered. The effect was completely reversible and repeatable in one of the subjects--the other subject did not recover completely and was sacrificed for histological examination which revealed no gross or microscopic damage. The nature of the effect suggests a neurochemical rather than an electrical or mechanical basis for the results.

Click on title for a complete paper.



Abstracts

The Double-Swept-Frequency Locating Reflectometer (Short Papers)

I. Yamaura and T. Hidaka. "The Double-Swept-Frequency Locating Reflectometer (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 316-317.

A swept-frequency-type reflectometer is newly developed which is capable of measuring the distances to the reflection locations and reflection magnitudes in the coaxial line or waveguide, using a double-swept-frequency (DSF) source and a bandpass filter. The principle of this reflectometer and experimental results obtained at 2 GHz are given.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Slotted Line Measurements for Propagation Constant in Lossy Waveguide (Short Papers)

F.E. Gardiol. "Slotted Line Measurements for Propagation Constant in Lossy Waveguide (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 317-319.

The propagation coefficient in a slotted waveguide partially loaded with a lossy dielectric can be determined accurately, in terms of the measured standing-wave pattern, by means of a computer program solving a set of transcendental equations. This determination is a necessary step in a permittivity measurement technique which was recently proposed by several authors.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Measurement of the Electromagnetic-Field Components in a Rectangular Drift Tube-Loaded Cavity Using Various Perturbing Objects (Short Papers)

F. Brunner, W. Schott and H. Daniel. "Measurement of the Electromagnetic-Field Components in a Rectangular Drift Tube-Loaded Cavity Using Various Perturbing Objects (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 319-320.

The electric-field quantities E , E_{y} , E_{z} , and the magnetic-field quantities H and H_{x} in a rectangular drift tube-loaded cavity resonating in the TE_{101} mode have been measured along the z direction by means of the perturbation method using a dielectric bead, a metallic disk, a metallic needle, a metallic sphere, and a ferrite disk. The relative errors for E and E_{y} are 3 percent; for E_{z} , 10 percent on the average; whereas for H and H_{x} , they are 10 percent at least. The ferrite disk, being superior to the metallic sphere, offers a new technique in determining magnetic-field components in cavity resonators.

Click on title for a complete paper.

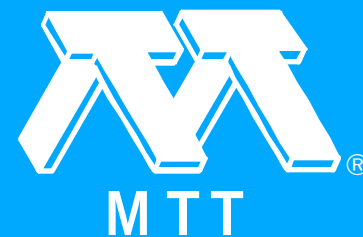


Abstracts

A New Type of Isolator Using the Edge-Guided Mode (Letters)

K. Araki, T. Koyama and Y. Naito. "A New Type of Isolator Using the Edge-Guided Mode (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 321-321.

Experiments on a new edge-guided mode isolator are reported. In this isolator, one edge of a wide strip is shorted to the ground, and no lossy electrical materials are used. Large isolation and small insertion losses were obtained.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A Lower Limit on the Interaction Between Symmetrical Odd-Mode Fringing Capacitances (Letters)

H.J. Riblet. "A Lower Limit on the Interaction Between Symmetrical Odd-Mode Fringing Capacitances (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 322-323.

Let us denote the familiar odd-mode fringing capacitance which is plotted in graphs given by Getsinger by C_{f0}' . It is further defined by Fig. 1(b) in the limit as the magnetic wall tends to infinity on the right. We also denote the corresponding fringing capacitance of the symmetrical coaxial structure of Fig. 1(a) by C_{f0} . When the dimensions of Fig. 1(a) and (b) are such that $s' = s$, it is convenient to denote the difference between C_{f0}' and C_{f0} by ΔC_{f0} , and define it as the interaction between the symmetrical odd-mode fringing capacitances. Clearly, ΔC_{f0} has the property of approaching zero as $w/(b-t) \rightarrow 0$ [w is defined in Fig. 1(a)]. Moreover, whenever ΔC_{f0} is known, C_{f0} is also known.

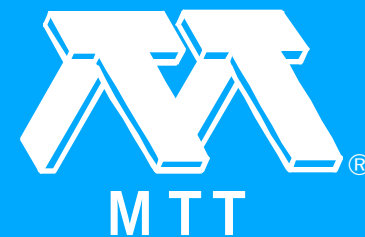
Click on title for a complete paper.



Abstracts

Contributors (Mar. 1975 [T-MTT])

L.E. Dickens, S. Egami, J. Helszajn, S. Kitazawa, D.W. Maki, T. Okoshi, M.V. Schneider, W.W. Snell, Jr. and F.C. Tan. "Contributors (Mar. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 323-324.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Mar. 1975 [T-MTT])

"Back Cover (Mar. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Apr. 1975 [T-MTT])

"Front Cover (Apr. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Foreword (Apr. 1975 [T-MTT])

R.E. Fisher. "Foreword (Apr. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 325-325.

The idea for this Special Issue on Microwave Communications grew out of a desire to couple the device and circuit designers within the microwave community more closely to the systems that utilize the outputs of their technologies. Accordingly, this Special Issue has been assembled in order to describe systems either currently operating, or under development, whose concept was stimulated, and existence made possible, by devices and circuits developed by members of the MTT Society and the organizations they represent.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A High-Capacity Digital Communication System Using TE/sub 01/ Transmission in Circular Waveguide

T.A. Abele, D.A. Alsberg and P.T. Hutchison. "A High-Capacity Digital Communication System Using TE/sub 01/ Transmission in Circular Waveguide." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 326-333.

In this paper, we describe the characteristics and several parts of a high-capacity digital communications system using the low-loss circular waveguide.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



400-Mb/s QPSK Repeater for 20-GHz Digital Radio-Relay System

H. Yamamoto, K. Kohiyama and K. Morita. "400-Mb/s QPSK Repeater for 20-GHz Digital Radio-Relay System." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 334-341.

This paper describes the design and performance of a repeater for a 20-GHz high-speed digital radio-relay system with a transmission capacity of 400 Mb/s. The repeater is totally solid state for miniaturization, high reliability and economy with the adoption of microwave IC's, monolithic IC's, and direct oscillation by Gunn diodes in the 20-GHz band. The modulation and demodulation techniques of the repeater employ QPSK, which has a theoretical advantage over FSK, DPSK, or ASK in error rate performance, considering spectrum utilization. The error rate performance is further improved by using a simple digital equalization for intersymbol interference. The error rate performance of this system was measured. From the test results, it became evident that the equivalent carrier-to-noise ratio (C/N) degradation of error rate performance at a 10^{-6} error rate was about 5 dB under fixed temperature conditions and that the equivalent C/N degradation due to a -10°C to $+45^{\circ}\text{C}$ temperature variation was only 1 dB. The experimental 13-hop system employing the repeaters has been operating stably since April 1973.



Abstracts

Improved Microwave Repeaters for Hungarian All-Solid-State Communications Systems

T. Berceli, G. Hammer, F. Rakosi, G. Reiter and S. Szenasi. "Improved Microwave Repeaters for Hungarian All-Solid-State Communications Systems." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 341-348.

Improvements in microwave repeaters are outlined utilizing new circuit concepts for the receiver, transmitter, and branching-filter systems. In this way, a 1.5-dB decrease in the receiver noise figure and a 1-dB reduction in the attenuation of branching-filter systems are obtained with a simultaneous 2-dB overall increase of transmitter-multiplier and upconverter efficiencies, resulting in a higher signal-to-noise ratio. An improvement is achieved in the AM-to-PM conversion and group-delay characteristics, too. The new circuits have been developed for Hungarian all-solid-state communications systems operating in the 4-, 6-, and 8-GHz frequency bands.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Low-Cost Multiple-Channel 12-GHz Receiver for Satellite Television Broadcasting

C.O. Risch, J.P. Singh, F.J. Rosenbaum and R.O. Gregory. "A Low-Cost Multiple-Channel 12-GHz Receiver for Satellite Television Broadcasting." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 348-353.

The design of a low-cost FM-microwave satellite-ground-station receiver is described. It is capable of accepting 12 contiguous color-television equivalent-bandwidth channels in the 11.72-12.2-GHz band using a wide-band FM format and frequency division multiplexing (FDM) of the channels. Each channel has 36 MHz of usable bandwidth with a 4-MHz guard band and provides a CATV compatible output. The overall system specifications are first discussed. Then consideration is given to the design, fabrication, and evaluation of the different subsystems in the receiver.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

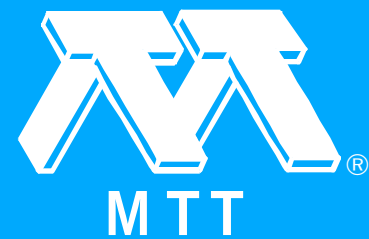
Optimum Modulator Design for a High-Sensitivity Homodyne System--Binary Modulation Method

K. Watanabe and I. Takao. "Optimum Modulator Design for a High-Sensitivity Homodyne System--Binary Modulation Method." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 354-359.

The optimum modulation method for a high-sensitivity homodyne system employing a reflection-type modulator is investigated. General expressions are derived which describe the effect of the modulator performance on the phase-sensitive conversion loss and noise figure of the system. It is shown that the highest phase-detection and the highest amplitude-detection sensitivities can be simultaneously attainable by the binary modulation method. This theoretical result is confirmed by the performance of the practical system employing a varactor binary modulator. The system has the minimum conversion loss of 6.3 dB. The rejection ratio for the quadrature signal is 42 dB, and the noise figure is 8.7 dB at 9.45 GHz.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Linearity Improvement of Microwave FM Oscillators by Harmonic Tuning

G.G. Endersz. "Linearity Improvement of Microwave FM Oscillators by Harmonic Tuning." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 360-367.

A new linearizing method for microwave communication FM oscillators is presented. As a linearizing mechanism the frequency perturbation caused by tuned harmonic(s) is utilized. Analytical formulation of linearity requirements for the general case are given and explicit relations are delivered for the second harmonic-tuned FM oscillator. Linearity and noise loading results are shown, obtained with an experimental 250-mW X band Gunn diode FM oscillator and satisfying CCIR linearity and noise loading requirements for broad-band microwave radio links.

[Click on title for a complete paper.](#)



Abstracts

Gunn-Effect Amplifiers for Microwave Communication Systems in X, Ku, and Ka Bands

J.G. de Koning, R.E. Goldwasser, R.J. Hamilton, Jr. and F.E. Rosztoczy. "Gunn-Effect Amplifiers for Microwave Communication Systems in X, Ku, and Ka Bands." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 367-374.

This paper describes the design and performance of small-signal stable multistage Gunn-effect reflection-type amplifiers for communication systems in X, Ku, and Ka bands. A single-stage design approach is developed, based on measured small-signal Z parameters of the Gunn diodes. This technique is then applied to a microstrip medium at lower frequencies (X and Ku bands) and to a coax/waveguide hybrid structure at Ku band. Performance of a two-stage amplifier is described in the bands 11.7 to 12.2 GHz and 14.0 to 14.5 GHz. In high Ka band, performance of both a two- and a four-stage amplifier is presented.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Analysis and Design of a Low-Noise X-Band MIC Mixer 1-GHz IF Amplifier

J.E. Degenford and B.A. Newman. "Analysis and Design of a Low-Noise X-Band MIC Mixer 1-GHz IF Amplifier." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 375-376.

The analysis and design of a low-noise 500-MHz bandwidth MIC image- and sum-enhanced 12-GHz mixer-IF amplifier is described. Typical midband noise figures of 6.3 dB have been achieved.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Guidance of 100-GHz Beams by Cylindrical Mirrors

J.A. Arnaud and J.T. Ruscio. "Guidance of 100-GHz Beams by Cylindrical Mirrors." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 377-379.

Microwave beams can be kept confined by sequences of pairs of cylindrical mirrors, each pair acting as a lens. At 100 GHz, with 1.2-m x 1.2-m focusers spaced 80 m apart, a loss of the order of 2 dB/km has been measured in clear weather. The use of this beam-guiding arrangement, called a "Hertzian cable," for distribution of information in cities is discussed.

[Click on title for a complete paper.](#)



Abstracts

Molecular Transfer Characteristics of Air Between 40 and 140 GHz

H.J. Liebe. "Molecular Transfer Characteristics of Air Between 40 and 140 GHz." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 380-386.

Radio wave propagation in the 40-140-GHz band through the first hundred kilometers of the clear atmosphere is strongly influenced by many (> 30) lines of the oxygen microwave spectrum (O_2 -MS) and to a lesser extent by water vapor. A unified treatment of molecular attenuation and phase dispersion is formulated whereby results of molecular physics are translated into frequency-, temperature-, and pressure-dependencies. The propagation factors are developed for O_2 continuum ($h < 10$ km) and line ($h > 20$ km) spectra taking into account pressure-broadening ($h < 40$ km), Zeeman-splitting ($h > 40$ km), and Doppler broadening ($h > 60$ km). The influence of water vapor is discussed briefly. The filter characteristics of dry air are evaluated for various path models. Examples of computer plots of attenuation and dispersion rates are given as a function of altitude h for homogeneous, zenith, and tangential path geometries through the 1962 U. S. standard atmosphere.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Evaluation of Linearity by Transformation of the Amplitude Characteristic

G.R. Stette. "Evaluation of Linearity by Transformation of the Amplitude Characteristic." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 387-390.

This paper addresses the problem of defining, measuring, and evaluating linearity of memoryless, nonlinear devices with relatively narrow bandwidths. The analysis is based on the single-carrier transfer characteristic and leads to a definition of linearity in terms of a transform which is determined by the input-signal composition and the working conditions of the device.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



A Dynamic Calibration Method for Biphas Phase-Shift-Keyed Modulators

F.P. Ziolkowski. "A Dynamic Calibration Method for Biphas Phase-Shift-Keyed Modulators." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 390-395.

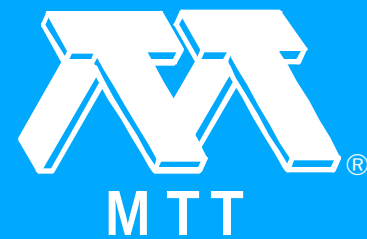
A method is proposed whereby a (microwave) phase bridge can be constricted to simultaneously measure both the phase and amplitude balance of a biphas phase-shift-keyed (PSK) modulator. Given an initial narrow-band phase shifter that is capable of either continuous uncalibrated phase shifting or slow switching between calibrated fixed-90° phase shifts, the phase and amplitude balance of a second wide-band phase shifter (biphas modulator) can be determined. Furthermore, these measurements may be dynamically and simultaneously displayed in real time on a dual-trace oscilloscope. A significant feature of the method is the unique identification of either or both the phase and amplitude unbalance by means of the symmetric or asymmetric features that these unbalances induce in the display Pattern. Quantitative criteria for the sensitivity of the technique are presented.



Abstracts

Contributors (Apr. 1975 [T-MTT])

T.A. Abele, D.A. Alsberg, J.A. Arnaud, T. Berceli, J.E. Degenford, J.G. de Koning, G.G. Endersz, R.E. Goldwasser, R.O. Gregory, R.J. Hamilton, Jr., G. Hammer, P.T. Hutchison, K. Kohiyama, H.J. Liebe, K. Morita, B.A. Newman, F. Rakosi, G. Reiter, C.O. Risch, F.J. Rosenbaum, F.E. Rosztoczy, J.T. Ruscio, J.P. Singh, G.R. Stette, S. Szenasi, I. Takao, K. Watanabe, H. Yamamoto and F.P. Ziolkowski. "Contributors (Apr. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): 396-400.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Back Cover (Apr. 1975 [T-MTT])

"Back Cover (Apr. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.4 (Apr. 1975 [T-MTT] (Special Issue on Microwave Communications)): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (May 1975 [T-MTT])

"Front Cover (May 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Propagation Along a Braided Coaxial Cable in a Circular Tunnel

J.R. Wait and D.A. Hill. "Propagation Along a Braided Coaxial Cable in a Circular Tunnel." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 401-405.

The modes of propagation along a coaxial structure contained within a circular tunnel are considered. The primary objective is to develop an approximate impedance boundary condition at the outer surface of the shielded cable that can be used in previously developed formalisms for axial conductors in tunnels. It is assumed that the metal braid can be characterized by a surface-transfer impedance. We also account for the possibility that a lossy film exists on the outer surface of the dielectric jacket of the cable.

[Click on title for a complete paper.](#)

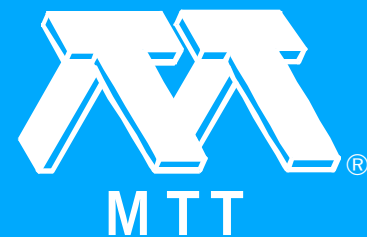


Abstracts

Propagation In Dielectric-Lined Square Waveguides

G.N. Tsandoulas. "Propagation In Dielectric-Lined Square Waveguides." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 406-410.

Symmetric structures such as circular and square waveguides may conveniently be used for dual polarization application. In this work the square waveguide with a dielectric lining of the same geometry is analyzed using a Galerkin-type method, with experimental verification. Modal characteristics, propagation constants, and bandwidth (BW) properties are outlined. Some interesting variations, depending on whether the value of the dielectric constant of the lining is higher or lower than that of the included material, are described and quantified to the extent possible by the accuracy of the method.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Minimum-Phase Behavior of Random Media

H.E. Rowe and D.T. Young. "Minimum-Phase Behavior of Random Media." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 411-416.

We give two different sufficient conditions for the transfer function of two-mode random media to be minimum phase. The second of these results states that the signal transfer function will be minimum phase if the spurious mode is dissipated faster than it is coupled from the signal mode, in a certain sense. Two illustrative examples are given. These two conditions cannot be greatly improved.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Statistical Coupled Equations in Lossless Optical Fibers

B. Crosignani, B. Daino and P. Di Porto. "Statistical Coupled Equations in Lossless Optical Fibers." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 416-420.

The problem of deriving sets of statistical coupled equations for the second and fourth moments of the mode amplitudes in a fiber with mode coupling is considered, starting from the deterministic coupled wave equations describing an electromagnetic field propagating in a lossless fiber. Our results extend the work of Marcuse, and, in particular, allow one to deduce sets of equations for quantities which describe the cross correlation between different modes. Furthermore, we obtain new results regarding the variances and cross correlations of the power in the modes (fourth-order amplitude statistics)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Symmetry-Induced Modal Characteristics of Uniform Waveguides -- I: Summary of Results

P.R. Mclsaac. "Symmetry-Induced Modal Characteristics of Uniform Waveguides -- I: Summary of Results." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 421-429.

The application of symmetry analysis to uniform waveguides is discussed. Symmetry analysis provides exact information concerning mode classification, mode degeneracy, modal electromagnetic-field symmetries, and the minimum waveguide sectors which completely determine the modes in each mode class. Tables are presented which list the possible mode classes and their degeneracies for the two general symmetry families, $C_{n/}$ and $C_{nv/}$, of uniform waveguides. Tables showing the azimuthal dependence of the longitudinal components of the electric and magnetic fields for each mode class are given. Based on this azimuthal dependence, figures showing the minimum waveguide sectors which are necessary and sufficient to completely determine the modes of the various mode classes are presented. The application of symmetry analysis is illustrated by considering uniform waveguides with $C_{4/}$ and $C_{6v/}$ symmetry.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Symmetry-Induced Modal Characteristics of Uniform Waveguides -- II: Theory

P.R. Mclsaac. "Symmetry-Induced Modal Characteristics of Uniform Waveguides -- II: Theory." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 429-433.

The application of symmetry analysis to uniform waveguides is discussed. Symmetry analysis provides exact information concerning mode classification, mode degeneracy, modal electromagnetic- field symmetries, and the minimum waveguide sectors which completely determine the modes in each mode class. This paper provides a summary of the development that leads to the results concerning symmetry-induced modal characteristics of uniform waveguides discussed in the previous paper. Some of the concepts of group theory are introduced, including the irreducible representations of symmetry groups. The use of the irreducible representations to determine the mode classes and their degeneracies is described. The projection operators belonging to the irreducible representations are introduced and their application to determining the azimuthal symmetry of the modal fields is explained. The minimum waveguide sectors for the mode classes are obtained from the azimuthal symmetry of the modal fields.

Click on title for a complete paper.



Abstracts

On the Performance of the Least Squares Method for Waveguide Junctions and Discontinuities (Short Papers)

R. Jansen. "On the Performance of the Least Squares Method for Waveguide Junctions and Discontinuities (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 434-436.

The high computational expenditure of the least squares boundary residual method restricts its application to certain problems. It is therefore necessary to utilize the inherent simplicity of special cases together with convergence-optimization criteria in order to reduce computational time and storage requirements. The problem of the coaxial-to-circular waveguide junction is presented as an illustrative example of how this is performed. A selection criterion is also suggested to determine the optimum weighting factor.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Solution of Electromagnetic Eigenvalue Problems by Least Squares Boundary Residuals (Short Papers)

H.J.A. LaRiviere and J.B. Davies. "The Solution of Electromagnetic Eigenvalue Problems by Least Squares Boundary Residuals (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 436-441.

The least squares boundary residual technique as used for the numerical solution of scattering problems is extended to the solution of electromagnetic eigenvalue problems. The theory is described and numerical results are given for the solution of an L-shaped membrane and microstrip in a hollow conducting guide. The microstrip example was chosen as a test case to compare with Fourier matching. This least square error minimization technique is of the same family as point matching and Fourier matching; however, it is shown to have three potentially important advantages: 1) it is rigorously convergent, 2) the choice of optimum weighting factors greatly accelerates convergence between a decreasing upper bound and an increasing lower bound, and 3) it is free from problems of relative convergence.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Microstrip Double-Ring Resonator (Short Papers)

I. Wolff and W. Menzel. "The Microstrip Double-Ring Resonator (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 441-444.

The resonance frequencies and the fields of a microstrip double-ring resonator are discussed. It is shown that no pure even or odd mode can be excited on the resonator. Therefore it is concluded that the microstrip double-ring resonator principally cannot be used to measure the phase velocities of the even and the odd modes on a coupled microstrip line.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

A Coupled-Line Model for Dispersion in Parallel-Coupled Microstrips (Short Papers)

H.J. Carlin and P.P. Civalleri. "A Coupled-Line Model for Dispersion in Parallel-Coupled Microstrips (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 444-446.

A new circuit model is derived for parallel-coupled microstrip consisting of two separate pairs of coupled lines. Each pair consists of a homogeneous TEM line coupled to a homogeneous TE line. One pair represents the hybrid even mode, the other represents the odd mode. Data calculated from the model are compared with experimental dispersion data for various parallel-coupled microstrip geometries. Agreement is excellent. The procedure for deriving the equivalent circuit is an example of a general technique for using coupled lines to model longitudinally uniform but transversely inhomogeneous lossless waveguide.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

The Phase Shift Through Symmetrical 3-Port Circulators (Short Papers)

G. Riblet. "The Phase Shift Through Symmetrical 3-Port Circulators (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 446-449.

Simple approximate formulas are derived for the phase shift through matched circulators---with and without transformer coupling---using expressions for the eigenadmittances $Y_{0/}$, $Y_{-1/}$, and $Y_{1/}$ which have recently been proposed. These formulas allow one to predict the phase shift from measurements of the VSWR in one case and from a knowledge of the transformer admittance Y in the second. They have been confirmed experimentally for strip-line circulators and indicate that in this respect circulators behave like electrically long transmission devices.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Power Generation and Efficiency in GaAs Traveling-Wave Amplifiers (Short Papers)

F. Giannini and A. Salsano. "Power Generation and Efficiency in GaAs Traveling-Wave Amplifiers (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 449-452.

The effect of the dielectric loading in a bidimensional GaAs traveling-wave amplifier (TWA) is investigated, with respect to the EM power generated by the structure and the efficiency of the dc to RF conversion. The validity of some usual approximations and assumptions is studied and a parameter, i.e., the power gain X efficiency product, is proposed as a useful tool for comparing the possible performances of TWA's.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Dispersion of Nonlinear Elements as a Source of Electromagnetic Shock Structure (Letters)

R. Landauer. "Dispersion of Nonlinear Elements as a Source of Electromagnetic Shock Structure (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 452-453.

Electromagnetic shock structure in nonlinear capacitance transmission lines can be resolved, and the energy losses associated with shock propagation explained, by including a resistance in series with the nonlinear capacitance. This resistance is inevitably present as the circuit representation of the nonvanishing relaxation time for the establishment of polarization in the nonlinear dielectric. Karbowiak and Freeman have dismissed this viewpoint as "not tenable!" This is a rebuttal of that statement.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Rebuttal of "Dispersion of Nonlinear Elements as a Source of Electromagnetic Shock Structure" (Letters)

A.E. Karbowiak and R.H. Freeman. "Rebuttal of "Dispersion of Nonlinear Elements as a Source of Electromagnetic Shock Structure" (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 453-454.

It is pointed out that if the classical method of weak solution is to be used for the solution of the problem, then it is necessary to include a resistive element of a sufficient magnitude. This also is a feature of Landauer's work. The solution so obtained is accurate under well-defined conditions, and among others, it can be shown that energy losses associated with the shock front can be accounted for by that resistance. However, it is inconsequential to assume that as the value of the resistive element is reduced to zero, the energy balance continues to hold. This requires a separate proof. An exact analysis based on a series of experimental results and computer modeling shows that the classical discrepancy can be accounted for in a different way.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Characterization of Microwave Oscillator and Amplifier Circuits Using an IMPATT Diode Biased Below Breakdown (Comments and Authors' Reply)

N.D. Kenyon, G.S. Hobson, R.C. Tozer and R. Charlton. "Characterization of Microwave Oscillator and Amplifier Circuits Using an IMPATT Diode Biased Below Breakdown (Comments and Authors' Reply)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 454-455.

In the above short paper, the method described for the characterization of IMPATT's and their circuits is based entirely upon an assumption that the whole oscillator can be correctly described by a single-resonant circuit. This the authors have been careful to emphasize. But it is by no means clear that such an assumption is tenable for any normal circuit configurations, nor that the test described to confirm the given equivalent circuit is sufficiently stringent. Though the resonant absorption may be fairly narrow, and its variation with diode bias smooth, this is no guarantee that the circuit is single tuned, that it does not, for example, require a further series reactance giving a broad resonance elsewhere, or that the components of the equivalent circuit are not themselves functions of frequency.



Abstracts

The Numerical Solution of Some Important Transmission-Line Problems (Correction)

H.E. Green. "The Numerical Solution of Some Important Transmission-Line Problems (Correction)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 455-455.

In the above paper, on pages 686 and 687, corrections are as follows.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Microstrip Discontinuity Capacitances for Right-Angle Bends, T Junctions, and Crossings (Correction)

P. Silvester and P. Benedek. "Microstrip Discontinuity Capacitances for Right-Angle Bends, T Junctions, and Crossings (Correction)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 456-456.

In the above paper, due to a programming error, Fig. 7 on page 345 for bend capacitance is incorrect and should appear as shown in the following.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

An S-Band Radiometer Design with High Absolute Precision (Comments)

N.J. Keen. "An S-Band Radiometer Design with High Absolute Precision (Comments)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 456-457.

In the above paper, a highly stable noise-balancing radiometer at 2.7 GHz for satellite applications, with a claimed absolute measurement precision of 0.1 K, is reported. The purpose of this letter is to indicate a source of calibration error which can be seriously underestimated.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The ZEPLS Program for Solving Characteristic Equations of Electromagnetic Structures (Computer Program Descriptions)

P. Lampariello and R. Sorrentino. "The ZEPLS Program for Solving Characteristic Equations of Electromagnetic Structures (Computer Program Descriptions)." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 457-458.

The program calculates the zeros of an analytic function in particular zones of the complex plane, inside the region where the function is holomorphic and single valued.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

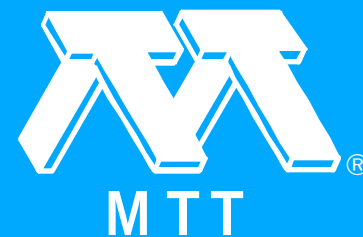
Click on title for a complete paper.



Abstracts

Contributors (May 1975 [T-MTT])

B. Crosignani, B. Daino, P. Di Porto, D.A. Hill, P.R. McIsaac, H.E. Rowe, G.N. Tsandoulas, J.R. Wait and D.T. Young. "Contributors (May 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): 459-460.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (May 1975 [T-MTT])

"Back Cover (May 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.5 (May 1975 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Jun. 1975 [T-MTT])

"Front Cover (Jun. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Performance of Dual-Gate GaAs MESFET's as Gain-Controlled Low-Noise Amplifiers and High-Speed Modulators

C.A. Liechti. "Performance of Dual-Gate GaAs MESFET's as Gain-Controlled Low-Noise Amplifiers and High-Speed Modulators." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 461-469.

This paper describes the microwave performance of GaAs FET's with two 1- μm Schottky-barrier gates (dual-gate MESFET). At 10 GHz the MESFET, with an inductive second-gate termination, exhibits an 18-dB gain with --26-dB reverse isolation. Variation of the second-gate potential yields a 44-dB gain-modulation range. The minimum noise figure is 4.0 dB with 12-dB associated gain at 10 GHz. Pulse modulation of an RF carrier with a 65-ps fall and a 100-ps rise time is demonstrated. The dual-gate MESFET with high gain and low noise figure is especially suited for receiver amplifiers with automatic gain control (AGC) as an option. The MESFET is equally attractive for subnanosecond pulsed-amplitude modulation (PAM), phase-shift-keyed (PSK), and frequency-shift-keyed (FSK) carrier modulation.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High Data-Rate Solid-State Millimeter-Wave Transmitter Module

Y.-W. Chang, H.J. Kuno and D.L. English. "High Data-Rate Solid-State Millimeter-Wave Transmitter Module." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 470-477.

This paper describes a solid-state millimeter-wave transmitter module consisting of an IMPATT oscillator, p-i-n quadri-phase modulator, and a three-stage IMPATT amplifier. The module has been operated up to 4-Gbits/s modulation rate with 500-mW output power in the 60-GHz range.

[Click on title for a complete paper.](#)



Frequency Multiplication by a P-I-N Diode when Driven into Avalanche Breakdown

P.L. Ntake and D.R. Conn. "Frequency Multiplication by a P-I-N Diode when Driven into Avalanche Breakdown." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 477-485.

An investigation of frequency multiplication using a step-recovery diode (SRD) driven into avalanche breakdown is presented. This mode of operation, which is called the "breakdown mode," consists of a reverse-biased p-n junction, SRD, or IMPATT diode driven into reverse breakdown by an ac signal source. As the diode voltage passes from reverse bias to reverse breakdown and avalanche, the state of the diode switches quickly from a depletion-layer capacitance to an avalanche inductance; hence the production of strong harmonics. A theoretical analysis and experimental investigation of a coaxial/waveguide 2-6-GHz frequency multiplier using HP5082-0320 step-recovery diodes, [$R_{\text{sub s}} = 0.75 \Omega$, $C_{\text{sub d}}(-6\text{V}) = 1.0 \text{ pF}$] shows that the breakdown-mode frequency multiplier has a higher conversion efficiency than the conventional "charge-storage" multiplier. A measured conversion efficiency of 73 percent was achieved while the same circuit configuration produced 52 percent for the same diode used as a charge-storage multiplier under optimum forward-drive and tuning conditions. Also the theory developed in this paper indicates a maximum possible conversion efficiency of 80 percent for the breakdown-mode multiplier, which corresponds closely with the measured results, and a maximum theoretical efficiency for a forward driven diode of 64 percent. The performance of an FM microwave system was monitored using the breakdown multiplier as a LO in which a baseband SNR of 59 dB was recorded.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

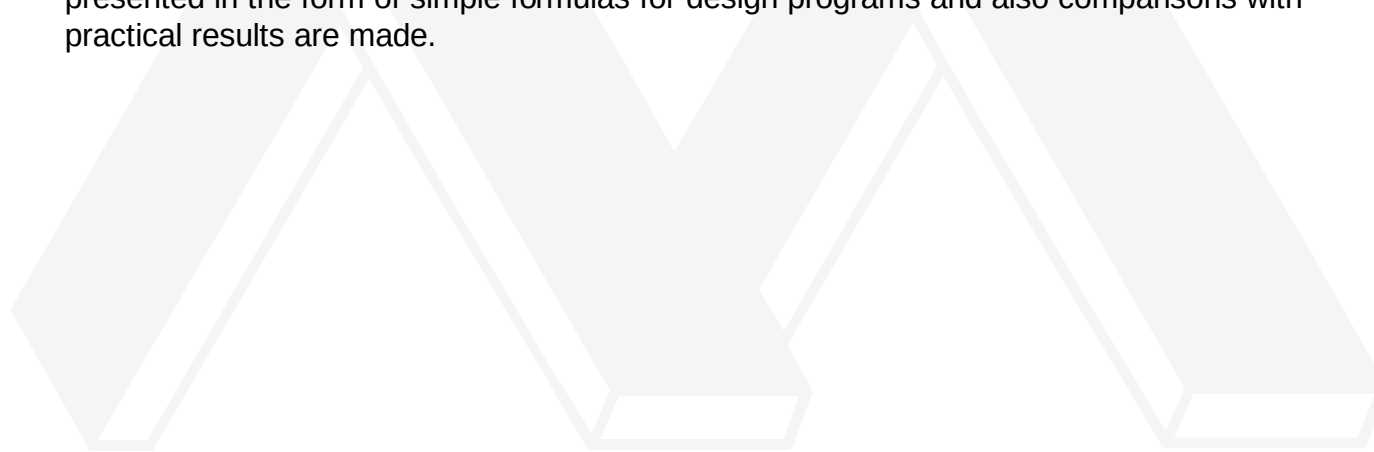
[Papers](#)

[Authors](#)

The Design of Coupled Microstrip Lines

S. Akhtarzad, T.R. Rowbotham and P.B. Johns. "The Design of Coupled Microstrip Lines." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 486-492.

Although graphical results and formulas are available for the design of microstrip couplers, the design procedure is hampered because even- and odd-mode impedances are always expressed in terms of the physical geometry. In practice the designer obtains these impedances and then requires to know the geometry given by them. A new design procedure for coupled parallel microstrip lines is therefore presented. The technique enables the geometry of the coupled lines to be obtained directly from the required even- and odd-mode impedances and uses single microstrip-line geometry as an intermediate step. The results are presented in graphical form using only two universal families of curves. Results are also presented in the form of simple formulas for design programs and also comparisons with practical results are made.



[Click on title for a complete paper.](#)



Abstracts

Effect of 2450-MHz Radiation on the Rabbit Eye

A.W. Guy, J.C. Lin, P.O. Kramar and A.F. Emery. "Effect of 2450-MHz Radiation on the Rabbit Eye." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 492-498.

The cataractogenic effects of near-zone 2450-MHz radiation in rabbits are presented. The power deposition pattern inside the eyes and head of rabbits has been determined using a thermocouple technique. It was found that a peak absorption of 0.92 W/kg occurred between the lens of the eye and the retina for each milliwatt/square centimeter incident. Time and power-density studies indicated a cataractogenic threshold of a 150-mW/cm² incident, or 138-W/kg peak absorption behind the lens for 100 min. The threshold time decreased with increasing power density. Agreement between in vivo intraocular temperature measurements and finite-element computer predictions reinforces the suggestion of a thermal mechanism for microwave-induced lens opacities.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Equivalent Circuit of the Schottky-Barrier Field-Effect Transistor at Microwave Frequencies (Short Papers)

R.H. Dawson. "Equivalent Circuit of the Schottky-Barrier Field-Effect Transistor at Microwave Frequencies (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 499-501.

Johnson's high-frequency representation theory for MOSFET's, experimentally confirmed by Hopkins up to 1 GHz, is extended in this short paper for SBFET's and is found to substantially agree with data for 1- μ m- and 1/2- μ m-gate GaAs SBFET's up to 12 GHz. Regenerative-feedback conductance not accounted for by conventional models is seen to be present in SBFET's at microwave frequencies.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Broad-Band Varactor-Tuned IMPATT-Diode Oscillator (Short Papers)

D.H. Claxton and P.T. Greiling. "Broad-Band Varactor-Tuned IMPATT-Diode Oscillator (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 501-504.

A varactor-tuned IMPATT-diode oscillator with a continuous and monotonic tuning bandwidth of 27 percent and a potential tuning range in excess of 40 percent is described. The results of a computer program which optimizes the tuning bandwidth of the equivalent circuit of the voltage-controlled oscillator (VCO) are presented. The VCO consists of two varactors located symmetrically on each side of an IMPATT diode all mounted in a ridged waveguide with two matched outputs into 50-Ohm coaxial. Experimental results on bandwidth, power output, frequency linearity, and FM noise are presented.

[Click on title for a complete paper.](#)



Abstracts

X-Band Microstrip-Inserted Puck Circulator Using Arc-Plasma-Sprayed Ferrite (Short Papers)

Y.S. Wu, F.J. Rosenbaum and D.H. Harris. "X-Band Microstrip-Inserted Puck Circulator Using Arc-Plasma-Sprayed Ferrite (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 504-506.

Experimental circulators using ferrite pucks which have been sprayed into cavities in dielectric substrates by an arc-plasma spray (APS) process are described.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A Millimeter-Wave Reflection-Beam Isolator (Short Papers)

M. Kanda and W.G. May. "A Millimeter-Wave Reflection-Beam Isolator (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 506-508.

A new and simple type of millimeter-wave isolator using a solid-state magnetoplasma in a reflection-beam system is described. Some data are presented showing performance at 94 GHz. Practical considerations indicate that performance should be much closer to ideal at higher frequencies.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

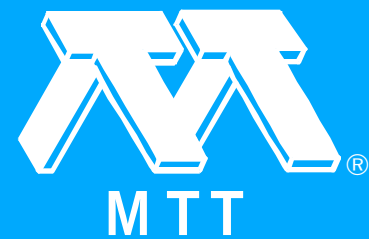


Abstracts

Numerical Analysis of Eigenvalue Solution of Disk Resonator (Short Papers)

K. Tanabe, Y. Kobayashi and S. Tanaka. "Numerical Analysis of Eigenvalue Solution of Disk Resonator (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 508-511.

A formulation is proposed to calculate the frequencies of the eigenmodes for a resonator with a thin conductor disk placed in the median plane between two infinite parallel conductor plates. The numerical analysis is carried out for the E- and EH-modes, and these eigenvalues are calculated as the function of the ratio of the disk radius to the distance between the disk and one of the infinite conductor plates. It is shown that at a ratio greater than a certain value the exact eigenvalue is smaller than the one predicted by applying the conventional method for two-dimensional bifurcation of rectangular waveguide, but the latter becomes closer to the exact one with increasing ratio. The availability of our exact eigenvalues is demonstrated in determining experimentally the dielectric constant of Teflon plate specimen by applying those values. Then the constancy of the measured dielectric constant is confirmed irrespective of the modes and the ratios.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A New Class of Nonreciprocal Components Using Slot Line (Short Papers)

L. Courtois and M. De Vecchis. "A New Class of Nonreciprocal Components Using Slot Line (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 511-516.

The authors present an experimental and theoretical study of edge modes in a ferrite-loaded slot line. Nonreciprocal properties are obtained over a broad frequency band. Added microstrip lines provide suitable transitions. A theory based on magnetic boundary conditions shows good agreement with the experimental results and allows a comparison with stripline devices described by Hines. In particular, the characteristics of the slot-line isolators are satisfactorily explained by this theory.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The Edge-Guided-Wave Circulator (Short Papers)

P. de Santis and F. Pucci. "The Edge-Guided-Wave Circulator (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 516-519.

A complete study is presented on "edge-guided-wave" circulators (EGC). The fundamental physical principles which underlie EGC's operation are established and exploited to construct a broad-band circulator in the 8-12-GHz band. The performance data are compared to those of a "continuous tracking" circulator (CTC) and a traditional Y-junction circulator.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Measurements of Intercavity Couplings (Short Papers)

A.E. Atia and A.E. Williams. "Measurements of Intercavity Couplings (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 519-522.

This short paper describes the determination of couplings within a system of coupled cavities by measuring frequencies at which the phase of the input reflection coefficient is either 0° or 180° . A high degree of accuracy may be achieved and corrections can be made for finite cavity Q.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Loss Considerations for Microstrip Resonators (Short Papers)

E. Belohoubek and E. Denlinger. "Loss Considerations for Microstrip Resonators (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 522-526.

The influence of radiation losses on the Q of microstrip resonators is shown for a variety of frequencies, characteristic impedances, substrate materials, and thicknesses. Radiation becomes a dominant factor at higher frequencies, especially for low-impedance lines and thick substrates with a low dielectric constant.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

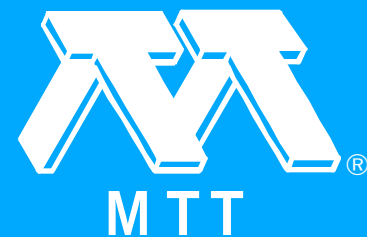


Abstracts

Microwave Measurement of the Temperature Coefficient of Permittivity for Sapphire and Alumina (Short Papers)

J.E. Aitken, P.H. Ladbrooke and M.H.N. Potok. "Microwave Measurement of the Temperature Coefficient of Permittivity for Sapphire and Alumina (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 526-529.

Measurements of the temperature coefficients of permittivity and of thermal expansion, for the important MIC substrate materials alumina and sapphire, are reported. The results are presented and in the case of sapphire include figures for the two main crystal orientations. An interesting correlation exists between our results for alumina substrates, and those for sapphire substrates in which the optical axis is perpendicular to the plane of the slice. The temperature stability of resonators on sapphire and alumina is discussed and experimental data are presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Electromagnetic Power Absorption in Anisotropic Tissue Media (Short Papers)

C.C. Johnson, C.H. Durney and H. Massoudi. "Electromagnetic Power Absorption in Anisotropic Tissue Media (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 529-532.

Strong dielectric-constant anisotropy exists in muscle tissue at the lower microwave frequencies. Based on a model derived from tissue measurements, an analysis is carried out for single and multiple tissue layers. Calculated effects of tissue anisotropy on microwave fields and power absorption in the tissues are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Fiber and Diffused Waveguide Structures for Distributed-Feedback Lasers (Short Papers)

C. Elachi, G. Evans and C. Yeh. "Fiber and Diffused Waveguide Structures for Distributed-Feedback Lasers (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 532-536.

Optimum threshold conditions for oscillations of transversely bounded distributed-feedback (DFB) lasers are derived and discussed for the case of a fiber guide and diffused guide.



MTT



IEEE

Contents

Publications

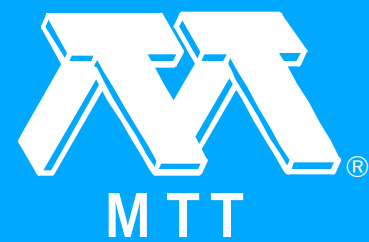
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Error in Impedance Measurement When the Signal is Introduced Across the Slotted-Line Probe (Comments and Author's Reply)

R.V. Garver and J. Barbero. "Error in Impedance Measurement When the Signal is Introduced Across the Slotted-Line Probe (Comments and Author's Reply)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 536-537.

In the above short paper, an attempt was made to calculate the errors in VSWR and phase caused by detector mismatch in a backwards-connected (power into the probe) slotted line. The short paper is wrong. There will be no first-order errors as predicted theoretically in the referenced short paper. The errors encountered in measuring nonlinear devices (diodes) are more complex than those encountered in measuring linear devices. It is very important that the harmonics generated by the diode being measured be absorbed in a matched load and kept out of the detector (especially for high-VSWR diodes). A low-pass filter is commonly used in front of the detector, but (unless it is padded) this filter reflects the harmonic power back into the diode. When the diode being measured does not see a match at the harmonic frequencies, then the harmonic mismatch will interact with the diode to make more efficient or less efficient the conversion to harmonics, depending on the phase relationship between diode and harmonic mismatch. The variable conversion to harmonics will change the impedance of the diode being measured (at the fundamental frequency) as the phase between diode and harmonic mismatch (unpadded low-pass filter) is varied. Therefore, when using a backwards-connected slotted line, it is important to have in front of the detector a low-pass filter that is padded or otherwise matched at the harmonic frequencies as seen from the diode. It is not important for the detector to be matched at the fundamental frequency in a backwards-connected slotted line, as proven in the following discussion.

Click on title for a complete paper.

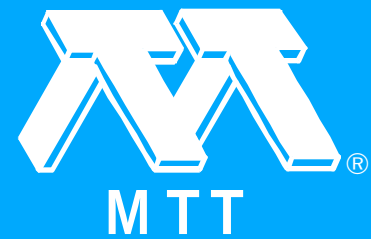


Abstracts

A Class of Waveguide Filters for Over-Moded Applications (Correction)

C.-L. Ren and H.-C. Wang. "A Class of Waveguide Filters for Over-Moded Applications (Correction)." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 537-537.

In the above paper, two typographical errors should be noted.



IEEE

Contents

Publications

Issues

Papers

Authors

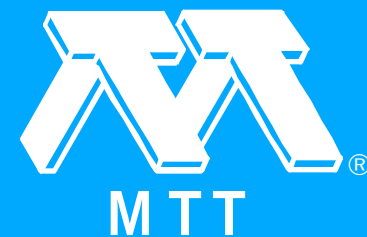
Click on title for a complete paper.



Abstracts

Contributors (Jun. 1975 [T-MTT])

S. Akhtarzad, Y.-W. Chang, D.R. Conn, A.F. Emery, D.L. English, A.W. Guy, P.B. Johns, P.O. Kramar, H.J. Kuno, C.A. Liechti, J.C. Lin, P.L. Ntuke and T.R. Rowbotham. "Contributors (Jun. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): 538-540.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Jun. 1975 [T-MTT])

"Back Cover (Jun. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.6 (Jun. 1975 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Jul. 1975 [T-MTT])

"Front Cover (Jul. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Analysis of Coupled Slots and Coplanar Strips on Dielectric Substrate

J.B. Knorr and K.-D. Kuchler. "Analysis of Coupled Slots and Coplanar Strips on Dielectric Substrate." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 541-548.

A frequency-dependent hybrid-mode analysis of single and coupled slots and coplanar strips is presented. The dispersion characteristic and characteristic impedance of the structures are obtained by applying a Fourier transform technique and evaluating the resulting expressions numerically using the method of moments. Numerical results are presented and compared with results published by other investigators. The experimental performance of a slot-line coupler is compared with predicted performance based upon the results presented here for coupled slots. Excellent agreement has been obtained in all cases.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Scattering Matrices of Junction Circulator with Chebyshev Characteristics

J. Helszajn. "Scattering Matrices of Junction Circulator with Chebyshev Characteristics." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 548-554.

The purpose of this paper is to derive the scattering matrix of junction circulators with Chebyshev characteristics. This is done by forming the overall eigenvalues of the circulator one at a time in terms of the ABCD matrix of the matching network and the initial set of the junction eigenvalues. This paper deals both with the case where the frequency variation of the in-phase eigennetwork at the gyrator terminals is neglected compared to that of the counterrotating ones, and with the case where it is included. It is found that the former approach is in excellent agreement with the results obtained by assuming a 1-port model for the circulator. The influence of this eigennetwork on the overall frequency response is studied separately by combining the electromagnetic and network problems in the case of the stripline circulator.

[Click on title for a complete paper.](#)



Abstracts

Propagation in Rectangular Waveguides with Arbitrary Internal and External Media

J.B. Andersen, S. Berntsen and P. Dalsgaard. "Propagation in Rectangular Waveguides with Arbitrary Internal and External Media." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 555-560.

The propagation characteristics of electromagnetic waves in a rectangular waveguide of a homogeneous medium embedded in a different medium have been found approximately. The total field is assumed to consist of four crossing plane waves interconnected at the boundaries by reflection matrices. The method is more accurate than other approximate techniques. New results are presented for tunnel propagation and attenuation of degenerate modes in metallic waveguides.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Randomly Imperfect Waveguides for Millimeter and Submillimeter Wavelengths for Long-Distance Transmission Applications

M. Koyama and K. Hashimoto. "Randomly Imperfect Waveguides for Millimeter and Submillimeter Wavelengths for Long-Distance Transmission Applications." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 561-565.

Randomly imperfect waveguides are considered for use in long-distance transmission at millimeter and submillimeter wave-lengths. The steady-state attenuation constant, modal power distribution, and pulse spreading are calculated from Marcuse's coupled power equations. The result shows that a random waveguide can transmit 3.6 Gbit/s per square root of kilometer with a loss of 1.7 dB/km at 500 GHz. Mode conversions due to circular bends are considered next. It is shown that the systematic mode conversion due to bends is not of prime importance if the random coupling coefficient is much larger than the systematic one. This may be the most important feature of random metal waveguides for long-distance transmission applications.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

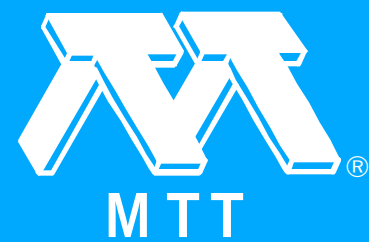
Propagation of Light Beam through Lens-Like Media with Complex Permittivity

S. Sawa. "Propagation of Light Beam through Lens-Like Media with Complex Permittivity." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 566-575.

Primary characteristics of the light beam propagation through a complex-permittivity lens-like medium are investigated in more detail than in previous papers, with the help of approximate wave theory. Explicit general expressions for the spot size and the curvature of the phase front of a Gaussian beam as well as the real-valued ray transfer matrix are derived, and detailed numerical investigations are presented. The existence of a new type of propagation, in which the light beam propagates with constant amplitude of undulation, neither converging nor diverging, is pointed out. Furthermore, precise conditions are given for the occurrence of convergent, divergent, and critical propagation, and the corresponding profiles of the real and imaginary parts of the complex permittivity in the transverse cross section are illustrated. The results of this paper will be useful for the evaluation of the effects of loss distributions inherent in practical optical fibers consisting of lens-like media, and also for the analysis or synthesis of laser resonators or amplifiers including a loss or gain distribution.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A Method for the Calculation of the Radiation-Pattern and Mode-Conversion Properties of a Solid-State Heterojunction Laser

L. Lewin. "A Method for the Calculation of the Radiation-Pattern and Mode-Conversion Properties of a Solid-State Heterojunction Laser." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 576-585.

A solution of the laser fields, both inside and outside the laser, is given in terms of the mode-conversion coefficients and an integral equation for the radiation pattern. It is shown how very accurate analytic solutions can be obtained by what, at first sight, appear to be extremely crude approximations. The reason is that mode conversion is taken implicitly into account by using a multiplier, whose exact form does not appear to be very critical, as a weighting function to average two different formulas for the function representing the radiation; and with the correct form for it, all the mode-conversion and reflection coefficients can be legitimately ignored. A plane-wave formula for this multiplier is a good first approximation, and a number of existing expressions occurring in the literature are obtained in this way. It is also shown rigorously that the results of an earlier obliquity-factor analysis apply. Further refinements are introduced to allow for higher order discrete modes, and good approximate analytic forms for the mode-reflection and conversion coefficients are obtained. A check with a rather extreme example shows excellent agreement with Ikegami's numerical computation for the dominant-mode reflection at the laser-air interface. The methods of this paper are applicable to general laser structures of cylindrical geometry with either continuous or discontinuous variations in refractive index. Very accurate numerical solutions should be obtainable after only one iteration of the integral equation, starting with the reflection-modified form of Hockham's formula as initiating function.

Click on title for a complete paper.



Characteristic Impedance and Field Patterns of the Shielded Microstrip on a Ferrite Substrate (Short Papers)

D.T. Yeh and D.M. Bolle. "Characteristic Impedance and Field Patterns of the Shielded Microstrip on a Ferrite Substrate (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 585-588.

The dispersion relation, field patterns, and current density at the interface of a shielded microstrip on ferrite substrate while operating at remanence is obtained and the characteristic impedance of such a structure is presented.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)



Abstracts

Capacitance of a Circular Disk for Applications in Microwave Integrated Circuits (Short Papers)

S.R. Borkar and R.F.H. Yang. "Capacitance of a Circular Disk for Applications in Microwave Integrated Circuits (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 588-591.

The quasi-static solution for a circular disk separated from a ground plane by a dielectric substrate is studied using the dual integral equation approach. A simple expression for equivalent capacitance is determined.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A Note on Green's Function for Microstrip (Short Papers)

S. Coen. "A Note on Green's Function for Microstrip (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 591-593.

The electrostatic Green's function for the open or covered microstrip line is obtained by an integral representation of the free space Green's function, the results of which may be applied to obtain approximately the characteristics of the lowest order "quasi-TEM" mode of microstrip.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Field Propagation in an Open-Beam Waveguide (Short Papers)

A. Consortini, L. Ronchi and R. Tognazzi. "Field Propagation in an Open-Beam Waveguide (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 593-595.

A new method is described for the investigation of the open-beam waveguides, which may be applied even when the optical elements are not inserted in absorbing screens.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Application of the Beam Mode Expansion to the Analysis of Noise Reduction Structure (Short Papers)

K. Tanaka, M. Tanaka and O. Fukumitsu. "Application of the Beam Mode Expansion to the Analysis of Noise Reduction Structure (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 595-598.

The beam mode expansion method used to discuss the distraction problem by an aperture is applied to the analysis of the noise reduction structure consisting of two aperture stops. The incident field is a fundamental wave beam whose amplitude distribution is Gaussian. The transmitted field through the structure can be represented as a sum of beam mode functions and is regarded as a signal. The noise which is originated from the spontaneous emission is added to the incident Gaussian wave beam. The signal-to-noise ratio (SNR) in the output is discussed and optimum conditions are obtained numerically.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Contributors (Jul. 1975 [T-MTT])

J.B. Andersen, S. Berntsen, P. Dalsgaard, K. Hashimoto, J. Helszajn, J.B. Knorr, M. Koyama, K.-D. Kuchler, L. Lewin and S. Sawa. "Contributors (Jul. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 598-599.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Overseas Abstracts (Jul. 1975 [T-MTT])

"Overseas Abstracts (Jul. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): 600-604.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Jul. 1975 [T-MTT])

"Back Cover (Jul. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.7 (Jul. 1975 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Aug. 1975 [T-MTT])

"Front Cover (Aug. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Analytic Constraints on Electromagnetic Field Computations

R.H.T. Bates. "Analytic Constraints on Electromagnetic Field Computations." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 605-623.

It is attempted to provide a definitive statement of the theoretical bases and the computationally useful manifestations of integral equation formulations of field problems, and the expansion of fields in sequences of functions which are proper solutions of the wave equation. The reason for doing this is that it has become clear during the last ten years that sophisticated points of mathematical analysis have practical computational significance. For ease of exposition, only two-dimensional fields are treated in detail. The paper is in five parts. The first part (Sections I and II) is introductory. The second part (Sections III-V) deals with formal diffraction theory. Methods particularly suited to digital computation are presented in the third part (Sections VI-XI). The results of computational experience are assessed in the fourth part (Sections XII-XIV). The fifth part (Sections XV-XVII) discusses the types of investigation needed to increase the technological usefulness of existing techniques.



IEEE

[Contents](#)

[Publications](#)

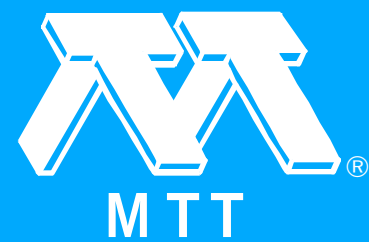
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Numerical Solution of Steady-State Electromagnetic Scattering Problems Using the Time-Dependent Maxwell's Equations

A. Taflove and M.E. Brodwin. "Numerical Solution of Steady-State Electromagnetic Scattering Problems Using the Time-Dependent Maxwell's Equations." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 623-630.

A numerical method is described for the solution of the electromagnetic fields within an arbitrary dielectric scatterer of the order of one wavelength in diameter. The method treats the irradiation of the scatterer as an initial value problem. At $t = 0$, a plane-wave source of frequency f is assumed to be turned on. The diffraction of waves from this source is modeled by repeatedly solving a finite-difference analog of the time-dependent Maxwell's equations. Time stepping is continued until sinusoidal steady-state field values are observed at all points within the scatterer. The envelope of the standing wave is taken as the steady-state scattered field. As an example of this method, the computed results for a dielectric cylinder scatterer are presented. An error of less than ± 10 percent in locating and evaluating the standing-wave peaks within the cylinder is achieved for a program execution time of 1 min. The extension of this method to the solution of the fields within three-dimensional dielectric scatterers is outlined.

Click on title for a complete paper.



Abstracts

Worst Case Network Tolerance Optimization

J.W. Bandler, P.C. Liu and J.H.K. Chen. "Worst Case Network Tolerance Optimization." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 630-641.

The theory and its implementation in a new user oriented computer program package is described for solving continuous or discrete worst case tolerance assignment problems simultaneously with the selection of the most favorable nominal design. Basically, the tolerance problem is to ensure that a design subject to specified tolerances will meet performance or other specifications. Our approach, which is believed to be new to the microwave design area, can solve a variety of tolerance and related problems. Dakin's tree search, a new quasi-Newton minimization method, and least pth approximation are used. The program itself is organized such that future additions and deletions of performance specifications and constraints, and replacement of cost functions and optimization methods are readily realized. Options and default values are used to enhance flexibility. The full Fortran listing of the program and documentation will be made available.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A New Fast and Accurate Algorithm for the Computation of Microstrip Capacitances

A. Premoli. "A New Fast and Accurate Algorithm for the Computation of Microstrip Capacitances." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 642-648.

A new algorithm is presented for the calculation of TEM parameters of microstrips, based on a lumped-circuit model of the microstrip transverse static field. The use of such an algorithm allows one to obtain either very high accuracies or very low computer times when ordinary accuracies are tolerated. Compared with the similar technique by Lennartsson, the analysis method presented here allows substantial reduction in computer time, storage, and errors.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Calculation of Microstrip Discontinuity Inductances

A.F. Thomson and A. Gopinath. "Calculation of Microstrip Discontinuity Inductances." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 648-655.

Inductive components of microstrip discontinuity equivalent circuits are calculated by the Galerkin method. The formulation and method of calculation are discussed and a large number of numerical results for symmetric corners, T junctions, and steps changes are presented. These results compare well with experiment.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

The Equivalent Circuit of Some Microstrip Discontinuities

B. Easter. "The Equivalent Circuit of Some Microstrip Discontinuities." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 655-660.

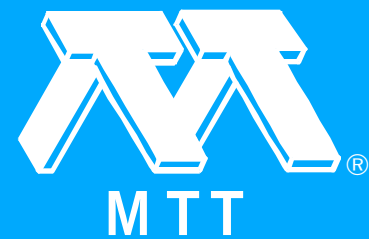
The experimental characterization of some microstrip structures of common interest, including symmetrical T junctions, is described. Some results are compared with data derived from recent three-dimensional static theory and from the uniform plane-wave model. It is concluded that while the three-dimensional theory requires further improvement, it is generally in much better agreement with the measured data than the two-dimensional uniform plane-wave model.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design and Performance of X-Band Oscillators with GaAs Schottky-Gate Field-Effect Transistors

M. Maeda, K. Kimura and H. Kodaera. "Design and Performance of X-Band Oscillators with GaAs Schottky-Gate Field-Effect Transistors." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 661-667.

The circuit construction and design of an X-band oscillator with a GaAs Schottky-gate FET have been studied. The oscillation characteristics including stability and noise performance have been examined in order to clarify the position of a GaAs FET as a microwave solid-state oscillator device. The experiments have revealed that 1) the GaAs FET simultaneously possesses the most desirable features of both Gunn and IMPATT oscillators, i.e., low bias voltage operation and fairly high efficiency, and 2) it is situated between Gunn and GaAs IMPATT oscillators with respect to noise properties. The results indicate that the GaAs FET oscillator will soon be joining the family of microwave solid-state oscillators as a promising new member.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Harmonic Mixing with an Antiparallel Diode Pair (Aug. 1975 [T-MTT])

M. Cohn, J.E. Degenford and B.A. Newman. "Harmonic Mixing with an Antiparallel Diode Pair (Aug. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 667-673.

An analytical and experimental investigation of the properties of an antiparallel diode pair is presented. Such a configuration has the following unique and advantageous characteristics as a harmonic mixer: 1) reduced conversion loss by suppressing fundamental mixing products; 2) lower noise figure through suppression of local oscillator noise sidebands; 3) suppression of direct video detection; 4) inherent self protection against large peak inverse voltage burnout. These results are obtained without the use of either filters or balanced circuits employing hybrid junctions.

[Click on title for a complete paper.](#)



Effect of Temperature on Device Admittance of GaAs and Si IMPATT Diodes

Y. Takayama. "Effect of Temperature on Device Admittance of GaAs and Si IMPATT Diodes." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 673-680.

The effect of temperature on the small-signal admittance of IMPATT diodes with uniformly doped and high-low doped (Read) structures is investigated experimentally and theoretically. Small-signal admittance characteristics of X-band Si p⁺-n-n⁺, GaAs M-n-n⁺ (Schottky-uniform), and GaAs M-n⁺-n-n⁺ (Schottky-Read) IMPATT diodes are measured at various junction temperatures for different dc current levels. Small-signal analysis is performed on GaAs IMPATT diodes of uniformly doped and high-low doped structures, and the calculated results on temperature dependence of the device admittance are compared with the experimental results. Reasonable agreement is found between theory and experiment. It is shown that GaAs IMPATT diodes are superior to Si diodes in admittance temperature characteristics and that the uniformly doped structure has a small admittance temperature coefficient in magnitude, compared to the high-low doped structure. It is also shown by calculation that the admittance temperature coefficient of a punch-through diode is small in magnitude, compared to that of a non-punch-through diode.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Explicit Design Formulas for Waveguide Single-Sided Filters

J.D. Rhodes. "Explicit Design Formulas for Waveguide Single-Sided Filters." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 681-689.

Explicit formulas are given for the design of optimum single-sided waveguide filters. Using a uniform waveguide with iris-coupled series stubs irregularly spaced along the waveguide, this class of filter results in a significant reduction in the number of resonators required to meet single-passband and single-stopband specifications over conventional techniques. Design information is given for both the Chebyshev and elliptic function cases from which the required structure may be obtained without recourse to synthesis procedures. Computer simulations of the response characteristics of both the quarter- and modified three-quarter-wave coupled quasi low-pass and the quasi high-pass designs are given. Experimental results on fifth-degree Chebyshev filters operating in X band for the former case are presented showing close agreement with theory.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Temperature-Stabilized 1.7-GHz Broad-Band Lumped-Element Circulator

H. Katoh. "Temperature-Stabilized 1.7-GHz Broad-Band Lumped-Element Circulator." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 689-696.

A new construction technique for broad-banding and temperature stabilization of a lumped-element circulator is presented to obtain a compact circulator for practical usage. By using a new integrated wide-banding network consisting of three series resonant circuits on the back of the junction substrate, 1.7-GHz double-tuned and triple-tuned broad-band circulators have been successfully developed. Fundamental junction parameters, such as an in-phase eigeninductance, parasitic capacitance, and nonreciprocal filling factor, have been investigated experimentally. A design theory for temperature compensation of a lumped-element circulator is also presented, and temperature compensation with bias magnetic field of positive temperature coefficient has been applied to the 1.7-GHz broad-band circulators. As a result, 20-dB isolation bandwidths of more than 600 MHz (double-tuned type) and 950 MHz (triple-tuned type) have been obtained throughout the temperature range of $-10 \sim +60^{\circ}\text{C}$.

[Click on title for a complete paper.](#)



Abstracts

Low-Noise Design of Microwave Transistor Amplifiers (Short Papers)

R.S. Tucker. "Low-Noise Design of Microwave Transistor Amplifiers (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 697-700.

Parameters are derived for circles of constant overall noise figure on the source admittance plane of a preamplifier cascaded with a noisy main amplifier. It is shown that the noise figure and noise measure of an amplifier can be expressed in terms of the scattering parameters of a lossless two-port network connected at the input of the amplifier. Examples are given which demonstrate how this network can be synthesized to meet amplifier noise specifications.



[Contents](#)

[Publications](#)

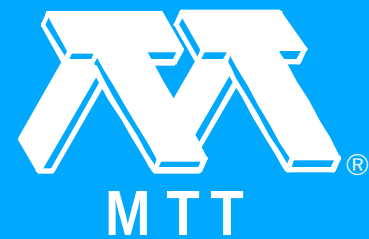
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Bias Frequency Modulation of GaAs Millimeter-Wave Diode Oscillators (Short Papers)

M.J. Lazarus, K.Y. Cheung, S. Novak and A.M. Sokullu. "Bias Frequency Modulation of GaAs Millimeter-Wave Diode Oscillators (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 700-703.

A method for estimation of FM bias modulation sensitivity of a Gunn-diode oscillator is presented under the assumption of incomplete domain formation for a very short diode. Experimental measurements at 33 and 11.3 GHz are shown as compared with this estimate and the decrease of sensitivity with external Q, for modulation frequency high enough to eliminate thermal effects, is demonstrated.

[Click on title for a complete paper.](#)



Abstracts

Variation of the Electrical Characteristics of an Inhomogeneous Microstrip Line with the Dielectric Constant of the Substrate and with the Geometrical Dimensions (Short Papers)

A. Ros, R. Daumas, D. Pompei and E. Rivier. "Variation of the Electrical Characteristics of an Inhomogeneous Microstrip Line with the Dielectric Constant of the Substrate and with the Geometrical Dimensions (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 703-706.

Studying systematically the variations of electrical characteristics of microstrip lines with the width w of the line, the thickness h , and the dielectric constant ϵ_r of the substrate, we have obtained a perfect linear variation with ϵ_r . Then using a least squares method, we have been able to give an analytical expression of capacitances usable for $1 \leq \epsilon_r \leq 100$ and $0.04 \leq w/h \leq 10$. The importance of this result is that we can give impedances and phase velocities without any computation.



Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Inductance of Nonstraight Conductors Close to a Ground Return Plane (Short Papers)

A.E. Ruehli, N. Kulasza and J. Pivnichny. "Inductance of Nonstraight Conductors Close to a Ground Return Plane (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 706-708.

Measurement and calculation of the inductance of a nonstraight conductor close to ground return plane are considered. An equivalent circuit model solution is given, and the results are compared to measurements for a corner-type geometry. Much larger changes in inductance as a function of frequency have been observed for the corner-type geometry than for the equivalent straight-conductor geometry. The circuit model can be used to predict the inductance for other configurations.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Prototype Characteristics for a Class of Dual-Mode Filters (Short Papers)

R.D. Wanselow. "Prototype Characteristics for a Class of Dual-Mode Filters (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 708-711.

Selected prototype characteristics of nonequiripple antimetric elliptic-function filters which can be realized in orthogonal cascaded dual-mode circular or square waveguide structures are presented. Cavity-coupling data for 4-, 6-, and S-section 0.01- and 0.05-dB-ripple passband designs with variable stopband levels are tabulated. Quantitative comparisons of elliptic and Chebyshev filter designs are also discussed, indicating the superior characteristics of elliptic networks.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Approximations for the Symmetrical Parallel-Strip Transmission Line (Letters)

J.M. Rochelle. "Approximations for the Symmetrical Parallel-Strip Transmission Line (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 712-714.

A single approximation that is valid for the capacitance of both "wide" and "narrow" parallel-strip transmission lines was derived by assuming that the current distribution is uniform. An approximate formula for the repulsive force between the strips was also derived.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

An Accurate Determination of the Characteristic Impedance of the Coaxial System Consisting of a Square Concentric with a Circle (Letters)

H.J. Riblet. "An Accurate Determination of the Characteristic Impedance of the Coaxial System Consisting of a Square Concentric with a Circle (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 714-715.

Bowman has shown how the rectangular region in the w plane of Fig. 1, bounded by $OABC$, may be mapped conformally into the trapezoidal region in the z plane of Fig. 1, bounded by $OABC$, by means of the successive transformations.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

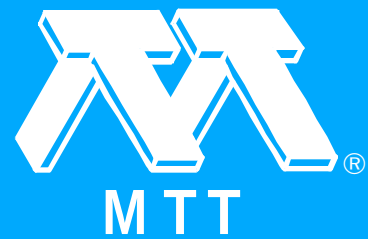


Abstracts

Transmission Line Impedance Matching Using the Smith Chart (Comments)

*P.I. Somlo. "Transmission Line Impedance Matching Using the Smith Chart (Comments)."
1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 715-715.*

For the recently discussed problem of R. M. Arnold of finding the characteristic impedance and electrical length of a uniform, loss-free transmission line which transforms a given impedance into another given impedance, an alternate approach using an elementary auxiliary calculation (with no trial and error) has been given in [1].



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

An Alternate Derivation and Procedure for Cristal's Transformation for Transmission-Line Networks (Letters)

A.I. Grayzel. "An Alternate Derivation and Procedure for Cristal's Transformation for Transmission-Line Networks (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 715-716.

This letter gives an alternate derivation and procedure for Cristal's transformation which transforms commensurate transmission-line networks with unit elements from the frequency variable λ to $1/\lambda$, where $\lambda = \tan h(\lambda L)$.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

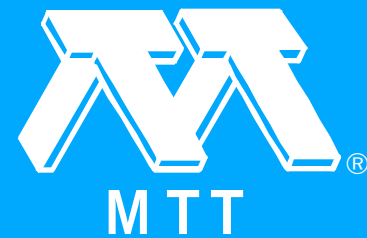
Click on title for a complete paper.



Abstracts

Contributors (Aug. 1975 [T-MTT])

J.W. Bandler, R.H.T. Bates, M.E. Brodwin, J.H.K. Chen, M. Cohn, J.E. Degenford, B. Easter, A. Gopinath, H. Katoh, K. Kimura, H. Kodaera, P.C. Liu, M. Maeda, B.A. Newman, A. Premoli, J.D. Rhodes, A. Taflove, Y. Takayama and A.F. Thomson. "Contributors (Aug. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): 717-720.



IEEE

Contents

Publications

Issues

Papers

Authors

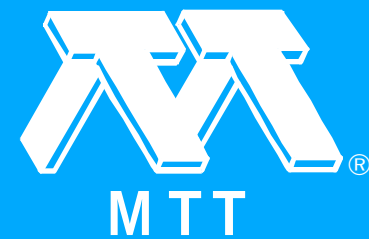
Click on title for a complete paper.



Abstracts

Back Cover (Aug. 1975 [T-MTT])

"Back Cover (Aug. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.8 (Aug. 1975 [T-MTT]): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

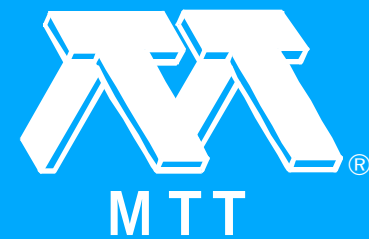
Click on title for a complete paper.



Abstracts

Front Cover (Sep. 1975 [T-MTT])

"Front Cover (Sep. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Optical Fibers with Coupled Dispersive Modes

R. Steinberg. "Optical Fibers with Coupled Dispersive Modes." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 721-724.

Marcuse's coupled-power theory incorporates the effect of different modal group velocities as the only mechanism responsible for pulse broadening in multimode, imperfect, optical fibers. In this paper the earlier theory is generalized to include the bandwidth-dependent effects: material dispersion and the waveguide dispersion that occurs within each mode. It is predicted that the latter two effects may partially cancel one another, the degree of cancellation depending on the shape of the fiber's refractive-index profile. Whether this effect causes a significant reduction in the calculated pulsewidth is shown to depend on the amount of mode coupling.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Spectral-Domain Calculation of Microstrip Characteristic Impedance

J.B. Knorr and A. Tufekcioglu. "Spectral-Domain Calculation of Microstrip Characteristic Impedance." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 725-728.

This paper presents a hybrid-mode solution for the characteristic impedance of microstrip on lossless dielectric substrate. A solution to the hybrid-mode equations is obtained by applying the method of moments in the Fourier transform domain. Numerical results are presented showing the frequency dependence of both wavelength and characteristic impedance for single and coupled strips. These results are compared with those of other investigators in the low-frequency range.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Circular Waveguide with Sinusoidally Perturbed Walls

O.R. Asfar and A.H. Nayfeh. "Circular Waveguide with Sinusoidally Perturbed Walls." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 728-734.

Uniform second-order asymptotic expansions are obtained for the propagation of TM waves in a perfectly conducting circular waveguide with sinusoidally perturbed walls using the method of multiple scales. The analysis concerns the interaction of two propagating modes satisfying the resonance condition imposed by the periodicity of the waveguide walls. Two cases of resonance are treated as well as the case of decoupled modes. In the first case resonance occurs whenever the difference between the wavenumbers of the two interacting modes is nearly equal to the wall wavenumber, while in the second case the difference is nearly equal to twice the wall wavenumber. The results of the theory are then applied to the design of a mode coupler.

[Click on title for a complete paper.](#)



Asymmetric Coupled Transmission Lines in an Inhomogeneous Medium

V.K. Tripathi. "Asymmetric Coupled Transmission Lines in an Inhomogeneous Medium." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 734-739.

Terminal characteristic parameters for a uniform coupled-line four-port for the general case of an asymmetric, inhomogeneous system are derived in this paper. The parameters (impedance, admittance, etc.) are derived in terms of two independent modes that propagate in two uniformly coupled propagating systems. The four-port parameters derived are of the same form as those obtained for the symmetric case resulting in similar port equivalent circuits for various circuit configurations considered by Zysman and Johnson. The results obtained should be quite useful in designing asymmetric coupled-line circuits in an inhomogeneous medium for various known applications.



Abstracts

Long-Wavelength Electromagnetic Power Absorption in Prolate Spheroidal Models of Man and Animals

C.C. Johnson, C.H. Durney and H. Massoudi. "Long-Wavelength Electromagnetic Power Absorption in Prolate Spheroidal Models of Man and Animals." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 739-747.

A previously developed electromagnetic (EM) field perturbation analysis is used to calculate the electric fields in tissue prolate spheroids irradiated by plane waves with long wavelength compared to the spheroid dimensions. This theory is applied to prolate spheroid models of man and animals to obtain internal electric field strength, absorbed power distribution, and total absorbed power. These data are of value in estimating tissue EM power absorption in experimental animals and man. The theory may be used to help extrapolate animal biological effects data to man, and as a guide to establishing an EM radiation safety standard.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Bias-Tuning and Modulation Characteristics of Transferred-Electron Oscillators

D.D. Tang and R.J. Lomax. "Bias-Tuning and Modulation Characteristics of Transferred-Electron Oscillators." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 748-753.

A theoretical analysis of the tuning and modulation characteristics of transferred-electron oscillators is given. The effects of the device properties and temperature and the influence of the circuit are discussed. Experimental results are also reported.

[Click on title for a complete paper.](#)



Abstracts

The Method of Series Expansion in the Frequency Domain Applied to Multidielectric Transmission Lines (Short Papers)

A.F. dos Santos and J.P. Figanier. "The Method of Series Expansion in the Frequency Domain Applied to Multidielectric Transmission Lines (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 753-756.

In this short paper a method of expanding the phase constant and the field of a multidielectric transmission line as a power series of the frequency is developed. The method provides a theoretical justification for the widely used "static" approximations and indicates the reason why their accuracy is frequently good. This expansion may also be useful for estimating an upper limit to the frequency band in which the dispersion does not exceed a specified value. A numerical example is included.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Useful Matrix Chain Parameter Identities for the Analysis of Multiconductor Transmission Lines (Short Papers)

C.R. Paul. "Useful Matrix Chain Parameter Identities for the Analysis of Multiconductor Transmission Lines (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 756-760.

By utilizing state variable theory, certain useful matrix identities involving submatrices of the chain parameter matrix for a multiconductor transmission line are shown. These identities are extensions of familiar properties associated with two-conductor lines to multiconductor lines and are used to formulate the complete solution for the terminal currents when the line is terminated by linear networks. The identities allow a simplified solution for these currents and reduce numerous redundant time-consuming matrix multiplications. In addition, the correspondence between familiar terms for the two-conductor case and the multiconductor case is shown.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Green's Function in a Region with Inhomogeneous, Isotropic Dielectric Media (Short Papers)

M. Kobayashi. "Green's Function in a Region with Inhomogeneous, Isotropic Dielectric Media (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 760-762.

The reciprocity relation satisfied by the Green's function for the inhomogeneous partial differential equation in a multielectric region with inhomogeneous, isotropic media is derived by using Green's theorem.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

On the Question of Computation of the Dyadic Green's Function at the Source Region in Waveguides and Cavities (Short Papers)

Y. Rahmat-Samii. "On the Question of Computation of the Dyadic Green's Function at the Source Region in Waveguides and Cavities (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 762-765.

The derivation of the dyadic Green's function for rectangular waveguides and cavities is approached systematically by using the theory of distributions. It is shown that, in order to obtain a complete solution for the field distribution in the entire structure, one must add an additional term to the classical expansion which is valid only outside the source region.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Enhancement of Surface-Acoustic-Wave Piezoelectric Coupling in Three-Layer Substrates (Short Papers)

A. Venema and J.J.M. Dekkers. "Enhancement of Surface-Acoustic-Wave Piezoelectric Coupling in Three-Layer Substrates (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 765-767.

Numerical results with respect to the piezoelectric coupling of a three-layer substrate (CdS-SiO/sub 2/-Si) are presented. <111> -cut Si is used, and the direction of propagation is [112], the SiO/sub 2/ layer is amorphous and the CdS layer (hexagonal, 6 mm) has the c axis normal to the substrate. The choice of these materials is connected with the integration of acoustic surface-wave devices on silicon. The interesting result is that, depending on the applied transducer configuration for particular values of kh of the SiO/sub 2/ and CdS layer, an increase in the piezoelectric coupling occurs. Its maximum exceeds the value of the coupling in the two-layer substrates: CdS-SiO/sub 2/ and CdS-Si, therefore more effective interdigital transducers can be designed for three-layer substrates.

[Click on title for a complete paper.](#)



Abstracts

Microwave Propagation in Rectangular Waveguide Containing a Semiconductor Subject to a Transverse Magnetic Field (Short Papers)

J.B. Ness and M.W. Gunn. "Microwave Propagation in Rectangular Waveguide Containing a Semiconductor Subject to a Transverse Magnetic Field (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 767-772.

The propagation constant of waveguide partially loaded with a semiconductor in the H plane is evaluated using a three-mode approximation analysis. As the waveguide is progressively filled, a large peak occurs in the attenuation coefficient due to higher order mode propagation. In the presence of a transverse magnetic field, propagation becomes nonreciprocal and this nonreciprocal effect is shown to be significantly increased in the region of the peak. The theoretical results are verified using n-type germanium samples in 26.5-40 -GHz waveguide.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Transmission Line Transformation Between Arbitrary Impedances Using the Smith Chart (Letters)

P.I. Day. "Transmission Line Transformation Between Arbitrary Impedances Using the Smith Chart (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 772-773.

A graphical method for transforming between two complex impedances using a single transmission line matching section is described. The Smith chart is used in a mode where the chart normalizing impedance is arbitrary.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Analysis of DC Blocks Using Coupled Lines (Letters)

C.Y. Ho. "Analysis of DC Blocks Using Coupled Lines (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 773-774.

It is shown mathematically that dc blocks can be realized by using $\lambda/4$ -- 3-dB directional couplers with both coupled port and transmitted port open-circuited.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

The Synthesis of Quarter-Wave Transformers, Low-Pass and Half-Wave Filters in the Sine Plane (Letters)

A.I. Grayzel. "The Synthesis of Quarter-Wave Transformers, Low-Pass and Half-Wave Filters in the Sine Plane (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 774-776.

This letter presents a method for synthesizing quarter-wave Chebyshev transformers, low-pass and half-wave filters. The method uses sine-plane synthesis which greatly simplifies the numerical calculations and allows one to obtain good numerical accuracy using just a desk calculator. Equations for the transmission coefficient are given in a simplified form.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

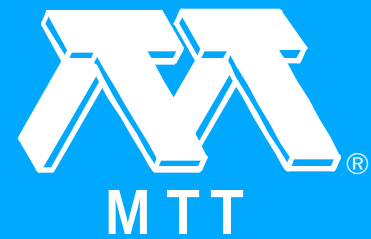


Abstracts

Single Hybrid Tee Frequency Discriminator (Letters)

J. Nigrin, N.A. Mansour and WA.G. Voss. "Single Hybrid Tee Frequency Discriminator (Letters)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 776-778.

A novel single hybrid tee frequency discriminator is investigated. It consists of ordinary microwave components and its tuning is achieved by means of a movable short circuit. The discriminator properties are comparable to those of an ordinary phase discriminator. Because of its simplicity, the discriminator can be used for instantaneous frequency measurements in nanosecond time intervals.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Broadside-Coupled Strips in a Layered Dielectric Medium (Correction)

J.L. Allen and M.F. Estes. "Broadside-Coupled Strips in a Layered Dielectric Medium (Correction)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 779-779.

In the above paper, to conform with the usual definitions of odd-and even-mode impedances, the impedance values read from Figs. 10, 14, 17, and 21 should be multiplied by two. The last sentence of paragraph one on page 664 should be changed to read: "The total capacitance for each mode is simply two times that obtained for the quarter-section." Mode velocities and other quantities are correct as given.

[Click on title for a complete paper.](#)



Abstracts

Radiation from Curved Dielectric Slabs and Fibers (Correction)

L. Lewin. "Radiation from Curved Dielectric Slabs and Fibers (Correction)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 779-779.

In the above paper, the equation in the top right-hand column of page 725.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Contributors (Sep. 1975 [T-MTT])

O.R. Asfar, C.H. Durney, C.C. Johnson, J.B. Knorr, R.J. Lomax, H. Massoudi, A.H. Nayfeh, R. Steinberg, D.D. Tang, V.K. Tripathi and A. Tufekcioglu. "Contributors (Sep. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 779-780.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

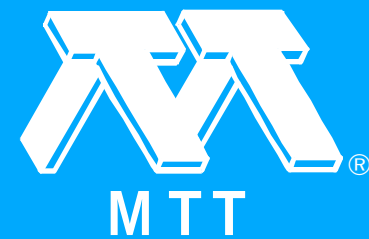
Click on title for a complete paper.



Abstracts

Back Cover (Sep. 1975 [T-MTT])

"Back Cover (Sep. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Oct. 1975 [T-MTT])

"Front Cover (Oct. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Low-Noise Room-Temperature and Cryogenic Mixers for 80-120 GHz

A.R. Kerr. "Low-Noise Room-Temperature and Cryogenic Mixers for 80-120 GHz." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 781-787.

A description is given of two new mixers designed to operate in the 80-120-GHz range on the 36-ft radio telescope at Kitt Peak, Ariz. It is shown that for a hard-driven diode the parasitic resistance and capacitance are the primary factors influencing the design of the diode mount. A room-temperature mixer is described which achieves a single-sideband (SSB) conversion loss (L) of 5.5 dB, and a SSB noise temperature ($T_{\text{sub m}}$) of 500 K (excluding the IF contribution) with a 1.4-GHz IF. A cryogenically cooled version, using a quartz structure to support the diode chip and contact whisker, achieves values of $L = 5.8$ dB and $T_{\text{sub m}} = 300$ K with a 4.75-GHz IF. The mixers use high-quality Schottky-barrier diodes in a one-quarter-height waveguide mount.

[Click on title for a complete paper.](#)



Abstracts

New Waveguide Structures for Millimeter-Wave and Optical Integrated Circuits (Oct. 1975 [T-MTT])

W.V. McLevige, T. Itoh and R. Mittra. "New Waveguide Structures for Millimeter-Wave and Optical Integrated Circuits (Oct. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 788-794.

Some new dielectric waveguide structures suitable for millimeter-wave and optical integrated circuits are presented. A method of analyzing wave propagation in these guides is developed by assuming simple field distribution and approximating the various regions of the guides in terms of effective dielectric constants. The mathematical formulation utilized results in simple eigenvalue equations from which the dispersion characteristics of the waveguides are readily obtained. Experimental results are described and the agreement between theory and experiment is shown to be quite good.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

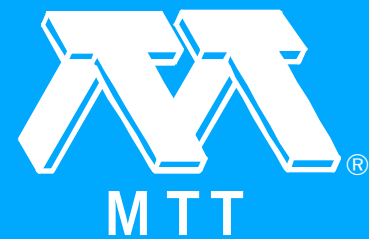
Computation of Coplanar-Type Strip-Line Characteristics by Relaxation Method and its Application to Microwave Circuits

T. Hatsuda. "Computation of Coplanar-Type Strip-Line Characteristics by Relaxation Method and its Application to Microwave Circuits." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 795-802.

The characteristics of new strip lines [i.e., a single strip-conductor coplanar-type strip line (S-CPS), a two symmetrical strip-conductor coplanar-type strip line (T-CPS), and a coupled strip-conductor coplanar-type strip line (C-CPS), which consists of single two-center strip conductors or coupled strip conductors and ground plates on a dielectric substrate and outer ground conductor] are calculated by the relaxation method. The effect of the outer ground conductor and side wall on these lines is analyzed and the characteristic impedance and phase-velocity ratio are determined. The characteristic impedance is determined experimentally and the maximum values of the discrepancies compared with the calculated value of each of the lines are 2.0-3.0 percent. Application examples of the coplanar-type strip line to microwave transistor amplifier and parallel-coupled filter are shown. A transistor amplifier of small size, light weight, wide bandwidth, and improved reliability is achieved. A parallel-coupled filter small in size (reduction ratio is more than 50 percent), with good frequency symmetry and featuring easy resonance frequency fine tuning is obtained.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Efficient Minimax Design of Networks without Using Derivatives

K. Madsen, O. Nielsen, H. Schjaer-Jacobsen and L. Thrane. "Efficient Minimax Design of Networks without Using Derivatives." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 803-809.

A new minimax network optimization algorithm not requiring derivatives has been developed. It is based on successive linear approximations to the nonlinear functions defining the problem. Adequate modeling of distributed parameter circuits for optimization purposes often involves parasitic, etc., which makes the gradient computation by the adjoint network method or related methods rather complicated, and often numerical errors are introduced in the gradients. Consequently, the algorithm is found to be of particular relevance in optimum design of practical microwave networks. The relative advantages of the proposed algorithm are established by comparison with known gradient and nongradient algorithms based on optimization of cascaded transmission-line transformers. The relevance to microwave filter design is demonstrated by an example which represents an improvement of analytical filter design results. Finally, optimum broad-band design of a practical coaxial transferred-electron reflection-type amplifier is carried out by means of the proposed method. The results are supported by experimental verification.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave Effect on Rabbit Superior Cervical Ganglion (Oct. 1975 [T-MTT])

K.R. Courtney, J.C. Lin, A.W. Guy and C.-K. Chou. "Microwave Effect on Rabbit Superior Cervical Ganglion (Oct. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 809-813.

Rabbit superior cervical ganglia were exposed to CW 2450-MHz fields within a temperature-controlled waveguide environment. Absorbed power densities between 2 and 1000 W/kg failed to significantly influence transmission latencies of responses recorded from postganglionic fibers due to stimulation of either B (myelinated) or C (unmyelinated) fibers in the preganglionic trunk.

[Click on title for a complete paper.](#)



Abstracts

Nonreciprocal Delay Line for Use in S Band Tubes

R.J. Tiernan and E. Schlomann. "Nonreciprocal Delay Line for Use in S Band Tubes." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 813-818.

In an effort to make ferrites available for broad-band resonance isolator applications in high-power microwave tubes, seven lithium ferrites and four nonlithium spinel ferrites were tested for resonance-loss behavior near an S band (2.0-4.0-GHz) linear helix. The observed behavior, i.e., the dependence of the absorption on the dimensions of the ferrites, can be attributed to excitation of surface magnetostatic modes. Using the results of the Damon-Eshbach theory for surface magnetostatic modes in semi-infinite slabs, resonance frequency and surface-wave attenuation factors were numerically calculated as a function of the propagation coefficient and the ratio of magnetization to internal field.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

An Annotated Bibliography of Microwave Circulators and Isolators: 1968-1975

R.H. Knerr. "An Annotated Bibliography of Microwave Circulators and Isolators: 1968-1975." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 818-825.

A bibliography of microwave circulators and isolators from 1968 to 1975 is presented. Some observations on selected topics are made.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Measured Odd- and Even-Mode Dispersion of Coupled Microstrip Lines (Short Papers)

J.G. Richings and B. Easter. "Measured Odd- and Even-Mode Dispersion of Coupled Microstrip Lines (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 826-828.

A convenient method is described for the measurement of the odd- and even-mode phase velocities of coupled microstrip lines. Results are presented which show the strong influence on the dispersion characteristics of a closely spaced low-loss shielding cover. The method also enables the loss of the odd and even modes to be determined.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A Technique for Determining the Local Oscillator Waveforms in a Microwave Mixer (Short Papers)

A.R. Kerr. "A Technique for Determining the Local Oscillator Waveforms in a Microwave Mixer (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 828-831.

A technique is described which enables the large-signal current and voltage waveforms to be determined for a mixer diode. This technique is applicable to any configuration where the impedance seen by the diode at the local oscillator (LO) frequency and its harmonics is known.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Wide-Band Characteristics of a Coaxial-Cavity Solid-State Device Mount (Short Papers)

P.H. Alexander and P.J. Khan. "Wide-Band Characteristics of a Coaxial-Cavity Solid-State Device Mount (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 831-833.

An experimental comparison is made between two theoretical approaches to evaluation of the driving-point impedance at the terminals of a gap in the center conductor of a coaxial cavity. The study shows that for wide-band characterization, radial-wave modal-field analysis provides greater accuracy than the conventional transmission-line approach.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Wide-Bandwidth Millimeter-Wave Gunn Amplifier in Reduced-Height Waveguide (Short Papers)

D. Rubin. "Wide-Bandwidth Millimeter-Wave Gunn Amplifier in Reduced-Height Waveguide (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 833-834.

A Ka-band millimeter-wave Gunn-amplifier structure with 15-GHz gain /sup 1/2/ -bandwidth product has been fabricated in reduced-height waveguide. Measurements were taken of the terminal admittance of the diode and its mount and used in the computer optimization of impedance matching transformer sections.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Optimization of Microwave Networks (Short Papers)

C. Charalambous and A.R. Conn. "Optimization of Microwave Networks (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 834-838.

The application of a new algorithm for minimax optimization is investigated. Unlike most of the previously published algorithms the new algorithm uses to its advantage certain obvious properties of the minimax function, namely, that the discontinuities in the first derivatives can be characterized by projections. An N-section transmission-line transformer is used as a test problem.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Minimax Optimization by Algorithms Employing Modified Lagrangians (Short Papers)

O. Einarsson. "Minimax Optimization by Algorithms Employing Modified Lagrangians (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 838-841.

Two general, modified Lagrangian algorithms related to recent developments in nonlinear programming are presented. The methods give accurate results and are easy to program. An N-section transmission-line transformer is used as a test problem for minimax (equal ripple) optimization and the methods are compared to existing algorithms for network optimization.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

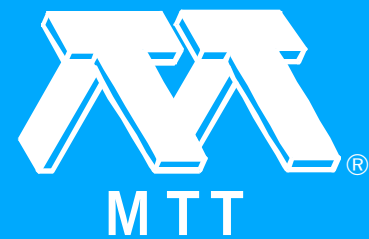
Integrated TRAPATT Diode Arrays (Short Papers)

A. Rosen, H. Kawamoto, J. Klatskin and E.L. Allen, Jr.. "Integrated TRAPATT Diode Arrays (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 841-843.

This short paper is a description of the technique used to monolithically interconnect TRAPATT diodes in an array--resulting in a diode having low inductance interconnection and integrated heat capacitance which is necessary for long pulsewidths. For given power dissipation density and pulse length, the transient temperature rise in the diode decreases with the diameter. The reduction in diode diameter, however, leads to reduced power output. To take advantage of the reduction in temperature rise of small-size diodes while maintaining a large power output, a multiple-diode structure, monolithically interconnected, was fabricated. Pulsewidth operation of 50 μ s has been achieved at a dissipation power density as high as 200 kW/cm², whereas the dissipation density must be reduced to 100 kW/cm² for the same total-area single-disk diode to operate reliably at 50 μ s.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

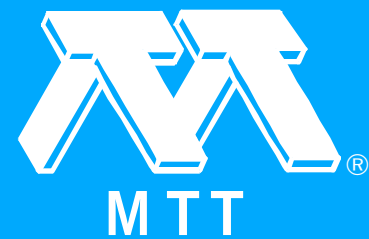
Commercial Glow Discharge Tubes As Detectors of X-Band Radiation (Short Papers)

N.S. Kopeika, B. Galore, D. Stempler and Y. Heimenrath. "Commercial Glow Discharge Tubes As Detectors of X-Band Radiation (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 843-846.

A survey of the detection properties of various commercial glow discharge tubes to X-band radiation is presented, and comparisons are made with typical sensitivities of diode detectors.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Light Transmittance and Microwave Attenuation of a Gold-Film Coating on a Plastic Substrate (Short Papers)

S.Y. Liao. "Light Transmittance and Microwave Attenuation of a Gold-Film Coating on a Plastic Substrate (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 846-849.

Light transmittance and microwave attenuation of a gold-film coating on a plastic substrate is investigated. The dependence of the transmittance of visible light upon the thickness or resistivity of a gold-film coating on a plastic substrate is analyzed numerically. The microwave attenuation produced in the far field over the frequency range of 100 MHz-30 GHz by the gold film is calculated and compared with experimental data. An optimum condition is established between the light transmittance and the microwave attenuation. The results are applicable to any transparent glass coated with any thin metallic film.

[Click on title for a complete paper.](#)

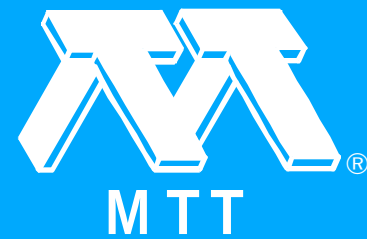


Abstracts

NOVA (Network Optimization Via Adjoints) (Computer Program Descriptions)

D.L. Herrick and J.C. Field. "NOVA (Network Optimization Via Adjoints) (Computer Program Descriptions)." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 849-850.

Least pth optimization of reflection coefficients and/or transducer gain of two-port microwave networks.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Contributors (Oct. 1975 [T-MTT])

C.-K. Chou, K.R. Courtney, A.W. Guy, T. Itoh, A.R. Kerr, R.H. Knerr, J.C. Lin, K. Madsen, W.V. McLevige, R. Mittra, O. Nielsen, H. Schjaer-Jacobsen, E. Schlomann, L. Thrane and R.J. Tiernan. "Contributors (Oct. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 850-852.



IEEE

Contents

Publications

Issues

Papers

Authors

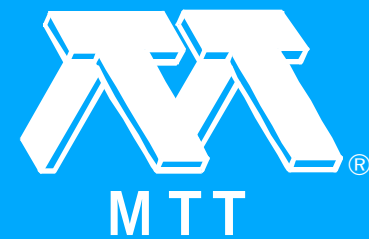
Click on title for a complete paper.



Abstracts

Back Cover (Oct. 1975 [T-MTT])

"Back Cover (Oct. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Front Cover (Nov. 1975 [T-MTT])

"Front Cover (Nov. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

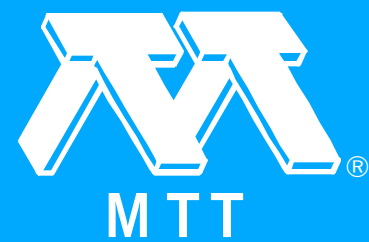
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Fundamental- and Harmonic-Frequency Circuit-Model Analysis of Interdigital Transducers with Arbitrary Metallization Ratios and Polarity Sequences

W.R. Smith and W.F. Pedler. "Fundamental- and Harmonic-Frequency Circuit-Model Analysis of Interdigital Transducers with Arbitrary Metallization Ratios and Polarity Sequences." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 853-864.

A three-port circuit model is developed that describes the operation of interdigital transducers with arbitrary metallization ratios and electrode-polarity sequences at fundamental and higher harmonic frequencies. The electric fields that excite surface acoustic waves are found on an electrode-by-electrode basis using the approximation that the local electric fields are not influenced by electrodes more distant than the next-nearest neighbors. The resultant fields are expressed in terms of familiar functions, with a "universal" set of expansion coefficients given in Appendix II. Use of these fields in the circuit model developed earlier by other authors describes arbitrary transducers by modeling each electrode using the expansion coefficients appropriate to the local electrode environment. Illustrative results include the effective coupling coefficient of single-and double-electrode transducers of arbitrary metallization ratio for frequencies up to and including the eleventh harmonic. Also included is one example of the consequences of end effects in short transducers, and a detailed comparison of theory and experiment for transducers with a nonalternating polarity sequence [phase-reversal transducers (PRT's)].

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Chebyshev Approximation Method for Microstrip Problems

G.M.L. Gladwell and S. Coen. "A Chebyshev Approximation Method for Microstrip Problems." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 865-870.

The quasi-static TEM mode of a microstrip line may be obtained approximately from the solution of Laplace's equation subject to certain boundary conditions. The Green's function approach leads to the solution of a Fredholm integral equation with a logarithmic singularity in the kernel. It is shown that if the charge distribution on the strip is expanded in terms of Chebyshev polynomials then the integrals arising from the logarithmic term may be evaluated in closed form, and the integral equation may be approximated closely by a set of algebraic equations. The method is applied to numerous open and shielded configurations of strips and couple-strips in the presence of dielectrics. Numerical results are compared with exact results whenever possible and with results from previous authors. Design curves are presented for particular shielded couple-strip configurations.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

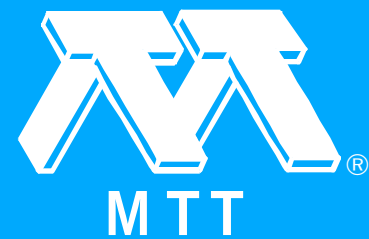
Numerical Solution of Coupling Between Two Collinear Parallel-Plate Waveguides

Y.E. Elmoazzen and L. Shafai. "Numerical Solution of Coupling Between Two Collinear Parallel-Plate Waveguides." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 871-876.

The problem of coupling between two collinear parallel-plate waveguides is investigated numerically using moment methods. The exciting mode in the waveguide is assumed as the incident field, and the integral equation for the induced current is expressed in terms of the reflected, transmitted, and evanescent currents on the waveguides. The integral equation is then solved numerically by a point-matching method and the reflection and the transmission coefficients and the radiated fields are obtained. To examine the accuracy of the results, the special case of a semi-infinite exciting waveguide coupled to a finite coupled waveguide is also considered and is solved numerically by treating the singularities of the induced currents using a transformation method. For a TE/sub 0,1/ excitation of the exciting waveguide, the results of both numerical methods are compared with the analytical results obtained previously using the Wiener-Hopf technique, and are found to be in good agreement. The methods are then used to study the effect of the coupled waveguide on the radiation field.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Nondegenerate Surface-Wave Mode Coupling Between Dielectric Waveguides

E.F. Kuester and D.C. Chang. "Nondegenerate Surface-Wave Mode Coupling Between Dielectric Waveguides." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 877-882.

A new variational derivation of the coupling coefficient is given for the problem of nondegenerate surface-wave modes on parallel dielectric waveguides. The results coincide with those of a number of different methods in the literature on the degenerate case, but all give distinct results in the nondegenerate case. These differences are examined and compared with the exact solution, whereby the approximations involved can be evaluated for the case of two parallel slab waveguides.

[Click on title for a complete paper.](#)



Abstracts

Single-Mode Pulse Dispersion in Optical Waveguides

E.F. Kuester and D.C. Chang. "Single-Mode Pulse Dispersion in Optical Waveguides." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 882-887.

The limitations of a widely used method for analyzing pulse distortion in a single-mode waveguiding structure are derived. The results are applied to propagation in optical waveguides, and for cases where material dispersion is dominated by a broad resonance line, pulse attenuation is found to be much more serious than the broadening of the pulse. In extremely low-loss regions, however, other effects may cause the reverse to be true.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computation of the Electromagnetic Fields and Induced Temperatures Within a Model of the Microwave-Irradiated Human Eye

A. Taflove and M.E. Brodwin. "Computation of the Electromagnetic Fields and Induced Temperatures Within a Model of the Microwave-Irradiated Human Eye." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 888-896.

The electromagnetic fields within a detailed model of the human eye and its surrounding bony orbit are calculated for two different frequencies of plane-wave irradiation: 750 MHz and 1.5 GHz. The computation is performed with a finite-difference algorithm for the time-dependent Maxwell's equations, carried out to the sinusoidal steady state. The heating potential, derived from the square of the electric field, is used to calculate the temperatures induced within the eyeball of the model. This computation is performed with the implicit alternating-direction (IAD) algorithm for the heat conduction equation. Using an order-of-magnitude estimate of the heat-sinking capacity of the retinal blood supply, it is determined that a hot spot exceeding 40.4°C occurs at the center of the model eyeball at an incident power level of 100 mW/cm² at 1.5 GHz.

[Click on title for a complete paper.](#)



Even- and Odd-Mode Waves for Nonsymmetrical Coupled Lines in Nonhomogeneous Media

R.A. Speciale. "Even- and Odd-Mode Waves for Nonsymmetrical Coupled Lines in Nonhomogeneous Media." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 897-908.

A simple analysis of the eigenvectors, representing the fundamental uncoupled wave modes of a pair of nonsymmetrical coupled lines in nonhomogeneous medium, proves that these two modes reduce, under a given condition, to an even mode with equal voltage magnitudes and an odd mode with equal current magnitudes and opposite polarities. The condition, which may be cast in many representative forms, is called "congruence condition" and may be formulated simply, for a nonhomogeneous dielectric medium, by saying that the ratio of the per-unit-length conductor-to-ground capacitances must be the same in the empty and in the filled structure. The essential interest of congruence lies in the drastic simplification it introduces in the expressions of the eigenvalues and of the mode velocities and in the expressions of the mode admittances and impedances for the two coupled lines. Because of this simplification, a straight forward matrix derivation may be written to obtain closed-form expressions of the entries of the 4×4 Y-, Z-, and S-parameter matrices of the coupled-line 4-port. The simplicity of the definition of the fundamental modes in congruent structures introduces great conceptual clarity in the description of coupled-wave propagation. Experimental evidence is presented which proves the physical existence of the even-mode wave and of the redefined odd-mode wave in suspended-substrate broadside-coupled striplines. Practical structures of this type are very closely congruent.

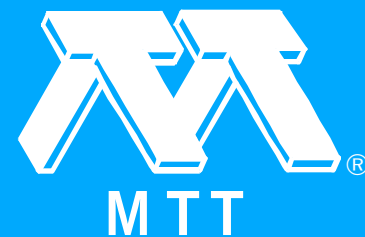


Abstracts

Annotated Literature Survey of Microwave Ferrite Control Components and Materials for 1968-1974

L.R. Whicker and D.M. Bolle. "Annotated Literature Survey of Microwave Ferrite Control Components and Materials for 1968-1974." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 908-918.

An annotated literature survey covering major development in the area of microwave ferrite control components and material primarily for the 1968-1974 period is presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Effect of Discontinuities on the Group Delay of a Microwave Transmission Line (Short Papers)

R.W. Beatty and T.Y. Ootshi. "Effect of Discontinuities on the Group Delay of a Microwave Transmission Line (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 919-923.

The problem is considered of the effect of reflections from discontinuities at each end of a transmission line on the group delay at microwave frequencies. Previous work is briefly reviewed and a general analysis is made. Graphical data are presented based upon the formulas developed. Experimental results are given which confirm the theory.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Performance Characteristics of 4-Port Stripline Circulators (Short Papers)

A.M. Hussein, M.M. Ibrahim and S.E. Youssef. "Performance Characteristics of 4-Port Stripline Circulators (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 923-926.

Impedance matrix formulation is applied to the 4-port stripline circulator to determine the optimum performance. The space harmonics generated in the ferrite disk are determined. The distribution of the electric field and the power densities across the ferrite disk are clearly presented. Using an inner dielectric provides more flexibility in the design.

[Click on title for a complete paper.](#)



Insertion Loss of 3-Port Circulator with One Port Terminated in Variable Short Circuit (Short Papers)

J. Helszajn, G.P. Riblet and J.R. Mather. "Insertion Loss of 3-Port Circulator with One Port Terminated in Variable Short Circuit (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 926-927.

The insertion loss between ports 1 and 3 of a 3-port circulator with port 2 terminated in a short circuit varies about twice the single path loss. The purpose is to give approximate simple upper and lower bounds for this loss in terms of the single path insertion loss of the junction. One application of this arrangement is encountered in the connection of a filter and equalizer by a single circulator. The final result indicates that, in the absence of circuit losses, the double path loss varies between one and three times the single path loss.

Abstracts

Application of a Property of the Airy Function to Fiber Optics (Short Papers)

J.A. Arnaud and W. Mammel. "Application of a Property of the Airy Function to Fiber Optics (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 927-929.

The integral of the square of the Airy function from one of its zeros to infinity is equal to the square of the first derivative of the Airy function at the zero considered. Two important applications of this result to fiber optics are discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The Relation of Teratogenesis in Tenebrio Molitor to the Incidence of Low-Level Microwaves (Short Papers)

L.M. Liu, F.J. Rosenbaum and W.F. Pickard. "The Relation of Teratogenesis in Tenebrio Molitor to the Incidence of Low-Level Microwaves (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 929-931.

The teratogenic effects of irradiation by low-level microwaves have been studied using the pupae of the darkling beetle *Tenebrio molitor*. For exposures of 2-h duration, statistically significant increases in teratogenesis were observed at waveguide power levels down to 200 μW ; the pupation time increased monotonically with the power. Exposures of various durations and powers at a constant dosage of 4 mW/h strongly suggested that it is the total dosage which determines the level of teratological damage.



[Contents](#)

[Publications](#)

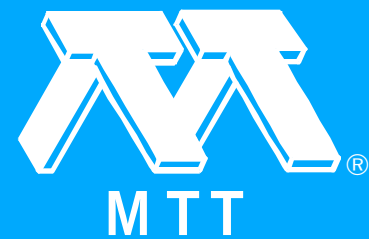
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

The Coupling of a Single-Ridge Waveguide to a Fabry-Perot Resonator (Short Papers)

M.L. Van Blaricum. "The Coupling of a Single-Ridge Waveguide to a Fabry-Perot Resonator (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 931-934.

The functional forms of the fields in a single-ridge waveguide are presented. Bethe's small-hole diffraction theory is used to determine the coefficient for coupling from various parts of the guide to a Fabry-Perot (FP) resonator. It is shown that frequency-independent coupling over a very broad band is possible, and specific examples are given for the band from 18.0 to 40.0 GHz.

Click on title for a complete paper.



Abstracts

Radiation from Curved Dielectric Slabs and Fibers (Comments)

J.A. Arnaud. "Radiation from Curved Dielectric Slabs and Fibers (Comments)." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 935-936.

In the above paper, Lewin gave an expression for the bending loss of a dielectric fiber with circular cross section. I have shown that the bending loss of arbitrary optical guides can be obtained in a simple manner when the field of the straight guide is known. The purpose of this letter is to show that the results of the two theories are in agreement, except for a factor of 2.



- Contents
- Publications
- Issues
- Papers
- Authors

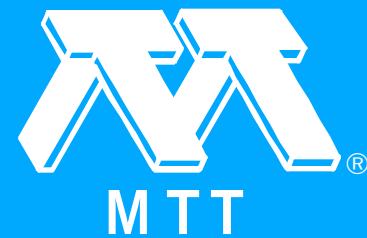
Click on title for a complete paper.



Abstracts

Contributors (Nov. 1975 [T-MTT])

D.M. Bolle, M.E. Brodwin, D.C. Chang, S. Coen, P. de Santis, Y.E. Elmoazzen, G.M.L. Gladwell, E.F. Kuester, N. Ogasawara, W.F. Pedler, A.C. Priou, R.G. Roberts, L. Shafai, W.R. Smith, R.A. Speciale, A. Taflove, R. Tang, L.R. Whicker and L.K. Wilson. "Contributors (Nov. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 937-939.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

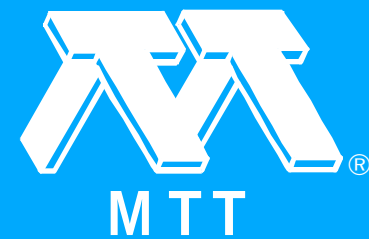
Click on title for a complete paper.



Abstracts

Join IEEE (Advertisement) (Nov. 1975 [T-MTT])

"Join IEEE (Advertisement) (Nov. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): 940-940.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

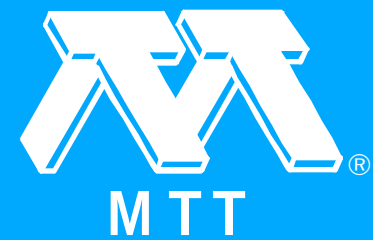
Click on title for a complete paper.



Abstracts

Back Cover (Nov. 1975 [T-MTT])

"Back Cover (Nov. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.11 (Nov. 1975 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Dec. 1975 [T-MTT])

"Front Cover (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Table of Contents (Dec. 1975 [T-MTT])

"Table of Contents (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 941-941.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Editor's Overview (Dec. 1975 [T-MTT])

S.F. Adam. "Editor's Overview (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 942-942.

The organization, preparation, and presentations of the 1975 Microwave Theory and Techniques Society Technical Program are now completed with this traditional issue of the Transactions. The qualifying papers included here together with the Symposium Digest comprise the record of technical achievement of our annual meeting.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

International Microwave Symposium (Dec. 1975 [T-MTT])

S.F. Adam. "International Microwave Symposium (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 943-946.

The 1975 IEEE S-MTT International Microwave Symposium was hosted by the San Francisco Chapter of MTT and held at Rickey's Hyatt House, Palo Alto, Calif., May 12-14, 1975.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

MTT Awards for 1974

"MTT Awards for 1974." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 947-951.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The 1975 S-MTT National Lectureship

R.W. Beatty. "The 1975 S-MTT National Lectureship." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 952-952.

The development of modern computer-controlled measurement systems has given the microwave engineer a fantastic tool for the design and testing of components and systems. Going beyond the point of fast, automatic measurements, they now give promise of high accuracy and are revolutionizing the microwave measurement field.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microstrip Varactor-Tuned Millimeter-Wave IMPATT Diode Oscillators (Dec. 1975 [T-MTT])

E.J. Denlinger, J. Rosen, E. Mykietyn and E.C. McDermott, Jr.. "Microstrip Varactor-Tuned Millimeter-Wave IMPATT Diode Oscillators (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 953-958.

Varactor-tuned millimeter-wave IMPATT diode oscillators in microstrip form using chip-mounted diodes are described. A nearly level output power of 28 ± 8 mW was achieved over a 6-GHz tuning range. Tunable bandwidths as high as 8 GHz with 6-26 mW of power were obtained from a single source. P-type epitaxial silicon IMPATT diodes were used for both the active device and the tuning varactor functions.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers

C.O.G. Obah, E. Benko, H.C. Bowers, T.A. Midford and R.D. Regier. "High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 959-970.

The design and performance of both the lumped-element TRAPATT oscillator circuit and deep-diffused p+-n-n+ silicon TRAPATT diodes designed primarily for pulsed radar applications in the UHF and L band frequency ranges are discussed. Circuit conditions for optimum performance are described. Methods of optimizing diodes are presented. Diode performance capability is shown to depend on the relative position of the junction in the device depletion region. Peak powers close to 900 W and maximum conversion efficiencies of 40 percent have been achieved from diodes with large p-region width to total depletion region width ratios. RF leading-edge jitter of less than 1 ns has been obtained under optimum circuit and diode operating conditions.

[Click on title for a complete paper.](#)



Abstracts

Satellite Altimetry Applications (Dec. 1975 [T-MTT])

J.T. McGoogan. "Satellite Altimetry Applications (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 970-978.

This paper provides a brief background of precision satellite altimetry. A description of satellite altimetry concepts and instrumentation is presented. The parameters measured, supporting data, and techniques, as well as physical limitations, are discussed. In addition, results are shown and a variety of applications is emphasized.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios (Dec. 1975 [T-MTT])

C.A. Hoer and K.C. Roe. "Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 978-984.

An arbitrary six-port junction is analyzed as a microwave vector voltmeter, measuring the amplitudes and phase differences of two input signals in terms of power readings taken at the remaining four ports. The junction may be calibrated for measuring the complex ratio of these two signals using a self-calibration procedure which requires no attenuation or phase standards.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Automated Calibration of Directional-Coupler-Bolometer-Mount Assemblies (Dec. 1975 [T-MTT])

G.F. Engen. "Automated Calibration of Directional-Coupler-Bolometer-Mount Assemblies (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 984-990.

Although the application of automated methods to power calibration problems in the UHF and microwave region has been described by a number of authors, the primary orientation has been towards the calibration of bolometer mounts and similar items. Little has been published on the problem of calibrating directional-coupler-bolometer-mount assemblies, which also play a major role in the calibration and measurement of UHF and microwave power. This paper develops a theoretical basis for several different approaches to this measurement problem.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Three-Dimensional Transmission-Line Matrix Computer Analysis of Microstrip Resonators

S. Akhtarzad and P.B. Johns. "Three-Dimensional Transmission-Line Matrix Computer Analysis of Microstrip Resonators." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 990-997.

A wide range of microwave resonators are analyzed using the same three-dimensional transmission-line-matrix (TLM) computer program. The paper demonstrates the ease of application, versatility, and accuracy of the TLM method. The results presented include the dispersion characteristics of microstrip on dielectric and magnetic substrates and an example of a microstrip discontinuity. The surface-mode phenomenon of microstrip is also investigated.

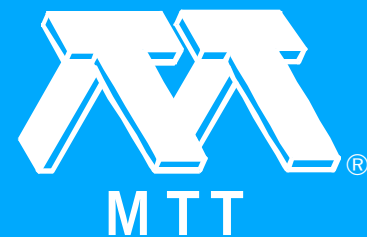
[Click on title for a complete paper.](#)



Microstrip Excitation of Magnetostatic Surface Waves: Theory and Experiment

A.K. Ganguly and D.C. Webb. "Microstrip Excitation of Magnetostatic Surface Waves: Theory and Experiment." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 998-1006.

A model is developed for excitation of magnetostatic surface waves (MSSW) with microstrip transmission lines. Energy carried away in MSSW propagating perpendicular to the microstrip is related to electromagnetic (EM) energy propagating along the microstrip line by an equivalent radiation resistance. Supporting experimental results are in excellent agreement with predictions derived from this model.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Tapped-Line Coupled Transmission Lines with Applications to Interdigital and Comblin Filters (Dec. 1975 [T-MTT])

E.G. Cristal. "Tapped-Line Coupled Transmission Lines with Applications to Interdigital and Comblin Filters (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1007-1012.

Exact, general, open-wire-line equivalent circuits for tapped-line comblin and interdigital arrays are derived using a combination of graph transformations and induction. A significant feature of the equivalent circuits is that they do not require commensurate length sections. The equivalent circuit for tapped-line interdigital arrays is utilized to develop design equations for tapped-line interdigital filters.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Synthesis of Interstage Networks of Prescribed Gain Versus Frequency Slopes

D.J. Mellor and J.G. Linvill. "Synthesis of Interstage Networks of Prescribed Gain Versus Frequency Slopes." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1013-1020.

Since the achievable gain of transistors typically falls off with increasing frequency, it is necessary to design interstage networks of microwave amplifiers with a complementary characteristic. A method is developed for the direct synthesis of interstage networks of prescribed gain versus frequency slopes. The bandwidth and ripple of these networks can also be precisely specified, and parasitic elements can be incorporated into synthesized networks. Design examples are presented, a complete computer program for the synthesis of interstage matching networks is described, and an octave band microwave amplifier illustrates an application of the interstage design techniques.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Conditions of Strongest Electromagnetic Power Deposition in Man and Animals

O.P. Gandhi. "Conditions of Strongest Electromagnetic Power Deposition in Man and Animals." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1021-1029.

Strongest power deposition for biological bodies is found for fields polarized along the longest dimension for frequencies such that the major length is about 0.4 times the free-space wavelength of radiation. Peak absorption in the presence of ground effects is observed at frequencies about one-half as much as for bodies isolated in free space. At resonance, an effective absorption area 34 times the shadow cross section is measured. Using biological-phantom figurines of the human body, distribution of power absorption is determined. Maximum power deposition is observed for the neck region. Initial experiments with anesthetized and dead rats have confirmed this observation.

[Click on title for a complete paper.](#)



Abstracts

Modeling and Computer Simulation of a Microwave-to-DC Energy Conversion Element (Dec. 1975 [T-MTT])

J.J. Nahas. "Modeling and Computer Simulation of a Microwave-to-DC Energy Conversion Element (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1030-1035.

A microwave-to-dc energy conversion element consisting of a dipole antenna, a low-pass filter, a Schottky-barrier diode, and a dc filter has been modeled using a distributed transmission-line modeling technique that includes skin-effect losses. Computer simulation has shown 80-percent conversion efficiency and has indicated that the diode generates significant power at higher harmonics due to a resonance effect.



IEEE

Contents

Publications

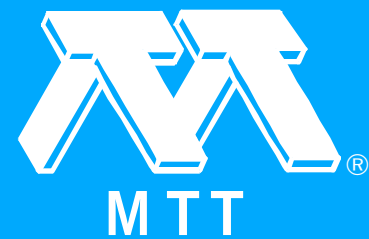
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature (Dec. 1975 [T-MTT])

C.A. Tearle and K.R. Heath. "IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1036-1042.

This paper describes an investigation of the amplitude modulation (AM) noise sidebands of silicon IMPATT microwave oscillators and the effect these noise sidebands have on the excess noise temperature of parametric amplifiers. It is shown that the noise temperature may be affected under both large- and small-signal conditions to an extent which depends on the level of pump sideband noise. Simple relationships between easily measurable amplifier properties and pump noise power are given which enable the performance of any combination of pump and amplifier under the two signal conditions to be predicted. A method which simultaneously eliminates the small-signal effect and reduces the large-signal effect to an acceptable level is proposed and demonstrated to be a practical solution.

[Click on title for a complete paper.](#)



Abstracts

The Operation of S-Band TRAPATT Oscillators with Tuning at Multiple Harmonic Frequencies (Short Papers)

R.J. Trew, G.I. Haddad and N.A. Masnari. "The Operation of S-Band TRAPATT Oscillators with Tuning at Multiple Harmonic Frequencies (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1043-1047.

A simplified TRAPATT oscillator model that allows the investigation of arbitrary terminal waveforms was utilized to investigate realistic TRAPATT waveforms and the tuning conditions necessary for high-efficiency operation. The effects of the higher harmonics on oscillator frequency and efficiency were studied. Circuit impedance measurements of S-band TRAPATT oscillators support the theoretical predictions.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Picosecond-Pulse Sequential Waveform Generation (Short Papers)

H.M. Cronson. "Picosecond-Pulse Sequential Waveform Generation (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1048-1049.

This short paper describes a novel method of generating a pulse sequence using step-recovery diodes (SRDs) shunting a transmission line. Individual pulses in the train may have rise times less than 60 ps with amplitudes greater than 10 V. The many potential applications of the device include a short RF pulse generator, an FM generator, and a high-speed word generator.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Depolarization Measurements on the ATS-6 20-GHz Downlink: A Description of the VPI & SU Experiment and Some Initial Results (Short Papers)

C.W. Bostian, W.L. Stutzman, E.A. Manus, P.H. Wiley and R.E. Marshall. "Depolarization Measurements on the ATS-6 20-GHz Downlink: A Description of the VPI & SU Experiment and Some Initial Results (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1049-1053.

This paper discusses the depolarizing effects of precipitation at millimeter wavelengths and describes an experiment in which depolarization on the ATS-6 satellite 20-GHz downlink is measured. Data are presented for unexplained clear weather variations in the observed polarization and for depolarization by rain and snow. A preliminary analysis indicates that for a given attenuation level, a satellite path exhibits more severe depolarization than experiments with ground systems would predict.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Microwave Scattering from the Ocean Surface (Short Papers)

*W.L. Jones, W.L. Grantham, L.C. Schroeder, J.W. Johnson, C.T. Swift and J.L. Mitchell.
"Microwave Scattering from the Ocean Surface (Short Papers)." 1975 Transactions on
Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1053-
1058.*

This paper reviews current aircraft and satellite programs which use microwaves to measure ocean wave and surface wind conditions. These particular measurements have been identified by the user community as offering significant economic and technological benefits. Active microwave remote sensing techniques for these applications have been described theoretically and verified experimentally. The results of recent aircraft and satellite experimental programs are presented herein along with plans for the SeaSat-A satellite scatterometer (SASS).



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Microwave Irradiation Design Using Dielectric Lenses (Short Papers)

H.S. Ho, G.J. Hagan and M.R. Foster. "Microwave Irradiation Design Using Dielectric Lenses (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1058-1061.

Theoretical calculations and electric-field measurements were made to investigate the focusing effects of plane-wave-irradiated dielectric spheres (lenses). Spheres of different diameters and dielectric properties and plane wave sources of different frequencies were used in the calculations. The results indicate the feasibility of using dielectric lenses for selective partial-body irradiation in biological experiments.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

On the Synthesis of Waveguides and Cavities Realized with Nonseparable Solutions of Helmholtz Wave Equation (Short Papers)

P.J. Luypaert and D.H. Schoonaert. "On the Synthesis of Waveguides and Cavities Realized with Nonseparable Solutions of Helmholtz Wave Equation (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1061-1064.

This short paper shows how nonseparable solutions of the Helmholtz wave equation can be used in the synthesis of waveguides and cavities with nonconventional cross section, and also investigates the attenuation and Q factor.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Tapered Asymmetric Microstrip Magic Tee (Short Papers)

M.H. Arain and N.W. Spencer. "Tapered Asymmetric Microstrip Magic Tee (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1064-1067.

The design, development, and construction of a very compact decade-(1-10-GHz) bandwidth microstrip --8.34-dB coupler are described. Calculations are given for the voltage coupling coefficient and the low-frequency cutoff, and the method of determining the physical dimensions of the circuit is described. Also, the feasibility of a decade-bandwidth microstrip magic tee by cascading two -- 8.34-dB couplers is demonstrated by comparing the actual and theoretical results of a coupler.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Evaluation of the Equivalent Circuit Parameters of Microstrip Discontinuities through Perturbation of a Resonant Ring (Short Papers)

W.J.R. Hoefer and A. Chattopadhyay. "Evaluation of the Equivalent Circuit Parameters of Microstrip Discontinuities through Perturbation of a Resonant Ring (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1067-1071.

A resonant technique for evaluating the equivalent circuit of reciprocal microstrip discontinuities is described. The complex Z parameters of a discontinuity are related to the change in resonant frequencies and Q factors of a microstrip ring it perturbs. As an example, measurements made on inductive posts are presented and compared with theoretical values.

[Click on title for a complete paper.](#)



Abstracts

The Accurate Measurement of Range by the Use of Microwave Delay Line Techniques (Short Papers)

G.F. Ross. "The Accurate Measurement of Range by the Use of Microwave Delay Line Techniques (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1071-1074.

A scheme is presented for accurately measuring range to a radar target by the use of microwave delay line techniques and the use of solid-state subnanosecond digital threshold circuitry. The scheme obviates the need for expensive high-speed counters or analog thresholding and is cost effective to implement. A breadboard design of the technique was constructed and schematic diagrams are presented in this short paper. The results of the breadboard tests indicate that the range to a target can be measured and indicated up to 250 ft in 2-ft increments at a cost below \$100.00.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A Transferred-Electron Frequency Memorizer (Short Papers)

W.R. Curtice. "A Transferred-Electron Frequency Memorizer (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1074-1076.

Transferred-electron oscillators capable of single-frequency operation at any of as many as 20 closely spaced frequencies have been constructed for microwave-frequency-memory applications around 11 GHz. Switching between different frequency states has been achieved with a single RF pulse as short as 0.1 μ s.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Nondestructive Measurement of Complex Permittivity for Dielectric Slabs (Short Papers)

M.C. Decreton and M.S. Ramachandraiah. "Nondestructive Measurement of Complex Permittivity for Dielectric Slabs (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1077-1080.

A method has been developed for the precise nondestructive measurement of the dielectric constant and losses of slab-like samples such as microstrip substrates, for instance. Basically, the test setup consists of an open-ended rectangular waveguide, the flange of which is placed in contact with one side of the dielectric material, the other one being backed by a metal plate. The waveguide can be either simply cut at its end, or terminated by an inductive or capacitive iris. The reflection characteristics or the resonance parameters are related to the real and imaginary parts of the permittivity by means of computer-generated charts or an optimization program.

[Click on title for a complete paper.](#)



Abstracts

Integrated Diode Phase-Shifter Elements for an X-Band Phased-Array Antenna (Short Papers)

M.E. Davis. "Integrated Diode Phase-Shifter Elements for an X-Band Phased-Array Antenna (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1080-1084.

The design and production of 502 X-band P-I-N diode phase-shifter elements for a transmissive phased-array radar are presented. These elements consist of three phase-shifter states and two integrated dipole radiators formed using microwave integrated circuit techniques. The detailed design of loaded-line phase shifters and effects of circuit variations during production are examined in terms of measured performance. Finally, the performance of the phase shifters in the phased array is demonstrated through computed and measured antenna patterns giving quantitative results.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

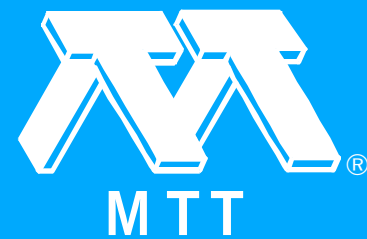
Click on title for a complete paper.



Abstracts

Contributors (Dec. 1975 [T-MTT])

S. Akhtarzad, E. Benko, H.C. Bowers, E.G. Cristal, E.J. Denlinger, G.F. Engen, O.P. Gandhi, A.K. Ganguly, K.R. Heath, C.A. Hoer, P.B. Johns, J.G. Linvill, E.C. McDermott, Jr., J.T. McGoogan, D.J. Mellor, T.A. Midford, E. Mykietyn, J.J. Nahas, C.O.G. Obah, R.D. Regier, K.C. Roe, J. Rosen, C.A. Tearle and D.C. Webb. "Contributors (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): 1085-1088.



IEEE

Contents

Publications

Issues

Papers

Authors

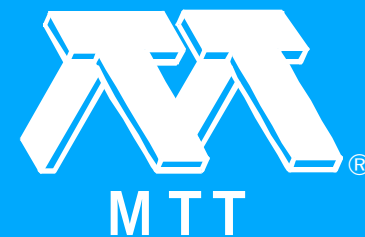
Click on title for a complete paper.



Abstracts

Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-23, 1975

*"Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-23, 1975."
1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975
Symposium Issue)): i-xiv.*



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Join IEEE (Advertisement) (Dec. 1975 [T-MTT])

"Join IEEE (Advertisement) (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): b1-b4.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

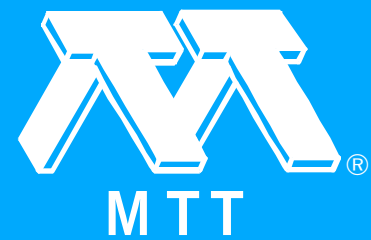
Click on title for a complete paper.



Abstracts

Annals of the IEEE (Advertisement) (Dec. 1975 [T-MTT])

"Annals of the IEEE (Advertisement) (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): b2-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

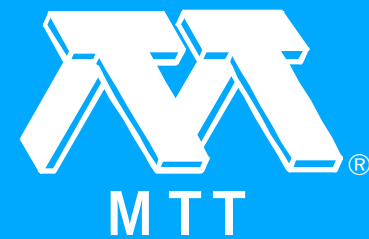
Click on title for a complete paper.



Abstracts

Back Cover (Dec. 1975 [T-MTT])

"Back Cover (Dec. 1975 [T-MTT])." 1975 Transactions on Microwave Theory and Techniques 23.12 (Dec. 1975 [T-MTT] (1975 Symposium Issue)): b3-b4.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

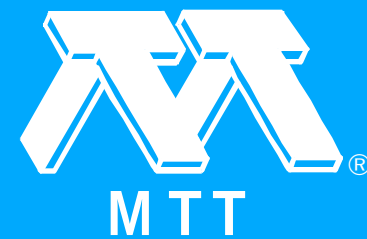
Click on title for a complete paper.



Abstracts

Front Cover (Jan. 1976 [T-MTT])

"Front Cover (Jan. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Synthesis of Two Classes of Acoustic Surface-Wave Filter Tap Weights

G.L. Matthaei, D.Y. Wong and B.P. O'Shaughnessy. "Synthesis of Two Classes of Acoustic Surface-Wave Filter Tap Weights." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 1-10.

Techniques are presented for the synthesis of interdigital acoustic surface-wave filter tap weights so as to give transfer functions having a Chebyshev stopband attenuation characteristic with a specified minimum attenuation, along with a single-peaked or a Chebyshev double-peaked passband characteristic. The techniques first give the gain zero locations, and as a result are very flexible. Linear phase or minimum or maximum phase-shift characteristics are obtainable. The transfer function can be factored into two sets of zeros which can be realized as two separate anodized transducers which, when operated with a multistrip coupler, will give the desired overall transfer function. Also, it is shown that the class of designs having a double-peaked passband can be realized in the form of an unanodized phase-reversal transducer (PRT) in cascade with a second transducer having very smooth anodization and no phase reversals. The fact that such designs have such smooth anodization with relatively few small taps can help in obtaining precision performance.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Symmetrical Four-Port Edge-Guided Wave Circulators

P. de Santis and F. Pucci. "Symmetrical Four-Port Edge-Guided Wave Circulators." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 10-18.

Four-port microwave-integrated-circuit (MIC) edge-guided wave circulators (BGC) have been designed, fabricated, and tested. A mathematical characterization of the strip conductor's shape as well as a precise mechanical control of the bias inhomogeneity are provided. By means of these two techniques the reproducibility of the device is greatly improved with respect to that of the EGC obtained by the traditional cut-and-try methods. X-band performance data are presented and related to the spatial distribution of the effective magnetic permeability μ_{eff} in the ferrite substrate. Experimental evidence is reported that an efficient circulator action occurs when $\mu_{\text{eff}} < 0$ at some point under the central circular shield. The spatial distribution of the RF electric field at the circulator's surface is investigated by a mechanical probing technique. It is found that in the lower part of the operation band, RF fields of considerable amplitude extend in the air in the region between the guiding edge and the substrate's edge.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Rate Effects in Isolated Turtle Hearts Induced by Microwave Irradiation

C.E. Tinney, J.L. Lords and C.H. Durney. "Rate Effects in Isolated Turtle Hearts Induced by Microwave Irradiation." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 18-24.

Microwave irradiation at 960-MHz CW of isolated poikilothermic hearts in Ringer's solution causes bradycardia. Tachycardia is usually produced by generalized heating, suggesting the possibility of a different mechanism in this case. The effect occurs only over a narrow power range of approximately 2-10 mW/g absorbed by the heart. It is hypothesized that microwave radiation causes neurotransmitter release either by excitation of the nerve remnants in the heart, or by some other mechanism, producing bradycardia over a restricted range of power absorption. Drugs which can change the response of the heart to transmitter substances have been used, and the results support a neurotransmitter release hypothesis. A generalized heating effect, causing tachycardia, is predominant at higher levels of absorbed power.

[Click on title for a complete paper.](#)

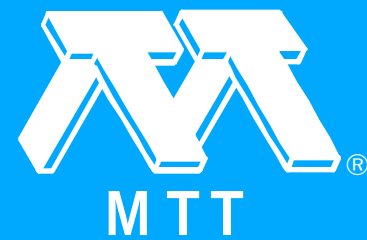


Abstracts

Circular TE/sub 0n/ Mode Filters for Guided Millimeter-Wave Transmission (Jan. 1976 [T-MTT])

K. Hashimoto. "Circular TE/sub 0n/ Mode Filters for Guided Millimeter-Wave Transmission (Jan. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 25-31.

A millimeter-wave circular TE/sub 01/ mode waveguide generates undesired circularly symmetric modes (TE/sub 02/, TE/sub 03/ modes, etc.) in bends or at discontinuities along a waveguide line. This paper describes the theory and experiment on the TE/sub 02/ and TE/sub 03/ mode filters developed for guided millimeter-wave transmission. The experimental results of two improved TE/sub 03/ mode filters show that the attenuation of the TE/sub 03/ mode is more than 16 dB for one type over the 40-70-GHz range. The TE/sub 01/-mode insertion loss of another type is about 0.2 dB over the 40-80-GHz range. The present mode filters can be applied to various high-speed guided millimeter-wave systems currently under development.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Wide-Band Varactor-Tuned Coaxial Oscillators

C.D. Corbey, R. Davies and R.A. Gough. "Wide-Band Varactor-Tuned Coaxial Oscillators." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 31-39.

An experimental investigation into the effects of package and circuit reactances on wide-band varactor-tuned oscillators is described. The results are used to design an X-band Gunn coaxial oscillator with a tuning range in excess of 3 GHz. It is shown that the stray reactance, junction capacitance, and bond-wire inductance affect the varactor tuning characteristics. The characteristics are conveniently displayed by the reflection phase variation with tuning voltage and frequency. A general theory for wide-band varactor-tuned oscillators is presented which is related to the impedance characteristics. These results are used to design three coaxial varactor-tuned oscillators. The first two oscillators are series arrangements while the third oscillator is a parallel arrangement. A simple circuit technique is used to improve the tuning range of each arrangement. This technique is shown to increase the coupling to the varactor diode and decrease the oscillator Q by reactance compensation.

[Click on title for a complete paper.](#)



Abstracts

On the Design of Dielectric Loaded Waveguides

T.K. Findakly and H.M. Haskal. "On the Design of Dielectric Loaded Waveguides." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 39-43.

Rectangular waveguides partially filled with a dielectric slab in the E plane can provide an alternative to ridged waveguides in broad-band systems. It is shown that by an appropriate choice of the dielectric constant, maximum power handling capacity for a given bandwidth and cutoff wavelength can be achieved. This power-handling capacity is much higher than for ridged waveguides. Attenuation and the effect of the first longitudinal-section-electric (LSE) mode on bandwidth are also discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Probe for Measuring Temperature in Radio-Frequency-Heated Material (Short Papers)

R.R. Bowman. "A Probe for Measuring Temperature in Radio-Frequency-Heated Material (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 43-45.

Measuring temperature in material being heated by radio-frequency (RF) fields is difficult because of field perturbations and direct heating caused by any conventional leads connected to the temperature sensor. A temperature probe consisting simply of a thermistor and plastic high-resistance leads appears to practically eliminate these problems. The design goals are described, and the performance of an initial test model of this type of probe is discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Computer Program for the Direct Calibration of Two-Port Reflectometers for Automated Microwave Measurements (Short Papers)

V.G. Gelnovatch. "A Computer Program for the Direct Calibration of Two-Port Reflectometers for Automated Microwave Measurements (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 45-47.

A short computer program is developed to solve explicitly a very useful reflectometer error model currently receiving high utilization in microwave measurement systems. The program architecture is designed to enhance its utilization as a stand-alone subroutine operating in conjunction with a measurement program, or to replace iterative solution software in existing automated measurement systems.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Coaxial to Microstrip Transition (Short Papers)

E.H. England. "A Coaxial to Microstrip Transition (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 47-48.

A method of obtaining an improved transition, from 0.141-in (3.55-mm) semirigid coaxial to microstrip is described. Further improvements by means of compensation include two fixed types having a reflection coefficient less than 0.005 and an adjustable form capable of producing a "transparent" transition.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

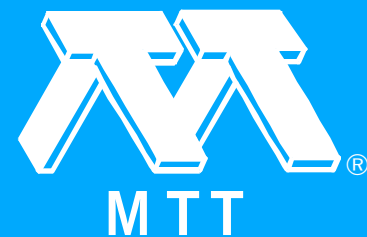


Abstracts

On an Automatic System for Simultaneous Measurement of Amplitude and Phase of Millimeter-Wave Fields (Short Papers)

R.J. King. "On an Automatic System for Simultaneous Measurement of Amplitude and Phase of Millimeter-Wave Fields (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 48-50.

Suggestions are given for improving the vibrating dipole technique for measuring the phase and amplitude of millimeterwave electric fields in free space. It is shown that the system can be simplified, at the same time reducing certain measurement errors and increasing the system's sensitivity and dynamic range. It is found that significant errors can result if the field being measured varies appreciably in amplitude, and/or if the phase does not vary linearly with position over the dipole's excursions.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Time-Domain Measurement of Loss and Dispersion (Short Papers)

D.A. Luce, H.M. Cronson and P.G. Mitchell. "Time-Domain Measurement of Loss and Dispersion (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 50-54.

Time-domain metrology (TDM) techniques are applied to determine loss and dispersion in microstrip and coaxial cable for possible future use in interconnections in the frequency range of 0.4-10 GHz. After a brief presentation of the method, results are given for microstrip, RG/U 58, and RG/U 188A coaxial cable. Good agreement is obtained between measured, computed, and published values. Major advantages of the technique are that unwanted multiple reflections can be excluded from the measurement time window, and errors from interface discontinuities can be evaluated and removed from the final result.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Real-Time Fourier Analysis of Spread Spectrum Signals Using Surface-Wave-Implemented Chirp-Z Transformation (Short Papers)

G.R. Nudd and O.W. Otto. "Real-Time Fourier Analysis of Spread Spectrum Signals Using Surface-Wave-Implemented Chirp-Z Transformation (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 54-56.

In many communication and radar applications it is desirable to determine the spectral content of signals in real time. A technique employing dispersive surface acoustic wave devices to implement the chirp-Z transform is described. The experimental results obtained for a number of commonly used signals, including the maximal-length pseudonoise sequences, are shown, and the agreement with theoretical prediction is discussed.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Waveguide Interferometer for Measuring Electric Susceptibility in Gases (Short Papers)

G.P. Srivastava, P.G. Mathur and A. Kumar. "Waveguide Interferometer for Measuring Electric Susceptibility in Gases (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 56-57.

A simple, quick, and accurate method employing a magic-T interferometer for the measurement of electric susceptibility in gases is presented in this short paper. The electric susceptibility of five substances in a gaseous state has been measured satisfactorily as a function of pressure at room temperature with the help of this setup.

Click on title for a complete paper.



Abstracts

A Microwave Applicator for In Vivo Rapid Inactivation of Enzymes in the Central Nervous System (Short Papers)

R.H. Lenox, O.P. Gandhi, J.L. Meyerhoff and H.M. Grove. "A Microwave Applicator for In Vivo Rapid Inactivation of Enzymes in the Central Nervous System (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 58-61.

The paper describes modifications of microwave techniques for in vivo rapid inactivation of brain enzymes. These modified techniques offer greater rapidity and homogeneity of inactivation. The microwave-treated brain remains suitable for regional dissection.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dynamic Microwave Frequency Division Characteristics of Coplanar Transferred-Electron Devices in a Resistive Circuit (Letters)

C.I. Huang, J. Tsui, R.T. Kemerley and G.L. McCoy. "Dynamic Microwave Frequency Division Characteristics of Coplanar Transferred-Electron Devices in a Resistive Circuit (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 61-63.

It is shown that dynamic microwave frequency division (divide-by-K) can be achieved by employing a transferred-electron device (TED) in a resistive circuit. The absolute bandwidth over which the input signal will be divided by a particular integer K and the maximum output frequency is the device transit time frequency. The percentage bandwidth is $200/(2K - 1)$ percent. With two-terminal TED's, divide-by-K ($K = 2, 3, 4, 5$) was demonstrated with substantial bandwidth.

[Click on title for a complete paper.](#)

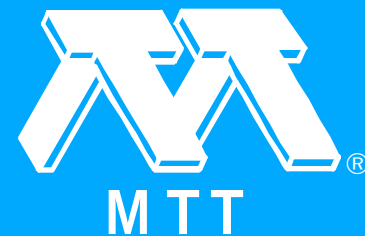


Abstracts

A Broad-Band 40--60-GHz Balanced Mixer (Letters)

A. Hislop and R.T. Kihm. "A Broad-Band 40--60-GHz Balanced Mixer (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 63-64.

A wide-band fixed-tuned millimeter-wave balanced mixer covering 40-60 GHz is described. Conversion loss of 8.5 dB $\pm$ 1 dB from 40-58 GHz was obtained using unencapsulated silicon Schottky-barrier diodes.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Transformer Cascade, Optimally Matched to a Conductance Shunted by a Stub, Exhibiting Reflection Coefficient Zeros (Letters)

H.J. Riblet. "A Transformer Cascade, Optimally Matched to a Conductance Shunted by a Stub, Exhibiting Reflection Coefficient Zeros (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 65-66.

A class of transmission-line networks is exhibited, which consist of alternate quarter-wave line sections and short-circuited stubs terminated in a stub in parallel with a conductance, which are optimum in the sense that no other network of the same form, with the same termination, can have a lower bound on its reflection coefficient in the design band. The reflection coefficients of these optimum networks are equiripple and have the maximum number of zeros in the design band consistent with their length.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

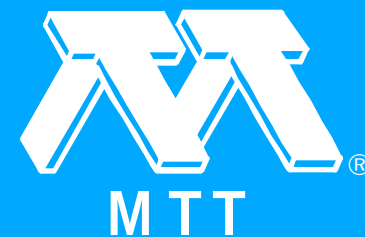
[Click on title for a complete paper.](#)



Abstracts

Contributors (Jan. 1976 [T-MTT])

C.D. Corbey, R. Davies, P. de Santis, C.H. Durney, T.K. Findakly, R.A. Gough, K. Hashimoto, H.M. Haskal, J.L. Lords, G.L. Matthaei, B.P. O'Shaughnessy, F. Pucci, C.E. Tinney and D.Y. Wong. "Contributors (Jan. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 66-68.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

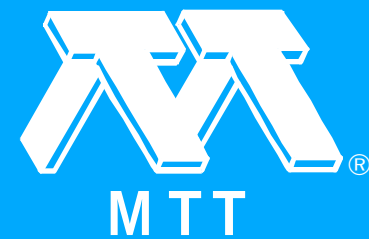
Click on title for a complete paper.



Abstracts

Back Cover (Jan. 1976 [T-MTT])

"Back Cover (Jan. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

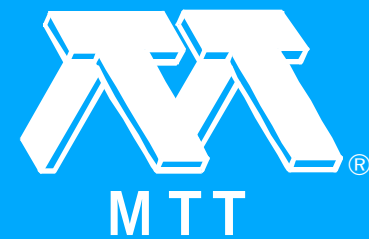
Click on title for a complete paper.



Abstracts

Front Cover (Feb. 1976 [T-MTT])

"Front Cover (Feb. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): f1-f2.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Study of Nonlinearities and Intermodulation Characteristics of 3-Port Distributed Circulators

Y.-S. Wu, W.H. Ku and J.E. Erickson. "A Study of Nonlinearities and Intermodulation Characteristics of 3-Port Distributed Circulators." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 69-77.

Results of a study of nonlinearities and intermodulation characteristics of 3-port distributed circulators are presented. Based on a rigorous theoretical analysis of the third-order nonlinearity in ferrites, analytical results are derived for the field strength and the power level of the intermodulation signal. These explicit results are applicable to high-power distributed circulators operating in VHF, UHF, and microwave frequencies. Measured intermodulation characteristics of an experimental distributed VHF high-power circulator are also presented.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A Theoretical Study of Light Beams Guided Along Tapered Lenslike Media, and Their Applications

S. Sawa. "A Theoretical Study of Light Beams Guided Along Tapered Lenslike Media, and Their Applications." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 77-93.

Propagation behavior of light beams along the tapered lenslike media, in which both the focusing parameter and the on-axis permittivity have gradients in the axial direction, is investigated in detail, theoretically and numerically, with the help of the approximate wave theory. As a result, it is clarified that the tapered lenslike media can be classified into two kinds, according to the differences of the focusing property. Matched incidence conditions to eliminate the fluctuations of the light beam are also clarified. As an application of the theory, a spot-size transducer and a mode transducer for use in a circular bend of the light focusing waveguide are proposed, and the design conditions are derived. A ray-oscillation suppressor (ROS) is also proposed, and its applicability to some new optical circuit components is discussed.



IEEE

Contents

Publications

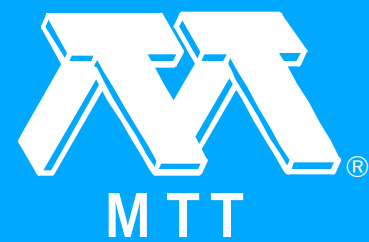
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Capacitances and Surface-Charge Distributions of a Shielded Balanced Pair

J.D. Nordgard. "The Capacitances and Surface-Charge Distributions of a Shielded Balanced Pair." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 94-100.

The capacitance matrix of a straight pair of uniform wires symmetrically placed in a shield is determined theoretically. Exact expressions for the elements of the capacitance matrix are determined as particular elements of the inverse of an infinite matrix which relates the Fourier coefficients of the surface-charge densities on the inner conductors and the shield to the applied voltage excitations on the cable conductors. If the wire diameter is small relative to the wire separation, and if the wire separation is small relative to the shield diameter, then accurate numerical approximations for the elements of the capacitance matrix are obtained to any degree of accuracy by suitably truncating the infinite matrix. Once the elements of the capacitance matrix are determined, then the distributions of the surface-charge densities on the peripheries of the inner conductors, and the shield are determined for any arbitrary excitation of the cable structure. In particular, the various capacitances associated with the cable structure, e.g., the direct, ground, and mutual capacitances, are determined from a comparison of the surface-charge densities resulting from a "balanced" excitation and a "longitudinal" excitation. The Fourier coefficients of the surface-charge densities are required to determine the propagation parameters and the associated propagation modes of the cable structure. The surface-charge distributions are evaluated numerically for a typical standard production cable using 22-gauge wires. The results of this paper will be extended by a perturbational method to include twisted wires in a shield; also, certain types of asymmetries in the cable geometry will be considered. Hence, the propagation constants and the associated propagation modes of unbalanced and/or twisted shielded pair cables can also be determined.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Coupling Between Narrow Transverse Inductive Strips in Waveguide

K. Chang and P.J. Khan. "Coupling Between Narrow Transverse Inductive Strips in Waveguide." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 101-105.

A general expression is found for the susceptance of two narrow transverse strips of differing width, unsymmetrically located in a rectangular waveguide. This analysis is based on extremization of the current-density ratio between the two strips, through use of the variational principle. The resulting susceptance values have been experimentally verified, and the theory is valid for interstrip spacings ranging down to the point where the two strips touch, or even overlap.

[Click on title for a complete paper.](#)



Abstracts

Dielectric Loss in Microstrip Lines (Short Papers)

T.L. Simpson and B. Tseng. "Dielectric Loss in Microstrip Lines (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 106-108.

A new technique is presented for calculating dielectric loss in microstrip lines. Numerical results for several different substrates are included. These are compared with other available results and experimental data.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Electric-Dipole Resonances of Ring Resonators of Very High Permittivity (Short Papers)

M. Verplanken and J. Van Bladel. "The Electric-Dipole Resonances of Ring Resonators of Very High Permittivity (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 108-112.

The lowest confined mode in a coaxial ring resonator is investigated. Data are given about the Q of the mode, the eigenelectric dipole at resonance, and the structure of the electric field surrounding the resonator. The data are valid for high, but finite values of ϵ_r .



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Resonant Frequency of a $TE_{01\delta}$ Dielectric Resonator

Y. Konishi, N. Hoshino and Y. Utsumi. "Resonant Frequency of a $TE_{01\delta}$ Dielectric Resonator." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 112-114.

The resonant frequency of a $TE_{01\delta}$ dielectric resonator was obtained by assuming a cylindrical surface containing the circumference of a dielectric resonator as a magnetic wall. In such a method, the error was less than 10 percent. In this short paper, the resonant frequency is obtained by a variational method, where the surface impedance is varied from a infinite value. The theoretical value of a resonant frequency has a good agreement with our experimental result with an error less than 1 percent.

[Click on title for a complete paper.](#)



Abstracts

Reciprocity Theorem for a Region with Inhomogeneous Bianisotropic Media and Surface Impedance (Short Papers)

M. Kobayashi. "Reciprocity Theorem for a Region with Inhomogeneous Bianisotropic Media and Surface Impedance (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 114-116.

It is shown that the modified reciprocity theorem holds for a region bounded by inhomogeneous anisotropic impedance surfaces and composed of regions with lossless inhomogeneous bianisotropic media; and besides, the reciprocity theorem holds for the case a condition.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

New Results in the Least pth Approach to Minimax Design

J.W. Bandler, C. Charalambous, J.H.K. Chen and W.Y. Chu. "New Results in the Least pth Approach to Minimax Design." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 116-119.

We present results of two general approaches for obtaining minimax designs through a sequence of least pth approximations demonstrating increased efficiency over previous least pth algorithms. Documented computer programs are available.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analysis of the Transient Temperature Distribution in a Stripline with Triple-Layer Dielectric (Short Papers)

S. Masaki, N. Yoshida, I. Fukai and J.-I. Fukuoka. "Analysis of the Transient Temperature Distribution in a Stripline with Triple-Layer Dielectric (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 119-121.

The transient temperature distributions in the cross section of a stripline with triple-layer dielectric substrate are found by employing the finite element method. The calculations for three cases of different depths of center conductor considered as heat source are shown. For each case, the calculated temperature distributions are shown at $t = 10$ s when the temperature variation has a large gradient in time and at the steady state.

[Click on title for a complete paper.](#)



Abstracts

An All-Harmonic Coupling-Band Hybrid (Letters)

J.S. Wight, W.J. Chudobiak and V. Makios. "An All-Harmonic Coupling-Band Hybrid (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 122-124.

A description is given of a microstrip, branch-arm hybrid which exhibits 3-dB coupling at all harmonics of a fundamental frequency as compared to the odd-harmonic coupling exhibited by conventional branch-arm hybrid structures.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Characteristic Impedance of Rectangular Coaxial Line with Ratio 2:1 of Outer-to-Inner Conductor Side Length (Letters)

R. Terakado. "The Characteristic Impedance of Rectangular Coaxial Line with Ratio 2:1 of Outer-to-Inner Conductor Side Length (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 124-125.

Recently, Riblet has given the exact dimensions of a family of rectangular coaxial lines with given impedance by conformal mapping. Before then the same problem was treated in [3], [4]. However, the previous literature does not include the case when the side of the outer and inner rectangle are in the ratio 2:1 both in width and in height: if in [1, eq. (11)] we put $\overline{OA} = \overline{DE}$ or $\overline{EO} = \overline{AB}$, modulus k coincides with modulus λ and the rectangular line becomes a square coaxial section, which is a special case of Bowman.

[Click on title for a complete paper.](#)



Abstracts

A Waveguide Applicator for Sheet Materials (Letters)

S.G. Kashyap and J.G. Dunn. "A Waveguide Applicator for Sheet Materials (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 125-126.

A partially loaded waveguide applicator for uniform heating of high-attenuation sheet materials is described. Experimental results are presented to exhibit its performance.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

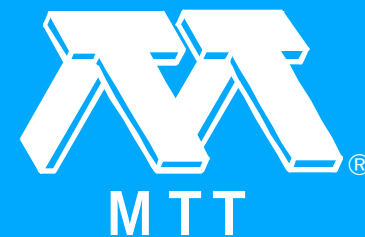


Abstracts

Contributors (Feb. 1976 [T-MTT])

K. Chang, J.E. Erickson, P.J. Khan, W.H. Ku, J.D. Nordgard, S. Sawa and Y.-S. Wu.

"Contributors (Feb. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): 127-128.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

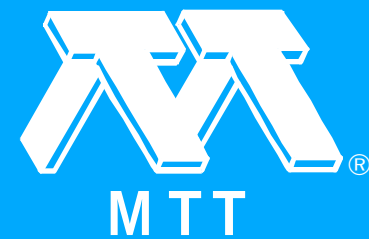
Click on title for a complete paper.



Abstracts

Back Cover (Feb. 1976 [T-MTT])

"Back Cover (Feb. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.2 (Feb. 1976 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Mar. 1976 [T-MTT])

"Front Cover (Mar. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A New Edge-Mode Isolator in the Very High Frequency Range

L. Courtois, N. Bernard, B. Chiron and G.E. Forterre. "A New Edge-Mode Isolator in the Very High Frequency Range." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 129-135.

An edge-mode isolator, using a magnetostatic surface mode operates in the very high frequency (VHF) range below the gyromagnetic resonance.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A New Impedance-Matched Wide-Band Balun and Magic Tee

G.J. Laughlin. "A New Impedance-Matched Wide-Band Balun and Magic Tee." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 135-141.

A new wide-band microwave balun particularly attractive for microstrip circuitry is described in which the normally balanced line is in the form of a pair of equal-amplitude and antiphase unbalanced lines. This novel method of input-output coupling allows a coplanar arrangement of input and output microstrip lines. Often the balanced and unbalanced line impedances in a balun are unequal, necessitating an impedance-matching network. A first-order reflection coefficient theory that mutually considers the impedance effects of the balun cavity, a compensating stub, and a quarter-wave transformer is used to design wide-band impedance-matched baluns. Curves of VSWR versus bandwidth are presented for several balanced-to-unbalanced line-impedance ratios. Experimental results are given for an octave-band impedance-matched balun with a balanced-to-unbalanced impedance ratio of 2:1. The new wide-band balun is adaptable to a microstrip magic tee. A proposed magic tee that relies on circuit symmetry for operation has multioctave bandwidth potential.

Click on title for a complete paper.



Abstracts

Equivalent Circuit Parameters of Microstrip Step Change in Width and Cross Junctions (Short Papers)

A. Gopinath, A.F. Thomson and I.M. Stephenson. "Equivalent Circuit Parameters of Microstrip Step Change in Width and Cross Junctions (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 142-144.

The inductive component of the equivalent circuit of microstrip step change in width and cross junctions has been evaluated theoretically and a comprehensive set of results is presented. Experimental results for one set of step changes in width obtained using the resonant method compare well with theory.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A New Integrated Waveguide-Microstrip Transition (Short Papers)

J.H.C. van Heuven. "A New Integrated Waveguide-Microstrip Transition (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 144-147.

A new waveguide-microstrip transition is described. This design provides wide-band performance (18-26 GHz) and very good reproducibility without the need for variable elements. The circuit is fully integrated on the substrate and the characteristics are much less sensitive to small variations in the dimensions than other known transitions. A narrow-band version has been made for the telecommunication band in particular (17.7-19.7 GHz) with a VSWR less than 1.1 and an attenuation less than 0.25 dB. The design can easily be scaled to other frequencies and is especially useful at frequencies above 10 GHz.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

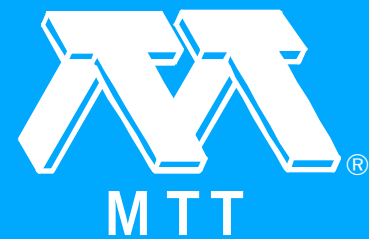
Oscillation Characteristics of Millimeter-Wave IMPATT Diodes Mounted in Low-Impedance Waveguide Mounts (Short Papers)

M. Akaike, H. Kato and S. Yuki. "Oscillation Characteristics of Millimeter-Wave IMPATT Diodes Mounted in Low-Impedance Waveguide Mounts (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 147-151.

Experiments on dc-bias-current-tuned IMPATT diodes mounted in low-impedance waveguide mounts are described. Broad-band bias-current-tuned IMPATT oscillators were obtained which cover almost the full waveguide band; 20-, 24-, and 18-GHz tuning bandwidths were obtained with the R-500, R-620, and R-740 waveguide, respectively. From experiments it became evident that there are some suitable relations for broad-band bias tuning among the diode breakdown voltage, the oscillation frequency, and the waveguide dimension. The results are very useful for the design of the circuit and diode parameter for broad-band millimeterwave IMPATT sweep oscillators. The feasibility of applying bias-current-tuned IMPATT oscillators to a broad-band measuring instrument is expected.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A Stabilized MIC Oscillator Using a Germanium Avalanche Diode (Short Papers)

S. Nanbu. "A Stabilized MIC Oscillator Using a Germanium Avalanche Diode (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 151-153.

A stabilized X-band oscillator using a germanium avalanche diode in a microwave integrated circuit (MIC) is proposed. The stabilization is achieved by coupling a transmission cavity to the resonant cavity in which an avalanche diode is embedded. A mode-jumping problem inherent in a coupled-cavity oscillator was solved coupling a third varactor-embedded low-Q cavity to the transmission cavity. As a result, single-mode oscillation in an MIC oscillator was successfully obtained. Varactor tuning can also be realized with as small a change in output power as 7 percent for a tuning range of 30 MHz. The experimental results and the theoretical analysis of the new stabilized oscillator are given.

Click on title for a complete paper.



Abstracts

Avalanche Diode Noise Sources at Short Centimeter and Millimeter Wavelengths (Short Papers)

N.J. Keen. "Avalanche Diode Noise Sources at Short Centimeter and Millimeter Wavelengths (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 153-155.

Semiconductor noise sources for microwave frequencies have been constructed using commercial avalanche diodes in waveguide mounts. For the diodes and waveguide configurations reported here the upper usable frequency is approximately 40 GHz. The measurements are in limited agreement with previous predictions. It is possible that a reduction in package and diode parasitic would improve this agreement, and raise appreciably the upper usable frequency of such noise sources.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microstrip Varactor-Tuned Millimeter-Wave Transmitter (Letters)

B.S. Glance. "Microstrip Varactor-Tuned Millimeter-Wave Transmitter (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 156-157.

A 60-GHz varactor-tuned microstrip oscillator intended for use in a millimeter-wave radio relay experiment has been designed and tested. The output power of the transmitter is 110 ± 15 mW from 58.5 to 60.1 GHz. The oscillator can be frequency-shift keyed (FSK) at a rate up to 200 Mbit/s. The rms FM noise of about 400 Hz/(kHz)/sup 1/2/ meets the required system specifications.

[Click on title for a complete paper.](#)

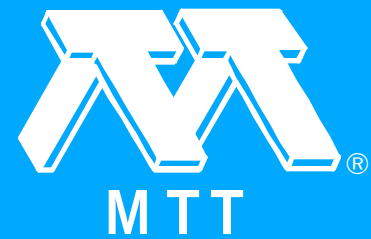


Abstracts

Asymmetric Odd-Mode Fringing Capacitances (Letters)

H.J. Riblet. "Asymmetric Odd-Mode Fringing Capacitances (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 157-159.

An expression is given for the odd-mode fringing capacity of an infinite rectangular bar asymmetrically located inside an infinite U-shaped outer conductor.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Transmission-Line Transformation Between Arbitrary Impedances (Letters)

T.A. Milligan. "Transmission-Line Transformation Between Arbitrary Impedances (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 159-159.

An analytical method for transforming between two complex impedances using a single transmission-line matching section is described.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A Wide-Band Parametric Amplifier with Triple-Tuned Signal Circuit and Single-Tuned Idler Circuit (Letters)

L.J. Agrawal, S.C. Gupta and N.K. Agrawal. "A Wide-Band Parametric Amplifier with Triple-Tuned Signal Circuit and Single-Tuned Idler Circuit (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 160-162.

It is the purpose of this letter to present the results of the extension of the work of Egami to the case of a single-tuned idler circuit and a triple-tuned signal circuit.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Temperature-Stabilized 1.7-GHz Broad-Band Lumped-Element Circulator (Correction)

H. Katoh. "Temperature-Stabilized 1.7-GHz Broad-Band Lumped-Element Circulator (Correction)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 162-163.

In the above paper, on page 691, from the duality relationship, (12) and (13) should read...



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Measurements of Intercavity Couplings (Letters)

N.A. McDonald. "Measurements of Intercavity Couplings (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 162-162.

The concept of determining intercavity couplings from frequency measurements used in the short paper by Atia and Williams was described for the case of coupling between two cavities in [2], which was referred to and portions summarized in [3]. A variation of that technique which the author has found useful for rapidly measuring the coupling between adjacent resonators in VHF filters is as follows.

Click on title for a complete paper.



Abstracts

High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers (Correction)

C.O.G. Obah, E. Benko, H.C. Bowers, T.A. Midford and R.D. Regier. "High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Lasers (Correction)." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 163-163.

In the above paper, the last word in the title of the paper is incorrect. The correct title should read as follows: High-Power Pulsed UHF and L Band p+-n-n+ Silicon TRAPATT Diode Oscillators.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Contributors (Mar. 1976 [T-MTT])

N. Bernard, B. Chiron, L. Courtois, G.E. Forterre and G.J. Laughlin. "Contributors (Mar. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): 164-164.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Mar. 1976 [T-MTT])

"Back Cover (Mar. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.3 (Mar. 1976 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Apr. 1976 [T-MTT])

"Front Cover (Apr. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

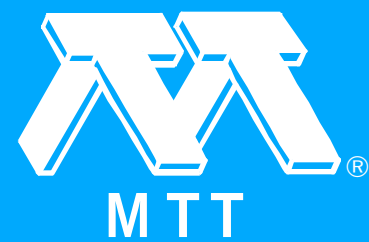
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Internal Dynamics and Microwave Properties of X-Band Transferred-Electron Devices

R.A. Kiehl and R.L. Gunshor. "Internal Dynamics and Microwave Properties of X-Band Transferred-Electron Devices." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 165-172.

A study of the internal dynamics and microwave properties of an X-band transferred-electron device having ohmic contacts is reported. Numerical calculations of the electric field evolution and large-signal properties of the device have been carried out for frequencies throughout the 6-12-GHz range and for a wide range in ac voltage amplitude including amplitudes insufficient for space-charge quenching. An investigation is made of the influence of electron diffusion upon the field evolution and properties of the device. The large-signal admittance plane is determined and used to examine the behavior of the device in microwave circuits. A comparison is made between the calculated device properties and those of experimental devices. Circuit-controlled oscillation is found to be possible throughout the 6-12-GHz range for ac voltage amplitudes well below those required for space-charge quenching. At these amplitudes diffusion is shown to have a strong effect upon the electric field evolution and large-signal properties, and this effect is shown to bear significantly upon the behavior of the device in microwave circuits. Finally, the numerically calculated large-signal properties are found to agree reasonably well with experimental results.

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

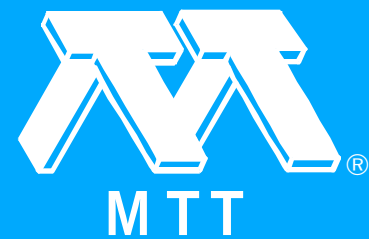
Filters with Single Transmission Zeros at Real or Imaginary Frequencies

R. Levy. "Filters with Single Transmission Zeros at Real or Imaginary Frequencies." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 172-181.

A new unified theory is presented for the synthesis of exactly equiripple low-pass prototypes having: a) one simple pole of attenuation at a real frequency; or b) a single pair of real-axis transmission zeros (giving linear-phase performance). These types of filters may be regarded as representing the least possible degree of complication over the conventional Chebyshev filter, and are usually realized with one extra cross coupling in the structure. It is demonstrated that this gives much improved skirt selectivity in the case of a finite frequency pole, making it a viable intermediate case between the Chebyshev and elliptic function filters, while in the case of real-frequency zeros, very flat group delay over 50 percent of the passband is achieved with minimal cost in insertion loss and skirt rejection. Approximate and exact synthesis techniques are described, including results for the previously neglected odd-degree case. Experimental results demonstrate agreement with theory.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Resonant Frequency and Tuning Characteristics of a Narrow-Gap Reentrant Cylindrical Cavity

A.G. Williamson. "The Resonant Frequency and Tuning Characteristics of a Narrow-Gap Reentrant Cylindrical Cavity." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 182-187.

The literature concerning the reentrant cylindrical cavity is reviewed and the relative advantages and disadvantages of the various formulations of the problem are discussed. In addition, a new formulation is proposed which accurately predicts the resonant frequency of narrow-gap cavities such as those currently finding application in the construction of solid-state oscillators. This new formulation is mathematically simpler and numerically more efficient than many other formulations which are not as accurate. The paper concludes with an investigation of the tuning characteristics of the cavity.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Efficient Calculation of Exact Group Delay Sensitivities

J.W. Bandler, M.R.M. Rizk and H. Tromp. "Efficient Calculation of Exact Group Delay Sensitivities." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 188-194.

This paper presents, explicitly, an approach to the exact calculation of group delay and its sensitivities with respect to component parameters based on the adjoint network concept and applicable to linear time-invariant circuits. In general, no more than four analyses are required and the computational effort is only moderately more than is necessary for a single analysis. The results presented are in a form particularly suited to the computer-aided design of microwave circuits and include useful tables of sensitivity expressions.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations

E. Yamashita and K. Atsuki. "Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 195-200.

The nonuniform discretization of the integral equation on the tangential electromagnetic (EM) field on the boundary surface is proposed as a numerically efficient method to analyze the microstrip-like transmission lines. The calculated results of the propagation constant of the microstrip line based on this method are compared with other published analytical results. Various types of planar striplines are treated by the same formulas. The dominant and higher order modes of shielded microstrip line are discussed and compared with the longitudinal-section electric (LSE) and linear synchronous motor (LSM) modes of a two-medium waveguide.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Exact Analysis of Rectangular Waveguides Inhomogeneously Filled with a Transversely Magnetized Semiconductor

R. Sorrentino. "Exact Analysis of Rectangular Waveguides Inhomogeneously Filled with a Transversely Magnetized Semiconductor." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 201-208.

An exact solution for the complex propagation constant in semiconductor loaded waveguides is obtained by superimposing a finite number of plane waves. The analysis is carried out through the study of the parallel-plate waveguide. Numerical results have been obtained by means of a numerical program previously set up. Reciprocal and nonreciprocal behavior of the electromagnetic (EM) structure, depending on the semiconductor parameters, geometrical parameters, and applied magnetic field, is illustrated. A good quantitative agreement between the theory and the experiments in [11] is shown.

[Click on title for a complete paper.](#)



Abstracts

On a Direct Use of Edge Condition in Modal Analysis (Short Papers)

C. Vassallo. "On a Direct Use of Edge Condition in Modal Analysis (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 208-212.

The edge condition allows us to know the asymptotic decrease of modal amplitudes in some discontinuity problems in waveguides. One may take a direct account of this information in modal analysis and gain a significant improvement of the calculation when the field singularity at edge is important. The accuracy and the validity of this method are studied in two cases: the diaphragm and the junction between an empty waveguide and a partially dielectric-filled waveguide.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

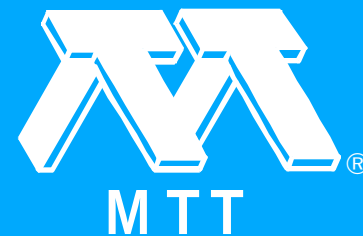


Abstracts

Improved Accuracy for Commensurate-Line Synthesis (Short Papers)

J. Komiak and H.J. Carlin. "Improved Accuracy for Commensurate-Line Synthesis (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 212-215.

By employing a simple transformation that preserves numerical accuracy, improved precision is obtainable using a Richards' extraction technique to obtain characteristic impedances of commensurate transmission-line structures. Furthermore, reduced sensitivity to coefficient truncation can result in computational savings.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Differential Phase Shift at Microwave Frequencies Using Planar Ferrites (Short Papers)

M.S. Sodha and N.C. Srivastava. "Differential Phase Shift at Microwave Frequencies Using Planar Ferrites (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 215-216.

It is generally believed that planar ferrites are not useful in differential-phase-shift devices operated below resonance. A configuration of planar ferrite is suggested, which leads to appreciable differential phase shift on application of very small magnetic fields.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Electric-Field Distribution Along Finite Length Lossy Dielectric Slabs in Waveguide

L.M. Liu, F.J. Rosenbaum and W.F. Pickard. "Electric-Field Distribution Along Finite Length Lossy Dielectric Slabs in Waveguide." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 216-219.

A procedure is given to calculate the reflection and transmission coefficients of a full-height dielectric slab centered in a rectangular waveguide. The effects of loss and of finite length are included. The magnitude squared of the electric field along the slab is calculated in order to predict inhomogeneous heat input to the sample. These results are compared with experimental measurements on several materials and the pupae of *Tenebrio molitor*.

[Click on title for a complete paper.](#)



Abstracts

Scattering of Microwaves by Dielectric Materials Used in Laboratory Animal Restrainers

J.C. Lin and C.-L. Wu. "Scattering of Microwaves by Dielectric Materials Used in Laboratory Animal Restrainers." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 219-223.

In most experimental investigations of the biological effects of microwave radiation, it is necessary to use low-loss dielectric materials for restraining animals under irradiation. Because of the complexity of the analysis of the animal-restrainer combination, an analysis is made of the scattering of microwave fields by a simplified model of the restrainer with no animal present. The model chosen is that of a plane wave incident at an arbitrary angle upon a rectangular slab of finite width and thickness. Numerical results indicate that the scattered fields within a square region of one wavelength in distance from the slab surfaces are greatly enhanced and highly nonuniform. In particular, the maxima for parallel incidence exceed those for normal incidence by almost a factor of 2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Bidirectionality in Gyrotropic Waveguides (Short Papers)

P.R. Mclsaac. "Bidirectionality in Gyrotropic Waveguides (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 223-226.

A waveguide containing gyrotropic media is shown to be bidirectional if it possesses at least one of the following symmetry operations: reflection in a plane perpendicular to the waveguide axis; 180° rotation about an axis perpendicular to the waveguide axis; or inversion in a point on the waveguide axis. The relation between the modal electromagnetic field components for any complementary mode pair is given for each symmetry case.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Piezoelectric-Magnetoelastic Wave Propagation through the Conducting Plate in a Composite Medium (Short Papers)

T. Bhattacharyya, M. Tsutsumi and N. Kumagai. "The Piezoelectric-Magnetoelastic Wave Propagation through the Conducting Plate in a Composite Medium (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 226-230.

The piezoelectric and magnetoelastic surface wave propagation through a composite layered structure of one piezoelectric and another magnetoelastic media is considered with a metal plate placed in between them. The dispersion relations have been derived and numerically computed. Thereafter, the field distributions are evaluated. These results may find usefulness for the realization of nonreciprocal acoustic surface wave devices.

[Click on title for a complete paper.](#)

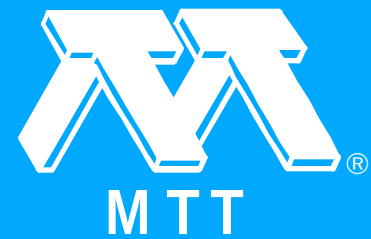


Abstracts

An Improved Microstrip-to-Microslot Transition (Letters)

B. Schiek and J. Kohler. "An Improved Microstrip-to-Microslot Transition (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 231-233.

An improved broad-band microstrip-to-slot transition has an insertion loss of less than 0.2 dB and is not critical in its dimensions.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Efficient Minimax Design of Networks without Using Derivatives (Correction)

K. Madsen, O. Nielsen, H. Schjaer-Jacobsen and L. Thrane. "Efficient Minimax Design of Networks without Using Derivatives (Correction)." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 233-233.

In the above paper, on page 804, the logic of the flow diagram in Fig. 1 appears to be somewhat in error. The corrected flow diagram is shown here in Fig 1.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

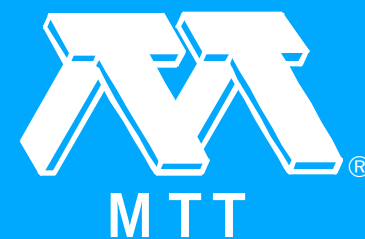
[Click on title for a complete paper.](#)



Abstracts

Contributors (Apr. 1976 [T-MTT])

K. Atsuki, J.W. Bandler, R.L. Gunshor, R.A. Kiehl, R. Levy, M.R.M. Rizk, R. Sorrentino, H. Tromp, A.G. Williamson and E. Yamashita. "Contributors (Apr. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): 234-235.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

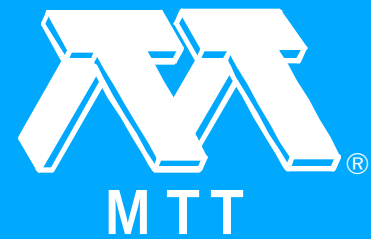
Click on title for a complete paper.



Abstracts

Annals of the IEEE (Advertisement) (Apr. 1976 [T-MTT])

"Annals of the IEEE (Advertisement) (Apr. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): b1-b3.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Apr. 1976 [T-MTT])

"Back Cover (Apr. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.4 (Apr. 1976 [T-MTT]): b2-b3.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (May 1976 [T-MTT])

"Front Cover (May 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A New Band-Splitting Filter for Guided-Millimeter-Wave Transmission Systems

N. Suzuki. "A New Band-Splitting Filter for Guided-Millimeter-Wave Transmission Systems." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 237-241.

A new Michelson-interferometer (MI) hybrid having a miter angle is developed for use as a millimeter-wave band-splitting filter. The construction and operating principle of the filter are described. The design method and the experimental results are also presented. This filter has low branching loss, yet keeps very wide band characteristics. For the 4W-120-GHz-frequency-range filter with 35° miter angle, the branching loss is 0.68-1.56dB. This is about 40 percent lower than that of the conventional MI filter. The input VSWR is less than 1.29 and the guard bandwidth is less than 250 MHz. This filter can be used for the 40-120-GHz guided-millimeter-wave transmission systems.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

TEM Pseudoelliptic-Function Bandstop Filters Using Noncommensurate Lines

J.A.G. Malherbe. "TEM Pseudoelliptic-Function Bandstop Filters Using Noncommensurate Lines." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 242-248.

A synthesis procedure for distributed bandstop filters that approximate an elliptic-function response is described. Existing tables of lumped constant elliptic-function filters are used together with an approximate transform that exchanges commensurate Foster sections for noncommensurate pairs of stubs or coupled lines. The method is usable for all bandwidths up to about 100 percent, providing that networks with a relative bandwidth of more than 50 percent are considered to be pseudo-low-pass.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High-Power C-Band Multiple-IMPATT-Diode Amplifiers

R.E. Lee, U.H. Gysel and D. Parker. "High-Power C-Band Multiple-IMPATT-Diode Amplifiers." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 249-253.

The design considerations and performance characteristics of two high-power microwave reflection amplifiers that use multiple silicon IMPATT diodes are presented. The amplifiers employ microstrip hybrid-circuit-type power combiners to combine the individually matched IMPATT diodes. The first unit, a single-stage 4-diode amplifier, produced 8-W output with 6-dB gain while the second 12-diode amplifier gave 15.8-W output at about 9-dB gain. FM and AM noise added by these amplifiers has been measured with each amplifier driven to nearly full output. Use of microstrip hybrid-circuit power combiners appears to offer a simple and economical design approach for the implementation of microwave solid-state power amplifiers using multiple active devices.

[Click on title for a complete paper.](#)



Abstracts

Local-Oscillator Noise Cancellation in the Subharmonically Pumped Down-Converter (Short Papers)

P.S. Henry, B.S. Glance and M.V. Schneider. "Local-Oscillator Noise Cancellation in the Subharmonically Pumped Down-Converter (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 254-257.

The noise power at the IF output of a superheterodyne mixer which is caused by local-oscillator noise can be significantly reduced by using the recently developed subharmonically pumped down-converter. In many cases this reduction is so large that even noisy sources, such as IMPATT oscillators, can be used to pump low-noise mixers without causing significant degradation of noise figure.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

The Ridged-Waveguide-Cavity Gunn Oscillator for Wide-Band Tuning (Short Papers)

S. Mizushina and T. Ohsuka. "The Ridged-Waveguide-Cavity Gunn Oscillator for Wide-Band Tuning (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 257-259.

A method of construction of the Gunn oscillator for wideband frequency tuning has been developed using the ridged-waveguide cavity. The ridged waveguide can be designed to provide the dominant mode with a wide bandwidth, and also to provide the higher order cutoff modes whose resonance is a limiting factor of the tuning range for oscillators of conventional design with reduced stored energies to permit wide-band tuning. A prototype oscillator having a packaged X-band diode demonstrated an 8-18-GHz tuning range.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Design and Performance of a 60-90-GHz Broad-Band Mixer (Short Papers)

N. Kanmuri and R. Kawasaki. "Design and Performance of a 60-90-GHz Broad-Band Mixer (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 259-261.

This short paper describes a practical design and performance of 60-90-GHz broad-band mixers. Conversion loss was less than 11 dB in the 60-90-GHz region, and the conversion-loss deviation could be less than about 1 dB throughout the 30-GHz band with fixed circuit parameters. In this design, a new construction technique, using a wave absorber in place of a filter in the IF circuit, was employed.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Effect of Thin-Film $\text{Bi}/\text{sub } 2/\text{O}/\text{sub } 3/$ Overlay on the Quality Factor of a Microstrip Resonator (Short Papers)

R.N. Karekar and M.K. Pande. "Effect of Thin-Film $\text{Bi}/\text{sub } 2/\text{O}/\text{sub } 3/$ Overlay on the Quality Factor of a Microstrip Resonator (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 262-264.

The effect of thin-film $\text{Bi}/\text{sub } 2/\text{O}/\text{sub } 3/$ overlay on a microstrip resonator has been studied. An improvement in Q suggests that lower radiation loss may be achieved in this manner.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Shuttle Pulse Measurement of Mode Coupling and Conversion (Short Papers)

P. Bernardi, F. Bertolani and F. Valdoni. "Shuttle Pulse Measurement of Mode Coupling and Conversion (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 264-266.

The measurement of weak coupling between two guided modes, for which the usual TE/sub 10/setups cannot be directly used, is dealt with. This problem mainly arises in coupling between different waveguides and in overmoded waveguides. In both cases a representation by means of two coupled lines is chosen, described by a directional coupler scattering matrix. In addition to the well-known resonant Klinger method, a new one, in the time domain, is suggested. This new method makes use of a shuttle pulse test set and starts from the observation of the envelope of an output signal, which under suitable conditions shows zeros related to the coupling to be measured. Experimental results, with frequencies up to 90 GHz and couplings as low as -40 dB, confirm the accuracy and the sensitivity of the new method.



Abstracts

A Wide-Band Rotating Coupler for VHF Use (Short Papers)

C.W. Allen and H.L. Krauss. "A Wide-Band Rotating Coupler for VHF Use (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 267-269.

A device which transmits wide-band signals in the VHF range across a rotating structure is described. It has potential application to rotating antenna systems and to telemetry systems between stationary and rotating elements. No electrical contact is necessary between the stationary and rotating terminals, and bandwidths on the order of 1000:1 are feasible. From the theoretical analysis given here, predicted device behavior agrees well with measurements on a prototype model.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

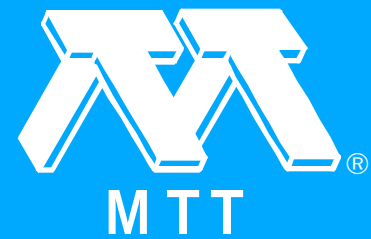


Abstracts

A Microstrip and Stripline Crossover Structure (Letters)

J.S. Wight, W.J. Chudobiak and V. Makios. "A Microstrip and Stripline Crossover Structure (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 270-270.

A microstrip or stripline four-port structure which allows two signal paths to physically cross over while maintaining high isolation is described in this letter.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Suppression of Higher Order Modes in Waveguide-Junction Circulators Using Coupled Open Dielectric Resonators (Letters)

F.C.F. Tan and J. Helszajn. "Suppression of Higher Order Modes in Waveguide-Junction Circulators Using Coupled Open Dielectric Resonators (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 271-273.

It is well known that some waveguide circulators exhibit an unwanted spurious mode within their passband, which limits their insertion loss and bandwidth. This mode is identified as the $TE_{0,1,\delta}$ mode in the case of the waveguide junction which relies on the $TM_{1,1,\delta}$ mode for its operation. The influence of the saturation magnetization on the separation between the two modes is studied in detail. A mode suppressor is also described which decouples the coupled $TE_{0,1,\delta}$ mode without altering the frequency of the circulation ones. This suppressor consists of a thin metal ring placed on the open face of one of the ferrite disks.

[Click on title for a complete paper.](#)



Abstracts

Complex Permittivity and Penetration Depth of Muscle and Fat Tissues Between 40 and 90 GHz (Letters)

J. Edrich and P.C. Hardee. "Complex Permittivity and Penetration Depth of Muscle and Fat Tissues Between 40 and 90 GHz (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 273-275.

First measurements of the complex permittivity and penetration depth of millimeter waves in fat and muscle tissue are reported. A new phaseless reduction technique is used. Significant variations of tissue properties after death were found.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

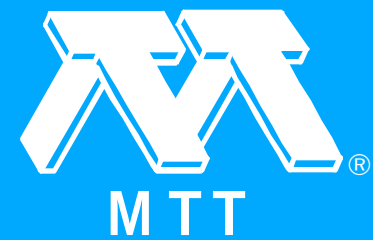
Click on title for a complete paper.



Abstracts

Contributors (May 1976 [T-MTT])

U.H. Gysel, R.E. Lee, J.A.G. Malherbe, D. Parker and N. Suzuki. "Contributors (May 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): 276-276.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

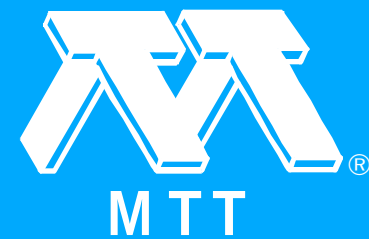
Click on title for a complete paper.



Abstracts

Back Cover (May 1976 [T-MTT])

"Back Cover (May 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.5 (May 1976 [T-MTT]): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Front Cover (Jun. 1976 [T-MTT])

"Front Cover (Jun. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Foreword (Jun. 1976 [T-MTT])

C.A. Liechti. "Foreword (Jun. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 277-278.

Field-Effect Transistor Technology is a very dynamic field in microwaves today. Improvements in both low-noise and high-power FET's are being made continuously in many countries around the world. It is the purpose of this Special Issue to introduce this topic with a comprehensive review paper and to highlight advances in the development of microwave FET's and their applications. Authors from Japan, Europe, and North America report recent achievements of ongoing work in this issue. Their contributions reflect the following trends in the direction of developments.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Microwave Field-Effect Transistors--1976

C.A. Liechti. "Microwave Field-Effect Transistors--1976." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 279-300.

A review of recent and current work on microwave FET's and amplifiers is presented, and an extensive bibliography of recent articles is appended (250 references). First, the various FET structures (MESFET's, JFET's, and IGFET's) and their performances are reviewed. Second, the principle of operation is outlined for Si- and GaAs-MESFET's; the basic device physics, equivalent circuit, high-frequency limitations, and noise behavior are treated. Third, the design principles and performance of microwave MESFET amplifiers are summarized.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Submicron Single-Gate and Dual-Gate GaAs MESFET's with Improved Low Noise and High Gain Performance

M. Ogawa, K. Ohata, T. Furutsuka and N. Kawamura. "Submicron Single-Gate and Dual-Gate GaAs MESFET's with Improved Low Noise and High Gain Performance." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 300-305.

Microwave performance of single-gate and dual-gate GaAs MESFET's with submicron gate structure is described. Design consideration and device technologies are also discussed. The performance of these GaAs MESFET's exceeds previous performance with regard to lower noise and higher gain up to X band: 2.9-dB noise figure (NF) and 10.0-dB associated gain at 12 GHz for a 0.5- μ m single-gate MESFET, and 3.9-dB NF and 13.2-dB associated gain at the same frequency for a dual-gate MESFET with two 1- μ m gates.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Power Silicon Microwave MOS Transistor

J.G. Oakes, R.A. Wickstrom, D.A. Tremere and T.M.S. Heng. "A Power Silicon Microwave MOS Transistor." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 305-311.

Vertical MOS silicon power transistors for microwave power applications have been fabricated using an angle evaporation technique to position the gate electrode on the side of a mesa. These devices have produced 3-W output power at 1.5 GHz as a Class B amplifier and exhibit excellent linearity and noise properties. Device modeling has shown that parasitic capacitances are the chief factor limiting the frequency response, and the prospects for useful devices at 4 GHz are good.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Power GaAs MESFET with a High Drain-Source Breakdown Voltage

M. Fukuta, K. Suyama, H. Suzuki, Y. Nakayama and H. Ishikawa. "Power GaAs MESFET with a High Drain-Source Breakdown Voltage." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 312-317.

A power GaAs MESFET with a high drain-source breakdown voltage in excess of 17 V has been developed. A selective GaAs epitaxial process is introduced to form "inlaid" n+ source and drain regions that can provide a high drain-source breakdown voltage and a low ohmic-contact resistance. Typical characteristics of the MESFET composed of two-cell units are as follows.



Abstracts

Some Aspects of GaAs MESFET Reliability

D.A. Abbott and J.A. Turner. "Some Aspects of GaAs MESFET Reliability." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 317-321.

The results of a short study into the reliability and failure modes of GaAs MESFET's are presented. Two failure modes have been observed during this study and improved fabrication techniques that reduce their occurrence have been examined. The results obtained indicate that extremely reliable devices can be manufactured with a predicted mean time to failure in excess of 10^7 h at junction temperatures of 70°C . Room-temperature life tests in excess of 1/2 million device hours lend support to these predictions.



IEEE

Contents

Publications

Issues

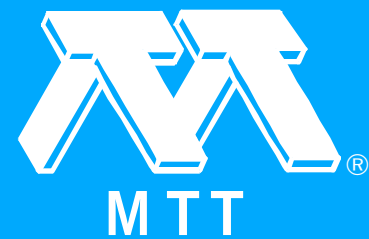
Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

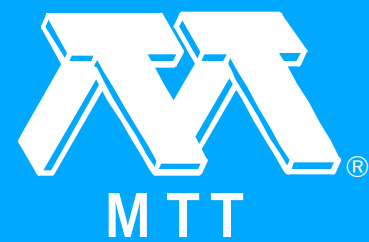
Reliability Study of GaAs MESFET's

T. Irie, I. Nagasako, H. Kohzu and K. Sekido. "Reliability Study of GaAs MESFET's." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 321-328.

Failure modes have been studied phenomenologically on a small-signal GaAs MESFET with a 1 μ m aluminum gate. Three major failure modes have been revealed, i.e., gradual degradation due to source and drain contact degradation, catastrophic damage due to surge pulse, and instability or reversible drift of electrical characteristics during operation. To confirm the product quality and to assure the device reliability, a quality assurance program has been designed and incorporated in a production line. A cost-effective lifetime prediction method is presented that utilizes correlations between RF parameters and dc parameters calculated using an equivalent circuit model. Mean time to failure (MTTF) value of over 10⁸/h has been obtained for the GaAs MESFET for an operating channel temperature of 100°C.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

GaAs MESFET Small-Signal X-Band Amplifiers

N.A. Slaymaker, R.A. Soares and J.A. Turner. "GaAs MESFET Small-Signal X-Band Amplifiers." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 329-337.

This paper describes several techniques used to design and realize small-signal amplifiers at X band using Plessey 1- μ m gate-length GaAs MESFET's. Noise figures of 3 dB or better at 8 GHz with associated gains of 5.5 dB have been produced. The mounting of GaAs MESFET's on 25-mil-thick alumina substrates and their S-parameter characterization is described. Owing to some uncertainties in these measurements, four parallel approaches were used to realize amplifiers. The "designed," "semidesigned," "semituned," and "tuned" methods are described and results are presented for each case. A semidesigned single-stage amplifier has a gain of 8 ± 0.6 dB from 8.5 to 9.5 GHz and a minimum noise figure of 4.4 dB. A semituned amplifier can be tuned from 8 to 10 GHz with VSWR's less than 2:1 over any 600-MHz bandwidth in that range.

[Click on title for a complete paper.](#)



Abstracts

Broad-Band Medium-Power Amplification in the 2-12.4-GHz Range with GaAs MESFET's

D.P. Hornbuckle and L.J. Kuhlman, Jr.. "Broad-Band Medium-Power Amplification in the 2-12.4-GHz Range with GaAs MESFET's." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 338-342.

The design of 100-mW GaAs MESFET amplifiers for the 2-6.2-GHz and 5.9-12.4-GHz bands is described. Both small-signal and large-signal matching considerations are presented to obtain a minimum 10-dB gain using a 1- μ m GaAs MESFET. Three combination techniques, direct paralleling, resistive combiners, and hybrid quadrature couplers are discussed. Finally, considerations for absolute stability are presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Wide-Band Gallium Arsenide Power MESFET Amplifiers

R.E. Neidert and H.A. Willing. "Wide-Band Gallium Arsenide Power MESFET Amplifiers." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 342-350.

The performance, with emphasis on wide bandwidth, that can be expected of linear medium power GaAs microwave MESFET (metal semiconductor field-effect-transistor) amplifiers is discussed. It starts with measured scattering parameters of devices and proceeds through computer-optimized device modeling, to amplifier circuit designs and performance results. It shows computed and measured octave bandwidth performance and reveals that decade bandwidth is feasible. It discusses single-ended and balanced amplifier design approaches. Some practical designs with performance results are presented, with circuit topologies which are easily realizable in microstrip.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Performance of GaAs MESFET Mixers at X Band

R.A. Pucel, D. Masse and R. Bera. "Performance of GaAs MESFET Mixers at X Band." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 351-360.

A theoretical analysis and experimental verification of the signal properties of the GaAs MESFET mixer are presented. Experimental techniques for evaluating some of the mixer parameters are described. Experiments performed on GaAs MESFET mixers at X band show that good noise performance and large dynamic range can be achieved with conversion gain. A conversion gain over 6 dB is measured at 7.8 GHz. Noise figures as low as 7.4 dB and output third-order intermodulation intercepts of +18 dBm have been obtained at 8 GHz with a balanced MESFET mixer.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave MESFET Mixer

O. Kurita and K. Morita. "Microwave MESFET Mixer." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 361-366.

GaAs metal-semiconductor FET's (MESFET) are developed for use in amplifiers at microwave frequencies. The FET has a Schottky barrier between the gate and source, operating in the same manner as a Schottky-barrier diode. If the Schottky barrier is used as a mixer, the IF signal is generated and simultaneously amplified by the FET itself. Thus a mixer with IF preamplifier can be realized. In this paper the theoretical and experimental results of a FET mixer are described. In such operations, the conversion loss in the frequency conversion alone is large due to the high series resistance of the Schottky barrier. However, the overall FET mixer has a "conversion gain" because the IF gain of the FET is made large. The experimental conversion gain is 6 dB at the RF frequency of 10.8 GHz and the IF frequency of 1.7 GHz. The noise figure of the FET mixer is at present large (15 dB, for example), due to large conversion loss in the frequency conversion.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

GaAs MESFET Regenerator for Phase-Shift Keying Signals at the Carrier Frequency

S. Komaki, O. Kurita and T. Memita. "GaAs MESFET Regenerator for Phase-Shift Keying Signals at the Carrier Frequency." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 367-372.

This paper describes a GaAs metal-semiconductor FET (GaAs MESFET) phase regenerator for biphase phase-shift keying (PSK) signals at the carrier frequency. By using this regenerator, decision and reshaping of the signals can be made without detection, thus repeaters can be simplified. This paper shows that phase regeneration is characterized by the symbol m , which denotes the ratio of the normal signal to the phase-inverted signal. Ideal phase regeneration is obtained for $m = 1$. An analysis of the ratio m for the MESFET regenerator is presented, and it is shown that, if the gate bias or the local-oscillator power level are selected at a slightly higher point than that minimizing the conversion loss, then $m = 1.03$ is obtained at an excess loss of 3 dB. To verify this analysis, the ratio m was measured experimentally and it was found to agree with the analysis. Static and dynamic characteristics were also measured, and it is shown that the MESFET regenerator has decision and reshaping ability.

Click on title for a complete paper.



Abstracts

Submicrometer Self-Aligned GaAs MESFET (Short Papers)

P. Baudet, M. Binet and D. Boccon-Gibod. "Submicrometer Self-Aligned GaAs MESFET (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 372-376.

This short paper presents a self-aligned technique which permits the production of submicrometer gate lengths and spacings between contacts. The exclusive use of standard photolithographic techniques makes this method interesting. Microwave measurements are reported for such a device with a 0.7- μm gate length in a 2.2- μm drain-source spacing. The yield of the process is usually better than 80 percent.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Performance of GaAs MESFET's at Low Temperatures (Short Papers)

C.A. Liechti and R.B. Larrick. "Performance of GaAs MESFET's at Low Temperatures (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 376-381.

The noise- and s-parameters of a GaAs MESFET with 1- μ m gate length are characterized versus temperature. At room temperature, the noise figure measured at 12 GHz is 3.5 dB. At 90 K, the noise figure decreases to 0.8 dB ($T/\text{sub } e/ = 60$ K). The associated gain is 8 dB. The design of a cooled amplifier for the 11.7-12.2-GHz communication band is discussed. At 60 K, the three-stage amplifier exhibits 1.6-dB noise figure ($T/\text{sub } e/ = 130$ K) and 31-dB gain.

Click on title for a complete paper.

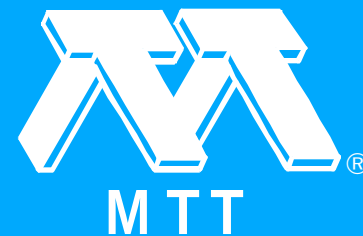


Abstracts

A 6-GHz Four-Stage GaAs MESFET Power Amplifier (Short Papers)

Y. Arai, T. Kouno, T. Horimatsu and H. Komizo. "A 6-GHz Four-Stage GaAs MESFET Power Amplifier (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 381-383.

A 6-GHz GaAs MESFET power amplifier with 1-W output power, 26dB gain, and 8-dB noise figure is described. It is a fully integrated four-stage amplifier with an efficiency of 22 percent. The third-order intermodulation product is 31.5 dB below the carrier at an output power of 1 W.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Feedback Effects in the GaAs MESFET Model (Letters)

G.D. Vendelin. "Feedback Effects in the GaAs MESFET Model (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 383-385.

GaAs MESFET models correctly predict a positive feedback conductance. The effect of common-lead inductance on Y_{12} rising computer modeling techniques is examined. Experimental data are also included which indicate that the common-lead inductance of about 0.06 nH cannot be omitted from the model in order to accurately predict the feedback conductance.

[Click on title for a complete paper.](#)



Abstracts

The GaAs MESFET as a Pulse Regenerator in the Gigabit per Second Range (Letters)

H. Beneking and W. Filensky. "The GaAs MESFET as a Pulse Regenerator in the Gigabit per Second Range (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 385-386.

Regeneration and amplification of fast pulses in the 50-IPS range have been established using GaAs MESFET's under switching conditions. Sharpening factors, $t_{\text{sub r in}}/t_{\text{sub r out}}$, of 3 and voltage amplification factors of 2 at 50 Omega have been achieved for output pulses up to 100 mA. The sharpening effect is caused mainly by the voltage-dependent gate capacitance which varies with the input pulse amplitude.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Contributors (Jun. 1976 [T-MTT])

D.A. Abbott, R. Bera, M. Fukuta, T. Furutsuka, T.M.S. Heng, D.P. Hornbuckle, T. Irie, H. Ishikawa, N. Kawamura, H. Kohzu, S. Komaki, L.J. Kuhlman, Jr., O. Kurita, C.A. Liechti, D. Masse, T. Memita, K. Morita, I. Nagasako, Y. Nakayama, R.E. Neidert, J.G. Oakes, M. Ogawa, K. Ohata, R.A. Pucel, K. Sekido, N.A. Slaymaker, R.A. Soares, K. Suyama, H. Suzuki, D.A. Tremere, R.A. Wickstrom, H.A. Willing and J.A. Turner. "Contributors (Jun. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 387-391.

Click on title for a complete paper.



Abstracts

Page Charges (Announcement) (Jun. 1976 [T-MTT])

J.E. Degenford. "Page Charges (Announcement) (Jun. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 392-392.

Ever-increasing costs for printing and mailing and virtually tied income have caused the MTT Society to adopt a modified page-charge policy similar to that of the American Institute of Physics.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Jun. 1976 [T-MTT])

"Back Cover (Jun. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Jul. 1976 [T-MTT])

"Front Cover (Jul. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

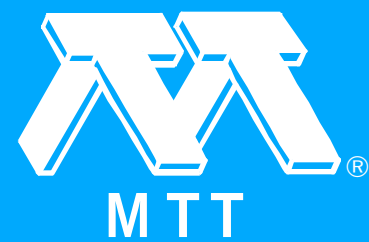
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Power Amplification of Microwave FM Communication Signals Using a Phase-Locked Voltage-Tuned Oscillator

M.E. Hines, R.S. Posner and A.A. Sweet. "Power Amplification of Microwave FM Communication Signals Using a Phase-Locked Voltage-Tuned Oscillator." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 393-404.

An analog phase-locked oscillator is used as a power amplifier for FM communications signals. Intended service is for FDM telephone message service or television relay. The output power is generated in a varactor-tuned oscillator, which is synchronized with a weak input signal using a phase-lock loop. This involves a phase detector and a wide-band direct-coupled video amplifier whose output is applied to the tuning varactor. The paper is largely theoretical, relating the parameters of the feedback loop to the performance of the overall device. Explicit expressions are derived for the noise figure, the frequency response of the modulation characteristic, AM-PM conversion, and nonlinearity effects in terms of differential gain and intermodulation. In addition, two experimental models are described, together with certain measured data. The phase-lock method differs in many ways from multistage reflection amplifiers and appears to offer advantages for many applications. The device has adequate bandwidth and linearity for a single FDM-FM signal with 1800 or more channels, but must be tuned to the intended frequency. Tuning procedures are simple. High gain of 25-35 dB is obtainable in a single microwave "stage." Most of this gain may be associated with the functions of phase detection, video amplification, and VCO tuning. Of major importance, with respect to noise, is that the device is functionally equivalent to a high-gain low-noise microwave preamplifier followed by a low-gain power amplifier stage in which the preamplifier has the noise figure of the phase detector combined with the video amplifier, and the power stage has a noise figure appropriate to the class of power diode used. FM noise generation is substantially lower than in a high-gain reflection amplifier using the same class of microwave power diode throughout.

Click on title for a complete paper.



Abstracts

Propagation of Cladded Inhomogeneous Dielectric Waveguides

M. Hashimoto. "Propagation of Cladded Inhomogeneous Dielectric Waveguides." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 404-409.

An approximate theory on the propagation of modes in an arbitrarily inhomogeneous optical waveguide embedded in a homogeneous medium is presented. Simple formulas are given, whereby the propagation constants can be determined assuming that the analytic solution is known in the absence of cladding. The results obtained applying the theory to a truncated parabolic-index profile are shown to be in good agreement with those obtained by the rigorous analysis. The theory is also applied to the propagation of TE and TM waves in truncated near-parabolic-index media.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Fringing-Field Effects in Edge-Guided Wave Devices

P. de Santis. "Fringing-Field Effects in Edge-Guided Wave Devices." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 409-415.

An equivalent model is presented for evaluating the fringing-field effects in edge-guided waves (EGW) propagating along ferrite microstrip circuits. It is based on the approximate model developed by Getsinger for nonferromagnetic microstrip circuits. Fringing-field effects are characterized by a fringing-field parameter b/b' whose numerical value is determined by experiment. Measurements are made on EGW resonators of various shapes for different values of the applied magnetic bias. Finally, the fringing-field parameter is used to evaluate the ratio between the reactive power stored in the fringing fields and the RF power in the ferrite under the strip conductor in a disk resonator.

[Click on title for a complete paper.](#)



Abstracts

Analysis of Wave Propagation in Optical Fibers Having Core with α -Power Refractive-Index Distribution and Uniform Cladding

K. Okamoto and T. Okoshi. "Analysis of Wave Propagation in Optical Fibers Having Core with α -Power Refractive-Index Distribution and Uniform Cladding." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 416-421.

This paper describes first that a simple closed-form characteristic equation can be derived from the variational formulation of the wave propagation in an optical fiber, provided that 1) the permittivity in the core is proportional to r^{α} , where r is the radial coordinate and $1 < \alpha < \infty$, and 2) the cladding is uniform. The obtained equation is then solved for various permittivity (or refractive-index) profiles. The results obtained are useful both for the understanding of the dispersion characteristics and for the design of inhomogeneous optical fibers. The optimum profile for a multimode fiber is derived and discussed.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



A Scattering Variable Approach to the Volterra Analysis of Nonlinear Systems

D.D. Weiner and G.H. Naditch. "A Scattering Variable Approach to the Volterra Analysis of Nonlinear Systems." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 422-433.

A new mathematical model is developed which extends Volterra series analysis of nonlinear systems with memory to high-frequency systems, including those containing linear distributed component devices. A generalized set of nonlinear scattering parameters is defined which can be used to describe power transfer and distortion in nonlinear multiports, and which reduce to the classical scattering parameters for linear networks. The methodology is based on Volterra functional series, and is most useful for the small-signal case where the response can be approximated by a finite number of terms of the series. Nonlinear scattering kernels, derived by extending the Volterra analysis, are simply related to previously developed nonlinear voltage and current Volterra kernels. For sinusoidal inputs nonlinear scattering parameters are defined which are shown to be particularly helpful when power relationships are studied. The principal applications are for microwave networks terminated in real-valued site reference impedances. To evaluate the average power dissipated in a load at some intermodulation frequency, the concept of nonlinear transducer gain is defined and shown to be proportional to the squared magnitude of a nonlinear scattering parameter. Examples are presented illustrating the analysis procedure for a tunnel diode reflection amplifier and for a linear lossless transmission line terminated by a non-linear network.

Abstracts

Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies

B.S. Guru and K.-M. Chen. "Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 433-440.

The total electric field inside some simulated biological bodies induced by an electromagnetic wave has been quantified by the recently developed tensor integral equation method and measured by an insulated probe. In general, the induced electric field inside a biological body was found to be quite complicated. An excellent agreement was obtained between theory and experiment.



IEEE

Contents

Publications

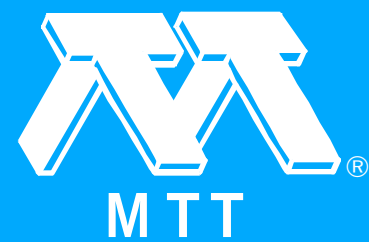
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analysis of Optical Waveguide Consisting of a Square-Law Lenslike Medium and its Analogies to Circular TE/sub 01/ waveguide

S. Sawa and N. Kumagai. "Analysis of Optical Waveguide Consisting of a Square-Law Lenslike Medium and its Analogies to Circular TE/sub 01/ waveguide." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 441-455.

Propagation behavior of light beams along sinusoidal and serpentine bends as well as circular bends and linearly tapered bends of optical waveguides consisting of a square-law lenslike medium is investigated in detail, both theoretically and numerically, on the basis of the approximate wave theory. A new design method of the circular bend for removing the effects of the bend is proposed and numerical results are presented. The divergence phenomena of the beam trajectory in both the sinusoidal and serpentine bends of the optical waveguide are discussed in comparison with mode-conversion phenomena occurring in the circular TE/sub 01/ waveguide with the same bends. Several design conditions to eliminate undulations of the beam trajectory and/or the spot size which would occur at a circular bend of the optical waveguide are also studied, and interesting analogies to the design conditions proposed so far to prevent mode-conversion losses at a circular bend of the TE/sub 01/ waveguide are shown.

[Click on title for a complete paper.](#)



Abstracts

Computation of Propagation Constants for the Fundamental and Higher Order Modes in Microstrip (Short Papers)

A. Farrar and A.T. Adams. "Computation of Propagation Constants for the Fundamental and Higher Order Modes in Microstrip (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 456-460.

A method used to treat static problems in microstrip is extended to treat time-harmonic problems of covered and uncovered microstrip. Both longitudinal and transverse currents are taken into account, Impedance functions (integrals of Green's functions) for covered and uncovered microstrip are derived in terms of improper integrals (limits $0 \rightarrow \infty$). Accurate evaluation of these integrals is carried out. Matrix methods are then used to obtain propagation constants for the fundamental and higher order modes. Data obtained agree closely with experiment.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

General Noise Analysis for Bias- and RF-Voltage-Dependent Transferred-Electron Devices (Short Papers)

J.T. Patterson. "General Noise Analysis for Bias- and RF-Voltage-Dependent Transferred-Electron Devices (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 460-463.

The general AM and FM noise spectrum analysis of Sweet for transferred-electron devices is extended to include the variation of device admittance with both bias- and RF-voltage amplitudes. This is important because recent investigations by the author suggest that there are significant variations of device admittance with both parameters. Also the expressions for the AM and FM noise spectra are formulated in terms of the more basic quantities such as stored charge, modulation sensitivities, and incremental admittance.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

On Some Integral Relationships for Commensurate Transmission-Line Networks (Short Papers)

E.G. Cristal. "On Some Integral Relationships for Commensurate Transmission-Line Networks (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 463-468.

Several integral relationships are presented for commensurate transmission-line networks. The integrals focus on the fact that $Z(1)$ for such networks, where $Z(S)$ is the input immittance of the network, is associated with a real or redundant unit element prefacing the network. Three bandwidth restrictions are derived. Some applications of the integral relationships are presented.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Note on the Finite-Element Solution of Exterior-Field Problems (Short Papers)

Z.J. Csendes. "A Note on the Finite-Element Solution of Exterior-Field Problems (Short Papers)." 1976 *Transactions on Microwave Theory and Techniques* 24.7 (Jul. 1976 [T-MTT]): 468-473.

An approximate closed-form expression corresponding to the energy functional in an infinite exterior region satisfying Laplace's equation is derived for use with the finite-element method. This expression simplifies the treatment of exterior-field problems in numerical calculations. The expression is given in terms of a few numerical matrices and logarithmic functions.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Hall Field and Magnetoresistance Effects in Rectangular Waveguide Completely Filled with Semiconductor (Short Papers)

J.B. Ness and M.W. Gunn. "Hall Field and Magnetoresistance Effects in Rectangular Waveguide Completely Filled with Semiconductor (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 473-476.

Microwave propagation through a rectangular waveguide completely filled with semiconductor and subject to a transverse magnetic field is analyzed. When the magnetic field is parallel-to the broad wall of the waveguide (the x axis), propagation is analyzed in terms of the Hall effect. For the magnetic field parallel to the y axis, the effect of the field on the propagation is shown to be due to longitudinal magneto-resistance effects. Good agreement is obtained between theory and experiment in both cases. The experiments were performed at 30 GHz using n-type germanium.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Propagation Along a Braided Coaxial Cable Located Close to a Tunnel Wall (Short Papers)

D.A. Hill and J.R. Wait. "Propagation Along a Braided Coaxial Cable Located Close to a Tunnel Wall (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 476-480.

A previous development is extended to permit attenuation calculations when a braided cable is located close to a tunnel wall. This is an important case in mine communications utilizing leaky feeders. Numerical results are presented to illustrate the effects of numerous parameters on mode attenuation. A principal finding is that the attenuation rate for the bifilar mode is hardly affected at all by the finite conductivity of the wall. On the other hand, the monofilar mode suffers a very high attenuation when the cable approaches the wall.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Reflection Coefficient of Unequal Displaced Rectangular Waveguides (Letters)

R. Levy. "Reflection Coefficient of Unequal Displaced Rectangular Waveguides (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 480-483.

The IEC has suggested that maximum allowable displacements of waveguide flanges should not cause the inherent return loss due to waveguide tolerances to degrade more than 1 dB. Calculations on displaced unequal waveguides at their extreme tolerances show that this leads to a maximum allowable displacement of 0.0175 of the broad (= a) dimension for a waveguide tolerance of $\pm a/500$. The worst return loss under these conditions is approximately -41dB. However, it is suggested that this maximum allowable displacement is based on a statistically remote worse case condition, and relaxation to a value of 0.021a would be more realistic.

[Click on title for a complete paper.](#)



Abstracts

A 60-W CW Solid-State Oscillator at C Band (Letters)

R.N. Wallace, M.G. Adlerstein and S.R. Steele. "A 60-W CW Solid-State Oscillator at C Band (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 483-485.

A 60-W CW solid-state oscillator has been developed for operation in C band. The oscillator combines the power of six high-efficiency GaAs multimesa Read diodes. Single-diode oscillators have given power outputs as high as 13.3-W CW at 5 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Measuring Dielectric Constant of Substrates for Microstrip Applications (Letters)

A.R. Gerhard. "Measuring Dielectric Constant of Substrates for Microstrip Applications (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 485-487.

A new technique for measuring the dielectric constant of unmetallized ceramic substrates for microstrip applications is fast, accurate, and nondestructive. Measurement is made at the actual microwave frequency at which the ceramic will be used. Results are repeatable to within ± 0.1 percent of the dielectric constant relative to a known standard substrate. A measurement rate of 100/h can easily be achieved. A circuit is described which is used at 1.4 GHz and measures an area of approximately 1/2-in diameter on 25-mil-thick alumina substrates.



- Contents
- Publications
- Issues
- Papers
- Authors

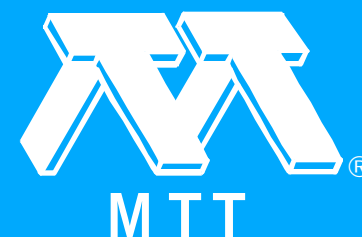
Click on title for a complete paper.



Abstracts

Contributors (Jul. 1976 [T-MTT])

K.-M. Chen, P. de Santis, B.S. Guru, M. Hashimoto, M.E. Hines, N. Kumagai, G.H. Naditch, K. Okamoto, T. Okoshi, R.S. Posner, S. Sawa, A.A. Sweet and D.D. Weiner. "Contributors (Jul. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 488-489.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

IEEE Press Books Coupon (Jul. 1976 [T-MTT])

"IEEE Press Books Coupon (Jul. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): 490-490.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Jul. 1976 [T-MTT])

"Back Cover (Jul. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.7 (Jul. 1976 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

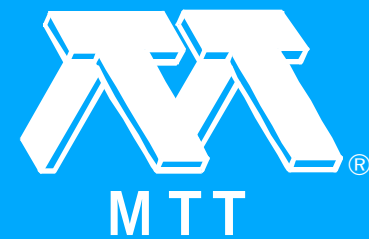
Click on title for a complete paper.



Abstracts

Front Cover (Aug. 1976 [T-MTT])

"Front Cover (Aug. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): f1-f2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

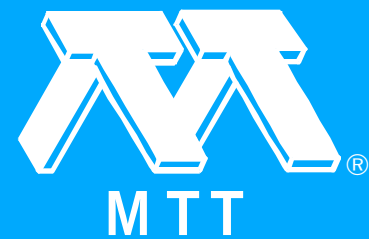
Reflection Problems in a Ferrite Stripline

K. Araki, T. Koyama and Y. Naito. "Reflection Problems in a Ferrite Stripline." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 491-498.

In this paper, the transmission characteristics of a ferrite stripline are investigated in comparison with those of an ordinary dielectric substrate stripline. Also, both "short"-end and "open"-end reflection problems of a ferrite stripline are solved by means of the eigenmode expansion method; the results, which are confirmed by experiments, show that there is a large difference between the two reflection coefficients. For the short end, very little reflection occurs. Finally, as a practical application, a new type of EG mode isolator based on these results is proposed.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Quasi-Static Characteristics of Microstrip on an Anisotropic Sapphire Substrate

R.P. Owens, J.E. Aitken and T.C. Edwards. "Quasi-Static Characteristics of Microstrip on an Anisotropic Sapphire Substrate." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 499-505.

The well-defined and repeatable electrical properties of single-crystal sapphire make it an attractive substrate material for microstrip, but its dielectric anisotropy constitutes an important design complication. This paper describes investigations into the quasi-static characteristics of single microstrip lines on sapphire substrates cut with a specified orientation. To account for anisotropy, a new permittivity parameter $\epsilon_{\text{sub req}}$ is introduced, which is a function of the linewidth to substrate-height ratio W/h . The variation of $\epsilon_{\text{sub req}}$ with W/h is derived by finite-difference methods. Universal curves for microstrip on correctly orientated sapphire are presented, showing 1) $\epsilon_{\text{sub req}}$, 2) the low-frequency limit of effective microstrip permittivity $\epsilon_{\text{sub } e0}$, and 3) the characteristic impedance of the line Z_0 , all as functions of W/h .

[Click on title for a complete paper.](#)



Abstracts

2-18-GHz Dispersion Measurements on 10-100-Omega Microstrip Lines on Sapphire

T.C. Edwards and R.P. Owens. "2-18-GHz Dispersion Measurements on 10-100-Omega Microstrip Lines on Sapphire." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 506-513.

Dispersion measurements on microstrip lines with characteristic impedances between 10 and 100 Omega are described, covering the frequency range 2-18 GHz. Single-crystal sapphire cut with a specified crystal orientation was used as the substrate material. Microstrip effective permittivities were calculated from the resonant frequencies of open-ended straight resonators using a technique which eliminated end-effect. The experimental results are compared with some recent dispersion theories. An empirical dispersion formula is independently developed, and is shown to provide well-fitting curves for all the measured dispersion results.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Passive Electrodeless Method for Determining the Interior Field of Biological Materials

M.E. Brodwin, A. Taflove and J.E. Matz. "A Passive Electrodeless Method for Determining the Interior Field of Biological Materials." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 514-521.

A passive remote-sensing method is proposed for the measurement of the electric-field distribution within a biological sample. The instrument analyzes the intermodulation spectrum reradiated by a diode imbedded within the sample exposed to a dual-frequency illumination. Experimental results in a waveguide system indicate that the relative intensities of the intermodulation products are a unique function of the field intensity at the diode. These results are also used to determine the basic scattering properties of the diode. A low-power free-space apparatus is described which exposes the principal problem associated with this method: the inadvertent generation of intermodulation frequencies. Isolation techniques are described which eliminate this problem. Finally, an analysis of a complete system shows that at 910 MHz fields can be measured in 4.0 cm of soft tissue, $\tan \delta = 0.5$, without exceeding an incident power density of 10 mW/cm².

[Click on title for a complete paper.](#)



Abstracts

On the Latching of Ferrite Microwave Devices (Short Papers)

R.S. Mueller and F.J. Rosenbaum. "On the Latching of Ferrite Microwave Devices (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 522-525.

Empirical relations are given for the hysteresis (B-H) loop of microwave ferrite toroids in terms of their measured properties (B_{r} , B_{m} , and H_{c}) and for the trajectory that B follows when flux drive latching is used. These relations also apply to minor loop switching. Finally, an idealized analysis of flux drive latching is presented and is shown to compare well with experiments for the number of voltage pulses of fixed width and amplitude needed to reverse the remanent flux.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Multiple Branch-Guide Directional Coupler Using TE/sub 01/-Mode Semicircular Waveguide (Short Papers)

S. Shindo. "Multiple Branch-Guide Directional Coupler Using TE/sub 01/-Mode Semicircular Waveguide (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 525-527.

This short paper describes experimental results derived from a newly devised branch-guide directional coupler using a TE/sub 01/-mode semicircular waveguide. The length of an experimental 0-dB coupler is about 150 mm, which is one-third shorter than the conventional coupled wave-type 0-dB coupler, and the loss is decreased in proportion to the reduction in length. Using this coupler, it is possible to manufacture more compact millimeter-wave diplexers with reduced insertion loss.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Frequency-Independent Large-Signal Equivalent Circuit for a BARITT Diode and Its Application to an Amplifier (Short Papers)

K. Okazaki, N.S. Chang and Y. Matsuo. "A Frequency-Independent Large-Signal Equivalent Circuit for a BARITT Diode and Its Application to an Amplifier (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 527-529.

A frequency-independent large-signal equivalent circuit having five elements with only one resistive element is presented for the BARITT diode. It is valid over the useful frequency range and is used for the investigation of the BARITT-diode amplifier.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High-Quality Image Reconstruction from Double Microwave Holograms (Short Papers)

H. Shigesawa, K. Takiyama and M. Nishimura. "High-Quality Image Reconstruction from Double Microwave Holograms (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 529-531.

A new mode of microwave holography is described. This is based upon the simultaneous deconvolution applied to double holograms obtained at different positions in space and has produced markedly improved microwave images. The effectiveness of the present method is demonstrated in both simulations and experiments.

[Click on title for a complete paper.](#)



Abstracts

Expressions for Wavelength and Impedance of a Slotline (Letters)

R. Garg and K.C. Gupta. "Expressions for Wavelength and Impedance of a Slotline (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 532-532.

Closed-form approximate expressions for slot wavelength and characteristic impedance for a slotline are presented. These expressions have an accuracy of about 2 percent for substrate permittivity ranging between 9.7 and 20.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Approximation for the Symmetrical Parallel-Strip Transmission Line (Comments)

R. Crampagne and G. Khoo. "Approximation for the Symmetrical Parallel-Strip Transmission Line (Comments)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 532-534.

In a recent article, Rochelle gave an approximation for the capacitance of both "wide" and "narrow" parallel-strip transmission lines in a homogeneous, lossless, dielectric medium. The author obtained a final, unique formula, which is an advantage.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

On the Accuracy of the Beam-Wave Theory of the Open Resonator (Letters)

A.L. Cullen. "On the Accuracy of the Beam-Wave Theory of the Open Resonator (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 534-535.

In an interesting paper Erickson has demonstrated how perturbation theory can be used to improve the accuracy of the beam-wave theory of the open resonator. Specifically, two defects of beam-wave theory are considered. The first is that the equiphase surfaces of beam-wave theory are not spherical, the second is that the wave function employed is only an approximate solution to the wave equation.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Microwave-Power Absorption by Rectangular-Shaped Conductive Dielectric Samples in Stripline (Letters)

W.T. Joines, G. Dakermadj, R.L. Seaman and H. Wachtel. "Microwave-Power Absorption by Rectangular-Shaped Conductive Dielectric Samples in Stripline (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 536-538.

A general method of calculating the power absorbed by a rectangular sample of material within the microwave field of a stripline is developed. Equations which account for the sample's disturbance of the otherwise uniform plane-wave field of the stripline are given, and restrictions on sample size for best accuracy are stated in terms of stripline dimensions. Power absorption measurements are made on a 0.775 x 1.04 x 1.7-cm sample of seawater over the 1-2-GHz range and compared with calculations made using the equations developed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Additional Information on the Noise-Temperature Behavior of F8T5 Lamps (Letters)

R.E. Guentzler. "Additional Information on the Noise-Temperature Behavior of F8T5 Lamps (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 538-539.

Noise temperature versus bulb temperature is given for an F8T5 lamp operating at 160-mA dc at bulb temperatures from 0 to 70°C. The new values supplement and correct previously published values. The behavior of the noise temperature is explained in terms of an Ar discharge at low bulb temperatures and the normal Hg-Ar discharge at high temperatures.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Scattering of Surface Waves at a Dielectric Discontinuity on a Planar Waveguide (Comments)

B. Rulf. "Scattering of Surface Waves at a Dielectric Discontinuity on a Planar Waveguide (Comments)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 539-541.

An analysis of the problem of scattering of surface waves at a dielectric discontinuity on a planar waveguide has recently appeared in this Transactions. (Letters)



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Asymmetric Coupled Transmission Lines in an Inhomogeneous Medium (Comments)

E. Costamagna and U. Maltese. "Asymmetric Coupled Transmission Lines in an Inhomogeneous Medium (Comments)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 541-541.

In the above paper, the terminal characteristic parameters for a uniform coupled-line four-port for the general case of an asymmetric, inhomogeneous system are derived, and some of the equivalent circuits are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

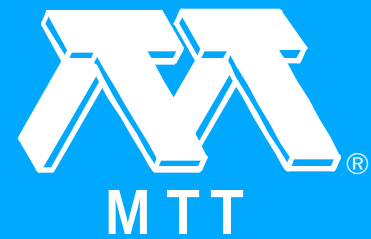
Click on title for a complete paper.



Theory of Periodic Dielectric Waveguides (Correction)

S.T. Peng, T. Tamir and H. Bertoni. "Theory of Periodic Dielectric Waveguides (Correction)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 542-542.

In the above paper, the information given by (10) on page 125 has been incompletely stated and is therefore misleading.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

FLOPT2--A Program for Least pth Optimization with Extrapolation to Minimax Solutions (Computer Program Descriptions)

J.W. Bandler and W.Y. Chu. "FLOPT2--A Program for Least pth Optimization with Extrapolation to Minimax Solutions (Computer Program Descriptions)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 543-544.

To solve least pth optimization problems, featuring art extrapolation procedure for minimax designs and a scheme for dropping inactive functions, assuming the availability of first partial derivatives with respect to the design parameters.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

MINOPT--An Optimization Program Based on Recent Minimax Results (Computer Program Descriptions)

J.W. Bandler, C. Charalambous and J.H.K. Chen. "MINOPT--An Optimization Program Based on Recent Minimax Results (Computer Program Descriptions)." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 543-543.

To solve design problems in which the objective is to best satisfy a given set of design specifications or constraints in the least pth or minimax sense, assuming the availability of first partial derivatives of the functions concerned with respect to the design parameters.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Contributors (Aug. 1976 [T-MTT])

J.E. Aitken, K. Araki, M.E. Brodwin, T.C. Edwards, T. Koyama, J.E. Matz, Y. Naito, R.P. Owens and A. Taflove. "Contributors (Aug. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): 545-546.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

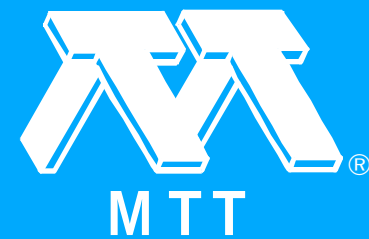
Click on title for a complete paper.



Abstracts

Back Cover (Aug. 1976 [T-MTT])

"Back Cover (Aug. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.8 (Aug. 1976 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

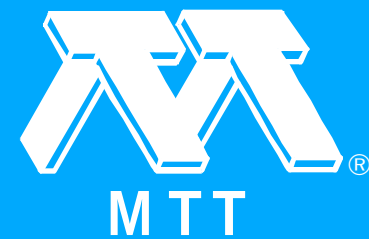
Click on title for a complete paper.



Abstracts

Front Cover (Sep. 1976 [T-MTT])

"Front Cover (Sep. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

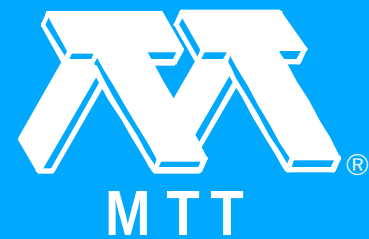
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Electromagnetic Theory of the Loosely Braided Coaxial Cable: Part I

J.R. Wait. "Electromagnetic Theory of the Loosely Braided Coaxial Cable: Part I." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 547-553.

A solution to Maxwell's equations subject to boundary conditions on counterwound helical wires is achieved. The helices are contained in a cylindrical surface that is concentric to a perfectly conducting center conductor of circular cross section. The permittivity of the annular region may be different from that of the external region. The excitation is taken to be symmetrical about the cable which leads to a considerable simplification of the formulation. The key step is to recognize that the assumed form of the current on the thin helical wires is a spatial harmonic expansion that leads to a doubly infinite expansion, in such harmonics, for the resultant fields. The inherent complication of the problem results from the intercoupling between the spatial harmonics of the helix currents. Various generalizations of the theory are also indicated.

[Click on title for a complete paper.](#)



Abstracts

Vector Variational Formulation of Electromagnetic Fields in Anisotropic Media

A. Konrad. "Vector Variational Formulation of Electromagnetic Fields in Anisotropic Media." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 553-559.

Maxwell's equations can be cast into a basic differential operator equation, the curlcurl equation, which lends itself easily to variational treatment. Various forms of this equation are associated with problems of practical importance. The formulation includes the treatment of loss-free anisotropic media. The boundary conditions associated with electromagnetic-field problems are treated in detail and the uniqueness of the solution is discussed. A functional is derived for the curlcurl equation in Cartesian and cylindrical coordinates.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Perturbation Method for the Analysis of Wave Propagation in Inhomogeneous Dielectric Waveguides with Perturbed Media

M. Hashimoto. "A Perturbation Method for the Analysis of Wave Propagation in Inhomogeneous Dielectric Waveguides with Perturbed Media." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 559-566.

This paper presents a perturbation method for determining the modes and the propagation constants of TE and TM waves in inhomogeneous dielectric waveguides whose index distributions depart from well-known profiles; e.g., a parabolic profile for which exact solutions can be obtained. Applying the variable-transformation technique to the wave equations, the wave-equation problem is transformed into the related-equation problem. The approximate solutions of the wave equations are obtained solving the related equation. The method is applied to the analysis of lower order mode propagation in a near-parabolic-index medium. The first-order field functions and the second-order propagation constants are given.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Slow-Wave Propagation Along Variable Schottky-Contact Microstrip Line

D. Jager. "Slow-Wave Propagation Along Variable Schottky-Contact Microstrip Line." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 566-573.

Schottky-contact microstrip lines (SCML) are a special type of transmission line on the semiconducting substrate: the metallic-strip conductor is specially selected to form a rectifying metal-semiconductor transition while the ground plane exhibits an ohmic metallization. Thus the cross section of SCML is similar to that of a Schottky-barrier diode. The resulting voltage-dependent capacitance per unit length causes the nonlinear behavior of such lines. In this paper a detailed analysis of the, slow-wave propagation on SCML is presented, including the effect of metallic losses. Formulas for the propagation constant and characteristic impedance are derived and an equivalent circuit is presented. Conditions for slow-mode behavior are given, particularly taking into account the influence of imperfect conductors and defining the range of many interesting applications. Experimental results performed on Si-SCML are compared with theory.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Analysis of a Waveguide Mounting Configuration for Electronically Tuned Transferred-Electron-Device Oscillators and its Circuit Application

J.S. Joshi and J.A.F. Cornick. "Analysis of a Waveguide Mounting Configuration for Electronically Tuned Transferred-Electron-Device Oscillators and its Circuit Application." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 573-584.

Theoretical analysis of a waveguide-post mounting configuration employed for high electronic (varactor) tuning of a transferred-electron-device oscillator is presented. The resulting two-port-coupling network representation is also used to derive the impedance of the post structure as an obstacle to the dominant TE/sub 10/ mode in the waveguide. Obstacle measurements conducted on the post structure for the incident TE/sub 10/ mode are found to be in very good agreement with the theory. This network representation is then applied to a practical transferred-electron-device oscillator reported elsewhere. It has been able to successfully explain the characteristic features of the oscillator. It is observed that the main source of discrepancy between the theoretical and experimental characteristics could be attributed to a lack of knowledge of the precise values of the package parasitic elements. The nature of the theoretical varactor-tuning characteristic predicted by the model is discussed and indicated for a particular configuration.

Click on title for a complete paper.



Abstracts

Integrated Approach to Microwave Design (Sep. 1976 [T-MTT])

J.W. Bandler, P.C. Liu and H. Tromp. "Integrated Approach to Microwave Design (Sep. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 584-591.

A new, integrated approach to microwave design is presented involving concepts such as optimal design centering, optimal design tolerancing, optimal design tuning, parasitic effects, uncertainties in models and reference planes, and mismatched terminations. The approach is of the worst case type, and previously published design schemes fall out as particular cases of the ideas presented. The mathematical and computational complexity as well as the benefits realized by our approach is illustrated by transformer examples, including a realistic stripline circuit.



IEEE

Contents

Publications

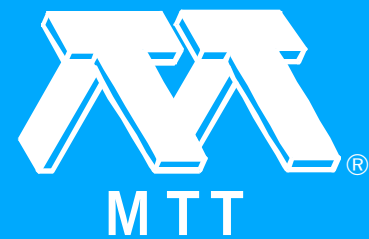
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Effect of the Magnetic Perturbation on Magnetostatic Surface-Wave Propagation

M. Tsutsumi, T. Bhattacharyya and N. Kumagai. "Effect of the Magnetic Perturbation on Magnetostatic Surface-Wave Propagation." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 591-597.

This paper discusses the propagation of the magnetostatic surface wave in two ferrite slabs (namely, YIG and Ga-YIG) with different magnetic saturations, and considers a weak coupling in between them. The theoretical results are obtained by using the conventional perturbation technique which is subsequently supported by experiment. Further, the time delay in group velocity affected by the magnetic perturbation is treated theoretically.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Different Representations of Dyadic Green's Functions for a Rectangular Cavity

C.-T. Tai and P. Rozenfeld. "Different Representations of Dyadic Green's Functions for a Rectangular Cavity." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 597-601.

Several different but equivalent expressions of the dyadic Green's functions for a rectangular cavity have been derived. The mathematical relations between the dyadic Green's function of the vector potential type and that of the electric type are shown in detail. This work supplements the one by Morse and Feshbach.

[Click on title for a complete paper.](#)



Abstracts

A New Approximation for the Capacitance of a Rectangular-Coaxial-Strip Transmission Line (Short Papers)

J.C. Tippet and D.C. Chang. "A New Approximation for the Capacitance of a Rectangular-Coaxial-Strip Transmission Line (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 602-604.

The method of conformal transformation is used to obtain the exact capacitance of a rectangular-coaxial-strip transmission line. An approximate form, which includes the edge-interaction capacitance of the strip, is obtained and is shown to reduce in an appropriate limit to a form obtained by other authors.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

A Coplanar Waveguide with Thick Metal-Coating (Short Papers)

T. Kitazawa, Y. Hayashi and M. Suzuki. "A Coplanar Waveguide with Thick Metal-Coating (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 604-608.

A theoretical method is presented for the analysis of a coplanar waveguide, with thick metal-coating. Numerical results are given and compared with published data. It is shown that the metal-coating thickness of the coplanar waveguide causes an increase in wavelength and a decrease in characteristic impedance and that the changes are about the same as those of a slot line.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analytical IC Metal-Line Capacitance Formulas (Short Papers)

W.H. Chang. "Analytical IC Metal-Line Capacitance Formulas (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 608-611.

In semiconductor IC technology, capacitance formed by the multilevel interconnection metal lines usually dominate circuit performance. However, for lack of accurate formulas, a numerical method usually has to be used to determine these capacitances. Two analytical capacitance formulas were derived using approximate conformal mapping techniques. One formula gives the capacitance of a finite-thickness metal line over a conducting ground plane, or over a silicon surface. The other formula gives the capacitance of the same metal line, but with an additional conducting metal line over it. The formulas are most accurate for metal lines whose width exceeds the dielectric thickness; accuracy increases with linewidth. They are accurate to 1 percent for a metal line whose width is comparable to the dielectric thickness. With these simple formulas, statistical distribution of the metal-line capacitances can be easily determined in a few seconds of computer time.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Equivalent Circuit of a Narrow Axial Strip in Waveguide (Short Papers)

K. Chang and P.J. Khan. "Equivalent Circuit of a Narrow Axial Strip in Waveguide (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 611-615.

A theoretical determination is made of the two-port equivalent circuit of a narrow strip located axially in a rectangular waveguide such that it extends partially or completely across the waveguide narrow dimension. The analysis is based upon derivation of a variational expression for a field quantity from which can be determined the reflection coefficient and the equivalent-circuit parameters. Experimental input susceptance values agree closely with the theory. The analysis shows that the T-equivalent network of a nontouching strip has a series-resonant shunt circuit. This element has application in filter and impedance-transforming networks, in planar circuits, and in fin-line structures.

[Click on title for a complete paper.](#)



Abstracts

On the Theory of Coupling Between Finite Dielectric Resonators (Short Papers)

L. Pettersson. "On the Theory of Coupling Between Finite Dielectric Resonators (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 615-619.

The coupling coefficients between open dielectric resonators in three useful dielectric-filter configurations, calculated from an electric rather than from a magnetic excitation of the fields, are given. The limitations of the latter method are pointed out and experimental results are given which supports the first method and shows that the differences cannot always be neglected.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Effect of Diode Parameters on Reflection-Type Phase Shifters (Short Papers)

P. Wahi and K.C. Gupta. "Effect of Diode Parameters on Reflection-Type Phase Shifters (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 619-621.

This short paper describes effects of series inductance, shunt capacitance, and resistances associated with p-i-n diodes on the performance of reflection-type digital phase shifters using a shorted transmission line behind a shunt-mounted diode. It is found that the shunt capacitance is the most dominant reactance influencing the phase shift and it increases the phase-shift value. The series inductance reduces the phase-shift value. Expressions for phase shift in various cases are presented.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Effects of the Surroundings on Electromagnetic-Power Absorption in Layered-Tissue Media (Short Papers)

P. Bernardi, F. Giannini and R. Sorrentino. "Effects of the Surroundings on Electromagnetic-Power Absorption in Layered-Tissue Media (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 621-625.

The influence of the surroundings on the interaction between electromagnetic (EM) waves and biological tissue is examined by schematizing the environment by a perfectly conducting screen placed beyond the irradiated tissue. The effects of standing waves, which are created in this situation, are determined as a function of the electrical and geometrical parameters of the structure. In particular, the hazard increase due to the presence of the screen combined with a phase disuniformity of the incident field--an elementary schematization of the "near-field"--is pointed out.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

General Form of Green's Function for Multilayer Microstrip Line with Rectangular Side Walls (Letters)

M. Kobayashi and R. Terakado. "General Form of Green's Function for Multilayer Microstrip Line with Rectangular Side Walls (Letters)." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 626-628.

This letter shows the general form of Green's functions for multilayer microstrip lines with rectangular side walls derived for the eight cases classified according to the boundary conditions by taking account of the reciprocity relation for Green's function and using the method of separation of variables



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations (Correction)

E. Yamashita. "Analysis of Microstrip-Like Transmission Lines by Nonuniform Discretization of Integral Equations (Correction)." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 628-628.

In the above paper, on page 195, the last line of the Abstract, and on page 198, line 4 of Section V, the abbreviation LSM was erroneously said to represent "linear synchronous motor." The correct meaning is "longitudinal-section magnetic modes."



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Design Equations for an Interdigitated Directional Coupler (Comments)

J.A. Mosko. "Design Equations for an Interdigitated Directional Coupler (Comments)." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 628-628.

In the above short paper, Ou derived some design equations for interdigital couplers. The purpose of this letter is to point out a limitation which may not be apparent upon reading the above work.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

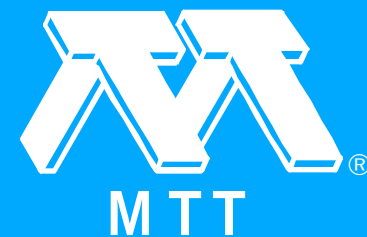
[Click on title for a complete paper.](#)



Abstracts

Contributors (Sep. 1976 [T-MTT])

J.W. Bandler, T. Bhattacharyya, J.A.F. Cornick, M. Hashimoto, D. Jager, J.S. Joshi, A. Konrad, N. Kumagai, P.C. Liu, P. Rozenfeld, C.-T. Tai, H. Tromp, M. Tsutsumi and J.R. Wait. "Contributors (Sep. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 629-630.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

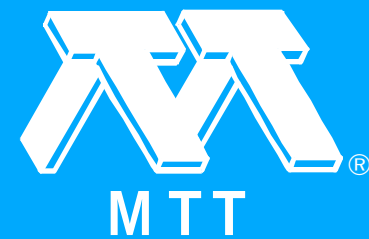
Click on title for a complete paper.



Abstracts

Back Cover (Sep. 1976 [T-MTT])

"Back Cover (Sep. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Oct. 1976 [T-MTT])

"Front Cover (Oct. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Design and Performance of Three-Line Microstrip Couplers

D. Pavlidis and H.L. Hartnagel. "The Design and Performance of Three-Line Microstrip Couplers." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 631-640.

An analysis is presented of microstrip-coupler circuits consisting of three parallel lines. The analysis is based on the existence of three mode impedances. Design equations describing the performance of this type of coupler are derived and allow the prediction of its matching and transmission properties. Numerical results using finite difference methods are presented for a three-line microstrip coupler made on an alumina substrate ($k = 9.8$). Experimental results for a 10-dB three-line coupler with a center frequency of 4 GHz show that its performance can be reasonably well predicted by the developed theory.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

General TE/sub 011/-Mode Waveguide Bandpass Filters

A.E. Atia and A.E. Williams. "General TE/sub 011/-Mode Waveguide Bandpass Filters." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 640-648.

A new structure for high-Q TE/sub 011/-mode circular waveguide cavities is introduced and shown to realize the most general bandpass-filter transfer functions. Methods of improving the mode purity and suppressing the degenerate TE/sub 111/ mode are presented. Several experimental narrow-bandpass filters having finite attenuation poles have been constructed; their measured responses show excellent agreement with theory. Average realizable unloaded Q's of 20000 and 16000 have been achieved at 8 and 12 GHz, respectively.

[Click on title for a complete paper.](#)



Abstracts

A Discriminator-Stabilized Microstrip Oscillator (Short Papers)

B. Glance and W.W. Snell, Jr.. "A Discriminator-Stabilized Microstrip Oscillator (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 648-650.

A 5.2-GHz microstrip Gunn oscillator has been frequency stabilized by means of a novel microstrip discriminator and integrated feedback loop. A stabilization factor of 1000 was measured for the oscillator with an external Q of 50. The self-capture bandwidth of the discriminator circuit is large enough to eliminate the need for a search voltage to obtain initial frequency locking.



[Contents](#)

[Publications](#)

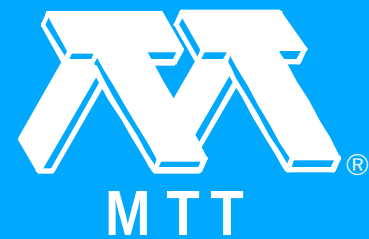
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Posttuning Drift of a Transferred-Electron-Device Voltage-Controlled Oscillator (Short Papers)

K.M. Johnson. "Posttuning Drift of a Transferred-Electron-Device Voltage-Controlled Oscillator (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 650-656.

An experimental study was done on the parameters affecting the frequency drift of a transferred-electron-device (TED) controlled oscillator (VCO) after tuning from one frequency to another within its tuning band. For the VCO measured, reduction in frequency drift was observed and measured when: 1) the output power was reduced voltage either by decoupling the load or by using a lower power TED; 2) the voltage swing was restricted so as to draw less than 10 μ A forward or reverse current; and 3) when a varactor with a high Q was used. With 5-mW output the TED VCO had a frequency drift less than 2.5 MHz from 1 μ s to 100 ms when step tuning the frequency anywhere in the frequency band from 6.8 to 9.1 GHz.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Absolute Load Detection with Microwave Gunn Oscillators (Short Papers)

L.D. Partain, W.A. Cook, H.-F. Huang and L.C. Goodrich. "Absolute Load Detection with Microwave Gunn Oscillators (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 656-660.

The change in the dc I-V properties of Gunn-flange microwave oscillators with a change in microwave load are shown to provide a method of measuring the physical properties of dielectric samples that only requires the measurement of dc voltages and currents. A phenomenological equivalent-circuit model has been developed that predicts a dependence of detection sensitivity on bias resistance that agrees closely with experiment and that explains the restrictions on such a bias resistor's maximum allowed value. Properties of a prototype system capable of measuring sample size with 8-percent accuracy are presented.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Variable Directional Coupler Using InSb Thin Films (Short Papers)

I. Tanaka and M. Ohshita. "A Variable Directional Coupler Using InSb Thin Films (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 660-662.

A variable directional coupler whose coupling is varied by an applied dc magnetic field is presented in this short paper. The directional coupler is of the two-hole type having InSb thin films in the coupling apertures to which the magnetic field is applied perpendicularly. The directional coupler was tested at room temperature at frequencies from 32 to 36 GHz. At a frequency of 33.1 GHz and magnetic flux densities of up to 13 kG, the coupling varies from 14.2 to 40.2 dB with the directivity exceeding 24.6 dB, the insertion loss of about 1 dB, and the VSWR of 1.2.

[Click on title for a complete paper.](#)



Abstracts

The Segmentation Method--An Approach to the Analysis of Microwave Planar Circuits (Short Papers)

T. Okoshi, Y. Uehara and T. Takeuchi. "The Segmentation Method--An Approach to the Analysis of Microwave Planar Circuits (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 662-668.

In many practical planar circuitries, the circuit pattern can be divided into several segments which themselves have simpler shapes such as rectangles. The segmentation method proposed in this short paper is a method in which the characteristics of a planar circuit are computed by combining those of the segmented elements. It features a relatively short computer time required. The principle and computer algorithm are described. Finally, as an example, the application of the proposed method to the trial-and-error optimum design of a ladder-type 3-dB hybrid is described.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Temperature Compensation of TE/sub 011/-Mode Circular Cavities (Short Papers)

A.E. Atia and A.E. Williams. "Temperature Compensation of TE/sub 011/-Mode Circular Cavities (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 668-669.

This short paper describes a novel method for temperature compensation of TE/sub 011/-mode circular-waveguide cavities. Implementation and experimental results on a single cavity are presented.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Experimental Development of Simulated Biomaterials for Dosimetry Studies of Hazardous Microwave Radiation (Short Papers)

A.Y. Cheung and D.W. Koopman. "Experimental Development of Simulated Biomaterials for Dosimetry Studies of Hazardous Microwave Radiation (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 669-673.

Simulated biotissues have been developed which are appropriate for dosimetry studies at X-band frequencies and for S-band modeling experiments which would use miniature phantoms at X-band frequencies. A short-circuited waveguide system has been built and tested for the precise measurement of the dielectric properties of the simulated tissue. Modifications of composition for varying the dielectric properties over a wide range have been found. The specific heats of the materials have been measured and are approximately the same as the tissues they represent.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Observation and Application of High-Order Azimuthal Modes in a Fabry-Perot Resonator (Short Papers)

C.W. Erickson. "Observation and Application of High-Order Azimuthal Modes in a Fabry-Perot Resonator (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 673-674.

High-order azimuthal modes ($p = 0$, $l > 20$) were excited at 10 GHz in a Fabry-Perot resonator. The energy of these modes is distributed in a ring around an energy-free central axis, which lends itself to safety applications on rotating machinery and in measuring density profiles of cylindrical plasmas.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

TLMRES--The TLM Computer Program for the Analysis of Microstrip Resonators (Computer Program Descriptions)

S. Akhtarzad and P.B. Johns. "TLMRES--The TLM Computer Program for the Analysis of Microstrip Resonators (Computer Program Descriptions)." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 675-675.

This program, based on the TLM method of numerical analysis in three dimensions, provides the exact numerical solution for general electromagnetic-wave problems.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Overseas Abstracts (Oct. 1976 [T-MTT])

"Overseas Abstracts (Oct. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 676-681.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Contributors (Oct. 1976 [T-MTT])

A.E. Atia, H.L. Hartnagel, D. Pavlidis and A.E. Williams. "Contributors (Oct. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 676-676.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

IEEE Press Books Coupon (Oct. 1976 [T-MTT])

"IEEE Press Books Coupon (Oct. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 682-682.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

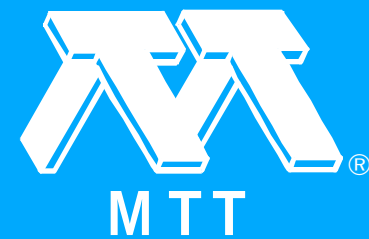
Click on title for a complete paper.



Abstracts

Back Cover (Oct. 1976 [T-MTT])

"Back Cover (Oct. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

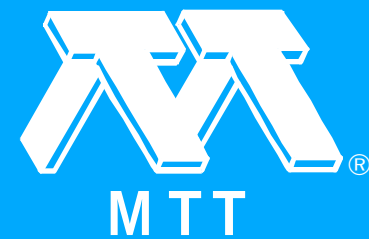
Click on title for a complete paper.



Abstracts

Front Cover (Nov. 1976 [T-MTT])

"Front Cover (Nov. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

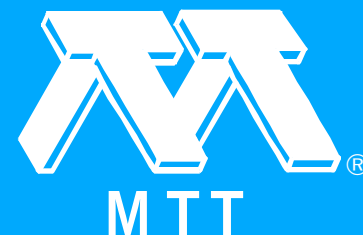


Abstracts

Foreword (Nov. 1976 [T-MTT])

H.J. Kuno. "Foreword (Nov. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 683-684.

For more than a quarter of a century, engineers and scientists have been challenging the frontier of microwave technology with the prospect of extending it into millimeter-wave systems applications. The progress toward this goal had been relatively slow. In recent years, however, a significantly increased effort has been directed toward the development of various solid-state devices for use at millimeter-wave frequencies. This has brought a rapid progress in the field of millimeter waves in many countries, particularly in Europe, Japan, and North America.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

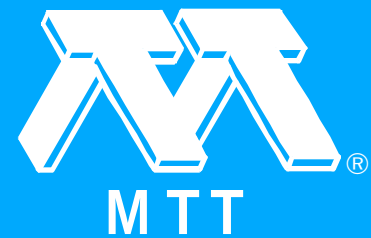


Abstracts

Millimeter-Wave Semiconductor Devices

N.B. Kramer. "Millimeter-Wave Semiconductor Devices." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 685-693.

Special techniques used in the construction of various types of millimeter-wave diodes are presented. The performance of millimeter Gunn and IMPATT devices is reviewed and other factors influencing the application of these diodes are discussed. The performance and characteristics of small-area diodes used for millimeter-wave modulation, mixing, and detection are also reviewed. Several shortcomings in the present design and application of millimeter diodes are pointed out with suggestions for further work.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Highly Reliable High-Power 86-GHz Components and Transmitter--Receiver Modules

M. Akaïke, H. Kato and N. Kanmuri. "Highly Reliable High-Power 86-GHz Components and Transmitter--Receiver Modules." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 693-701.

The reliability of semiconductor active devices is related to the junction temperature of diodes used. This paper describes the reliability design and performance of 86-GHz active components and transmitter-receiver modules for a guided millimeter-wave transmission system. The components are IMPATT oscillators, IMPATT amplifiers, varactor frequency multipliers, and Schottky-barrier diode upconverters. The maximum output powers of these active devices are calculated for a given mean time between failure (MTBF). Active components and transmitter-receiver modules for 86-GHz operation were manufactured based upon the design with considerations for reliability as well as RF performance.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Schottky-Diode Realization for Low-Noise Mixing at Millimeter Wavelengths

G.T. Wrixon. "Schottky-Diode Realization for Low-Noise Mixing at Millimeter Wavelengths." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 702-706.

A short review of the current theory and technology of low-noise Schottky-barrier diodes for use at millimeter wavelengths is presented. Recent advances in fabrication technology are discussed which have yielded photolithographically produced GaAs diodes with a cutoff frequency in excess of 3000 GHz together with improved noise performance due to reduced contamination of the contact. Noise producing mechanisms in diodes are outlined and the limitations of noise reduction by cooling are considered. Finally, methods for overcoming the high-frequency limitations of conventional GaAs Schottky diodes are assessed.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Low-Noise 47-GHz Mixer Using a Permanent Josephson Junction

J. Edrich. "A Low-Noise 47-GHz Mixer Using a Permanent Josephson Junction." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 706-709.

A new method to produce permanent Josephson junctions for millimeter-wave mixers is reported. In contrast to conventional point contacts which are mechanically unstable and require adjustments after each cooldown, these point contact junctions are set at room temperature, stay mechanically stable, and can be temperature cycled without readjustments. Using these junctions in a modified Sharpless wafer mixer mount, a single-sideband noise temperature of 71 K was measured at 47 GHz. Based on these results, system noise temperatures of less than 100 K are predicted for practical broad-band radiometers, radar, and communications receivers up to at least 100 GHz.

[Click on title for a complete paper.](#)



Abstracts

The Challenge of Astronomy to Millimeter-Wave Technology

C.H. Townes. "The Challenge of Astronomy to Millimeter-Wave Technology." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 709-711.

The inseparability of pure and applied science, or the synergy between scientific discovery and technological advance, has already been well illustrated in the field of radio astronomy. Recent astronomical discoveries in the millimeter range, and what can be expected to emerge from the far-infrared region, make further technological developments in these relatively unexploited areas of great interest to astronomy as well as technologically challenging. The nature of problems and the goals of astronomy in this area are discussed with particular reference to technological needs and developments.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

K-Band Traveling-Wave Maser Using Ruby

K.S. Yngvesson, A.C. Cheung, M.F. Chui, A.G. Cardiasmenos, S.-Y. Wang and C.H. Townes. "K-Band Traveling-Wave Maser Using Ruby." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 711-717.

A K-band ruby traveling-wave maser (TWM) has been developed, which has provided a decrease in system noise temperature compared to other front ends presently used in radio telescopes at K-band by an order of magnitude. The maser uses a new type of photoetched slow-wave structure, integral with the ruby rod, especially suitable for millimeter-wave masers. It also employs a new type of built-in isolator configuration, which guarantees stable net gain of typically 30 dB over the tunable bandwidth, which is about 20 percent. Its phase stability, both short and long term, is excellent, making it highly suitable for use on an interferometer for radio astronomy.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Traveling-Wave Masers for Radio Astronomy in the Frequency Range 20-40 GHz

E.L. Kollberg and P.T. Lewin. "Traveling-Wave Masers for Radio Astronomy in the Frequency Range 20-40 GHz." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 718-725.

Tunable rutile traveling-wave masers (TWM's) have been developed for the frequency ranges 20-25 GHz and 29-35 GHz. Operating data for iron-doped rutile are given and the optimum concentration of iron has been determined. A new type of dielectric image line slow-wave structure (SWS), particularly useful in the frequency range 10-50 GHz, is used in two of the masers. This SWS is found superior to the other structure tested, the dielectrically loaded waveguide. For both types of masers, a ferromagnetic isolator is used in order to ensure the gain stability of better than ± 0.2 dB at 30 dB net gain, required for radio astronomical applications. The instantaneous 3dB bandwidth is 30-60 MHz, depending on the maser. The maser package noise temperature at the input waveguide flange was measured to 27 ± 4 K.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A Traveling-Wave Maser Amplifier for 85-90 GHz Using a Slot-Fed Image-Guide Slow-Wave Circuit

A.G. Cardasmenos, J.F. Shanley and K.S. Yngvesson. "A Traveling-Wave Maser Amplifier for 85-90 GHz Using a Slot-Fed Image-Guide Slow-Wave Circuit." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 725-730.

A description is given of a newly developed traveling-wave maser amplifier for use at the new 13.7-m millimeter-wave radio telescope of the Five College Radio Astronomy Observatory (FCRAO) near Amherst, MA. The maser amplifier, using iron-doped rutile as the active maser material, has achieved 15-dB electronic gain in the prototype over an instantaneous bandwidth of 140 MHz in the frequency range from 85 to 90 GHz. The use of a slot-fed image-guide mode which provides a wide-bandwidth coupling to the maser material is described and analyzed. Reduction of the total system noise temperature to less than 100 K including the atmosphere can be realized with these maser devices providing an order of magnitude improvement in system sensitivity.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High-Power 50-GHz Double-Drift-Region IMPATT Oscillators with Improved Bias Circuits for Eliminating Low-Frequency Instabilities

Y. Hirachi, T. Nakagami, Y. Toyama and Y. Fukukawa. "High-Power 50-GHz Double-Drift-Region IMPATT Oscillators with Improved Bias Circuits for Eliminating Low-Frequency Instabilities." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 731-737.

Low-frequency instabilities in millimeter-wave double-drift-region (DDR) IMPATT diodes are investigated and new oscillator circuits with the improved bias circuits for eliminating the low-frequency instability are developed. DDR IMPATT diodes mounted in these circuits exhibited a maximum free-running oscillation power of 1.6 W at 55.5 GHz with 11.5-percent conversion efficiency. A highly stabilized oscillator was also constructed with the maximum output power of 1 W and the frequency stability 0.3 ppm/mA at 51.86 GHz.

[Click on title for a complete paper.](#)



Abstracts

Millimeter IMPATT Sources for the 130-170-GHz Range

K.P. Weller, R.S. Ying and D.H. Lee. "Millimeter IMPATT Sources for the 130-170-GHz Range." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 738-743.

Device and circuit design of silicon IMPATT sources in the 130-170-GHz range is discussed. A 170-GHz source has been developed with 16 mW at the isolator output having an AM double-side-band noise-to-signal ratio of -115 dB per 1 kHz beyond 70 kHz from carrier.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Nonlinear and Intermodulation Characteristics of Millimeter-Wave IMPATT Amplifiers

H.J. Kuno and D.L. English. "Nonlinear and Intermodulation Characteristics of Millimeter-Wave IMPATT Amplifiers." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 744-751.

An analysis and experimental results of intermodulation distortion characteristics of millimeter-wave IMPATT amplifiers are presented. Design considerations for linear IMPATT amplifiers and tradeoffs between the small-signal gain and intermodulation distortion are discussed.

Click on title for a complete paper.



Abstracts

Circuit Characterization of V-Band IMPATT Oscillators and Amplifiers

T.T. Fong, K.P. Weller and D.L. English. "Circuit Characterization of V-Band IMPATT Oscillators and Amplifiers." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 752-758.

A circuit model has been developed to describe a class of commonly used waveguide cavities for V-band IMPATT oscillators and amplifiers. Calculated results based on this model used in conjunction with theoretical small-signal IMPATT characteristics have shown good qualitative agreement with experimental data. Detailed characterization of a small-signal V-band IMPATT amplifier and a mechanical tuned oscillator are presented, and the predicted performance is compared with measurements.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Millimeter-Wave IMPATT Power Amplifier/Combiner

H.J. Kuno and D.L. English. "Millimeter-Wave IMPATT Power Amplifier/Combiner." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 758-767.

The development of a two-stage millimeter-wave IMPATT power amplifier/combiner is described herein. The driver stage consists of a two-diode hybrid-coupled amplifier and the output stage consists of a four-diode combiner (a pair of hybrid-coupled amplifiers). An output power of 1 W was achieved with a 22-dB small-signal gain and a 6-GHz bandwidth in the 60-GHz range. Design considerations and experimental data are presented in detail.

[Click on title for a complete paper.](#)



Abstracts

New Modes of Operation for Avalanche Diodes: Frequency Multiplication and Upconversion

P.-A. Rolland, J.L. Vaterkowski, E. Constant and G. Salmer. "New Modes of Operation for Avalanche Diodes: Frequency Multiplication and Upconversion." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 768-775.

The nonlinear properties of avalanche diodes can be exploited for use as frequency multipliers and upconverters. Among the various possible modes of avalanche device operations, the two mentioned above evoke great interest because of their high conversion efficiency. Basic principles, theoretical predictions, and experimental results are outlined in some detail and indicate both the present state of development as well as the performance achieved using avalanche devices operated in this manner.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

InP Gunn-Effect Devices for Millimeter-Wave Amplifiers and Oscillators

R.J. Hamilton, Jr., R.D. Fairman, S.I. Long, M. Omori and F.B. Fank. "InP Gunn-Effect Devices for Millimeter-Wave Amplifiers and Oscillators." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 775-780.

CW InP Gunn oscillator performance has been extended up in frequency to the 26.5-40 and 50-75-GHz ranges. CW power outputs of 78 mW at 56 GHz have been attained to date. Amplifier evaluation in Ku band yielded useful gain from 26.5 to 40 GHz in two half-band circuits with noise figures ranging from 12.4 to 16.5 dB on flat profile devices. In a narrow-band amplifier circuit at 23 GHz, a device noise figure of 10.1 dB was obtained at 9-dB gain. A description of material growth, evaluation techniques, and device designs is also presented.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Generation of Millimeter-Wave Signals of High Spectral Purity

A.A. Castro and F.P. Ziolkowski. "Generation of Millimeter-Wave Signals of High Spectral Purity." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 780-786.

The generation of millimeter-(mm-) wave signals phase coherent to a lower frequency reference or standard implies a large multiplication factor with inherent amplification of the short term instability or phase noise. This effect which usually is of secondary importance at lower microwave frequencies may become a limiting factor in the implementation of some mm-wave digital communication systems. Techniques used for the generation of signals of high spectral purity are discussed, and illustrated with the realization for a low data rate mm-wave satellite communications system. Quantitative results are presented and analyzed in terms of the theoretical time and frequency domain relationships.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Versatile Millimeter-Wave Imaging System

J.P. Hollinger, J.E. Kenney and B.E. Troy, Jr.. "A Versatile Millimeter-Wave Imaging System." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 786-793.

A new millimeter-wave imaging system has been assembled at the Naval Research Laboratory and flight-tested using the NASA/ Wallops C-54 aircraft. The system incorporates an oscillating mirror and interchangeable radiometer units making it particularly adaptable to variations in its operational frequency, polarization, and angular resolution. Flight tests of the system have been conducted at 90 GHz and simultaneously at 22 and 31 GHz using a dual frequency radiometer. The imaging system and data processing are described and some of the initial flight test results at 90 GHz are presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A Compact 60-GHz Transmitter--Receiver

Y. Matsuo, Y. Akaiwa and I. Takase. "A Compact 60-GHz Transmitter--Receiver." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 794-797.

A new, compact, low-cost, and reliable 60-GHz transmitter-receiver was developed for civilian use. Common components are used for transmitting and receiving functions. An IMPATT oscillator generates the millimeter-wave output power for both the transmitter and the receiver local oscillator. A common antenna is also used for transmitting and receiving signals without a circulator. A mixer is used as a modulator in transmission as well as a receiver front end. A noise figure of 13 dB is obtained by a balanced mixer with a 200-MHz IF frequency differential preamplifier. A reliable packaged GaAs varactor diode is used for the mixer-modulator (MM).

Click on title for a complete paper.



Abstracts

A V-Band Communication Transmitter and Receiver System Using Dielectric Waveguide Integrated Circuits

J.E. Kietzer, A.R. Kaurs and B.J. Levin. "A V-Band Communication Transmitter and Receiver System Using Dielectric Waveguide Integrated Circuits." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 797-803.

A V-band communication transmitter and receiver is described. Both units make extensive use of passive microwave components fabricated using millimeter-wave insular line integrated circuits (MILIC's). These components consist of rectangular dielectric rod antennas, a MILIC ferrite isolator, a bandpass ring filter, a directional coupler, and sections of dielectric insular waveguide. The passive insular waveguide components are integrated together, along with split block metal waveguide mounts for the active devices, in order to form the RF circuitry of the transmitter and receiver.



[Contents](#)

[Publications](#)

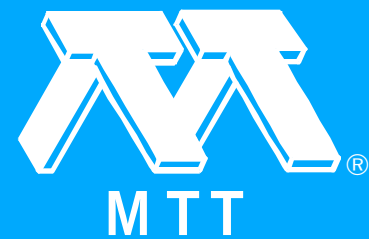
[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Millimeter-Wave Thin-Film Downconverter

W.W. Snell, Jr. and M.V. Schneider. "Millimeter-Wave Thin-Film Downconverter." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 804-806.

A 60-GHz hybrid integrated downconverter intended for use in a millimeter-wave radio relay experiment has been designed and tested. The converter consists of a strip transmission line circuit and two beam-leaded Schottky-barrier diodes which are pumped at a subharmonic of the conventional local oscillator frequency. The conversion loss of the circuit is 6.3 dB and the total single-sideband noise figure, including the noise contribution from the IF amplifier, is 9.1 dB. The circuit looks attractive for millimeter-wave communication systems application up to 100 GHz.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dielectric Waveguide Microwave Integrated Circuits--An Overview

R.M. Knox. "Dielectric Waveguide Microwave Integrated Circuits--An Overview." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 806-814.

An integrated circuit technique for microwave and millimeter wavelengths which uses refractive-type waveguides and signal processing coupled with planar integration techniques characteristic of microstrip microwave integrated circuits (MIC's) is described. Following a comparison of the optical and millimeter approaches to this circuit technique, a discussion of transmission lines and components for millimeter wavelengths is presented. System applications are also described.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Measurement of Guide Wavelength in Rectangular Dielectric Waveguide

H. Jacobs, G. Novick, C.M. LoCascio and M.M. Chrepta. "Measurement of Guide Wavelength in Rectangular Dielectric Waveguide." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 815-820.

Oscillators in the microwave and millimeter-wave region were constructed wherein the resonators consisted of sections of rectangular dielectric waveguide. While adding thin blocks of dielectric to increase the mechanical length of the resonator, the power output and frequency were measured. Using this technique, the experimental value of the wavelength in the longitudinal direction, λ_g , was determined. These experimental data were then compared with calculations predicted by optical theory. Good agreement was found where the bulk wavelength was small compared with the cross-sectional dimensions of the dielectric. If the half-wavelength in the dielectric was comparable with the dielectric dimensions, the values of λ_g were greater than the theoretical values. In the process of carrying out these experiments, a new type of oscillator is described which provides a power output comparable with diodes in metal-walled cavities. In addition, the new dielectric cavities are simple in construction and are compatible with dielectric waveguide, image line, or microstrip systems.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

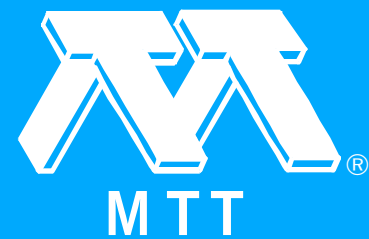
Inverted Strip Dielectric Waveguide for Millimeter-Wave Integrated Circuits

T. Itoh. "Inverted Strip Dielectric Waveguide for Millimeter-Wave Integrated Circuits." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 821-827.

A new type of dielectric waveguide, which has a number of advantages over other previously available waveguide structures for millimeter-wave integrated circuits, is described. Dispersion characteristics and the field distributions in the waveguide are calculated using the concept of effective dielectric constant. Field distributions have been measured in the 80-GHz range in order to check the accuracy of the analytical results. This measurement has been done using a novel experimental technique, which should also be applicable to many other millimeter-wave waveguides and components.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Double-Layered Slot Line for Millimeter-Wave Integrated Circuits

N. Samardzija and T. Itoh. "Double-Layered Slot Line for Millimeter-Wave Integrated Circuits." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 827-831.

A new type of waveguide, a double-layered slot line, is described which is useful for millimeter-wave integrated circuits (IC's). Galerkin's method applied in the Fourier transform domain is used for analyzing the propagation characteristics of the dominant mode in the structure. Theoretical and experimental results are presented and compared.

Click on title for a complete paper.



80-GHz-Band Low-Loss Ring-Type Channel Diplexer Using a Semicircular Electric Mode

N. Nakajima and I. Ohtomo. "80-GHz-Band Low-Loss Ring-Type Channel Diplexer Using a Semicircular Electric Mode." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 831-836.

A low-loss ring-type channel diplexer consisting of two deformed ring cavities, three directional couplers, a TE/sub 01/ mode semicircular waveguide for the through channels, and a TE/sub 10/ mode rectangular waveguide for the dropped channel, has been developed as a channel-dropping filter for a millimeter-wave channel multiplexing network. The structure and experimental results of the diplexer are described, the design method is also discussed. Measurements show that insertion losses of the through and dropped (coupled) channels, and VSWR are less than 0.15 dB, 0.68 dB, and 1.12, respectively, for a diplexer centered at 81.91 GHz with 3-dB bandwidth of 800 MHz. Specifically, the through channel loss is reduced by half, as compared with a conventional rectangular waveguide diplexer, owing to the low insertion loss characteristics of the TE/sub 01/mode semicircular waveguide. As a result, an overall loss of a channel multiplexer, in which several channel diplexers are connected in tandem, is remarkably decreased, particularly at higher frequencies covering W-120 GHz.





IEEE

Contents

Publications

Issues

Papers

Authors

Analysis and Design of a Millimeter-Wave Bandpass Filter with a Stopband in the Specified Higher Frequencies

K. Yamamoto. "Analysis and Design of a Millimeter-Wave Bandpass Filter with a Stopband in the Specified Higher Frequencies." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 837-842.

The characteristics of a rectangular waveguide bandpass filter (BPF) are not well known in the high-frequency range where higher order modes can propagate. In this paper, the frequency response of a BPF, composed of symmetric inductive windows, is investigated. The range of frequency under investigation covers the region where not only the TE/sub 10/ mode but also higher modes can propagate in the waveguide. A window with incident waves of various modes is first characterized by a scattering matrix. The matrix elements for various modes are obtained in a closed form by means of the variational method. The overall characteristics of the BPF are then obtained by calculating the product of these matrices. A design of a BPF with a stopband in the specified higher frequencies is proposed. Prototype production proved the validity of the theoretical investigation.

Click on title for a complete paper.

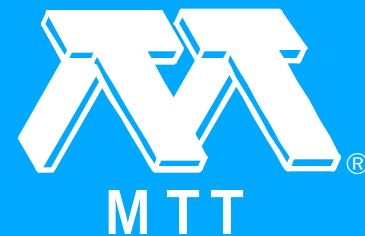


Abstracts

A Millimeter-Wave Directional Filter Cavity

B.D. Moore and J.R. Cogdell. "A Millimeter-Wave Directional Filter Cavity." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 843-847.

The theory and design of millimeter-wave directional filter cavities are presented. Experimental results obtained at 15 and 100 GHz are described.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Helical Coupler from Rectangular-to-Circular Waveguide

C.R. Predmore. "Helical Coupler from Rectangular-to-Circular Waveguide." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 847-852.

The very-large-array (VLA) radio telescope utilizes a low-loss TE/sub 01/ circular waveguide transmission system. During the design of this system a coupler was developed which couples directly from a standard millimeter rectangular waveguide to the TE/sub 01/mode in highly overmoded circular waveguide. In contrast to previous couplers which used periodically spaced groups of coupling holes, this design wraps the rectangular waveguide in a helix around the circular waveguide to give a continuous array of coupling apertures for maximum coupling and a compact mechanical configuration. The helix angle is chosen to match the phase velocities of the rectangular and circular waveguide modes at a given frequency. In particular, couplers have been designed and fabricated which couple from WR-28 (26.540-GHz) and WR-22 (33-50-GHz) rectangular waveguides to the TE/sub 01/ mode in 20- and 60-mm-diam circular waveguide.

[Click on title for a complete paper.](#)

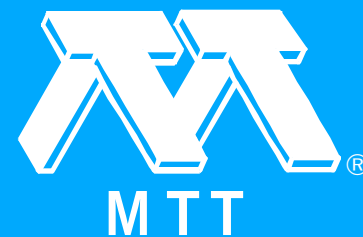


Abstracts

Excess Conduction Losses at Millimeter Wavelengths

F.J. Tischer. "Excess Conduction Losses at Millimeter Wavelengths." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 853-858.

Excess conduction losses and discrepancies between theoretical and measured values of waveguide attenuation and surface resistance are investigated. The results of comprehensive experiments to isolate the effects contributing to the discrepancies and excess losses are presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

200-GHz 50-mW CW Oscillation with Silicon SDR IMPATT (Short Papers)

T. Ishibashi and M. Ohmori. "200-GHz 50-mW CW Oscillation with Silicon SDR IMPATT (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 858-859.

Silicon SDR IMPATT diodes have been operated continuously in 200- and 300-GHz bands. A p+-n junction structure was formed by thermal diffusion of boron and ion implantation of phosphorus ions. CW output power of 50 mW was obtained at 202 GHz with 1.3-percent conversion efficiency. At 301-GHz CW output power of 1.2 mW was observed.

Click on title for a complete paper.



Abstracts

A 230-GHz Radiometer System Employing a Second-Harmonic Mixer (Short Papers)

P.F. Goldsmith and R.L. Plambeck. "A 230-GHz Radiometer System Employing a Second-Harmonic Mixer (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 859-861.

A radiometer system for use in the $\lambda \sim 1.3$ mm ($\nu \sim 230$ GHz) region has been constructed and used for radio astronomical observations. A second-harmonic mixer employing a single Schottky diode downconverts the incident power to an IF frequency of -1400 MHz. The measured double-sideband system noise temperature is 6000 K (noise figure = 13 dB) and the double-sideband mixer conversion loss is calculated to be 10 dB. The mixer is tunable over a range of at least 15 GHz.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

High-Efficiency Frequency Multiplication with GaAs Avalanche Diodes (Short Papers)

B.M. Kramer, A.C. Derycke, A. Farayre and C.F. Masse. "High-Efficiency Frequency Multiplication with GaAs Avalanche Diodes (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 861-863.

GaAs avalanche diodes for frequency multiplication at millimeter wavelengths have been investigated. The GaAs diode design is described and compared with that of Si diodes. Experimental results obtained in the optimum circuit are presented. Frequency multiplication from 4 to 32 GHz with 6-dB conversion loss (400 to 100 mW) and 1.5-W dc bias power was achieved. A temperature dependence of the output power was measured to be less than 1 dB over the -40 to +60/spl deg/C range.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Low-Loss Broad-Band EHF Circulator (Short Papers)

W.S. Piotrowski and J.E. Raue. "Low-Loss Broad-Band EHF Circulator (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 863-866.

A waveguide circulator design is reported that has resulted in a structurally rugged, thermally stable circulator with exceptional RF performance. With this design, insertion loss of less than 0.1 dB, more than 2MB isolation, and VSWR less than 1.2:1 have been achieved, each over 7 GHz of bandwidth from 27 to 34 GHz and 31 to 38 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Varactor-Tuned Millimeter-Wave MIC Oscillator (Short Papers)

D. Rubin. "Varactor-Tuned Millimeter-Wave MIC Oscillator (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 866-867.

Varactor-tuned millimeter-wave MIC Gunn oscillators have been developed using packaged devices. A tuning range greater than 1 GHz was obtained in the 35-GHz range.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.

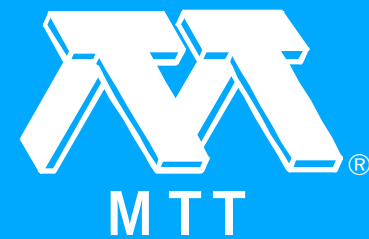


Abstracts

A Low-Noise Millimeter MIC Mixer (Short Papers)

A.J. Kelly and H.C. Okean. "A Low-Noise Millimeter MIC Mixer (Short Papers)." 1976 *Transactions on Microwave Theory and Techniques* 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 867-869.

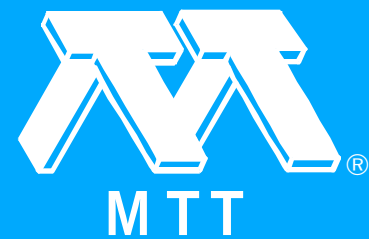
This short paper describes a K/sub a/-band integrated circuit mixer which, when integrated with a 2.5-dB-noise-figure IF amplifier, yields a 6-dB double-sideband noise figure over the band 36.5-38.5 GHz. A readily machinable low dielectric constant substrate has been utilized.



Contents
Publications
Issues
Papers
Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dielectric Rod Antennas for Millimeter-Wave Integrated Circuits (Short Papers)

Y. Shiau. "Dielectric Rod Antennas for Millimeter-Wave Integrated Circuits (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 869-872.

The design of dielectric rod antennas for millimeter-wave integrated-circuit applications is described. The experimental investigation was initially performed for sealed models at Ku band and then developed at V band. A moderately high-gain alumina dielectric rod antenna that is entirely compatible with insular integrated circuits has been designed and tested. The antenna has been fabricated and integrated, as one of the system components, into short-range V-band transmitter and receiver modules. The measured gain was found to be 15.2 dB. Radiation characteristics are discussed.

[Click on title for a complete paper.](#)



Abstracts

E-Type Modes in Cylindrical Dielectric Waveguides with Periodic Boundary Perturbations (Short Papers)

E. Topuz. "E-Type Modes in Cylindrical Dielectric Waveguides with Periodic Boundary Perturbations (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 872-875.

A general method for the analysis of the effects of periodic boundary perturbations on E-type modes of dielectric waveguides (DW's) is presented. The method is applied to hollow cylindrical dielectric waveguide (HCDW), and numerical solutions for surface wave and radiation mode intensities are given.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Tunable Bandpass Ring Filter for Rectangular Dielectric Waveguide Integrated Circuits (Short Papers)

A.R. Kaur. "A Tunable Bandpass Ring Filter for Rectangular Dielectric Waveguide Integrated Circuits (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 875-876.

Dielectric waveguide structures have received renewed interest in recent years for application at millimeter wavelengths. A number of passive and active microwave devices in the dielectric waveguide technologies have been recently developed. This short paper describes a method for providing continuous mechanical tuning of a resonant dielectric ring filter for use with rectangular dielectric waveguide integrated circuits. Results obtained with an experimental device operating at K band are also given.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A New Form of Ferrite Device for Millimeter-Wave Integrated Circuits (Short Papers)

V.P. Nanda. "A New Form of Ferrite Device for Millimeter-Wave Integrated Circuits (Short Papers)." 1976 *Transactions on Microwave Theory and Techniques* 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 876-879.

A new form for ferrite devices has been developed which finds extensive applications in the integrated circuits from Ku band to millimeter wavelengths. The new configuration is compatible with the emerging technology of millimeter-wave image line integrated circuits (MILIC's) which use dielectric image line as the guiding structure. Development of a MILIC isolator is discussed in detail to spotlight the salient points of the new approach. The design approach permits flexibility in layout and mechanical dimensions, and it results in low fabrication costs for MILIC ferrite devices at component and subsystem levels.

[Click on title for a complete paper.](#)



Abstracts

The Fabrication of Dielectric Image Lines Using Casting Resins and the Properties of the Lines in the Millimeter-Wave Range (Short Papers)

K. Solbach. "The Fabrication of Dielectric Image Lines Using Casting Resins and the Properties of the Lines in the Millimeter-Wave Range (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 879-881.

Experiments with dielectric image lines fabricated of casting resins are described, and the properties of the electromagnetic fields and the phase coefficients of the waves in the millimeter-wave range (26-40 GHz) are discussed. As an example, a ring resonator and the measurement of its insertion loss is presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

22-GHz Measurements of Dielectric Constants and Loss Tangents of Castable Dielectrics at Room and Cryogenic Temperatures (Short Papers)

R.W. Haas and P. Zimmermann. "22-GHz Measurements of Dielectric Constants and Loss Tangents of Castable Dielectrics at Room and Cryogenic Temperatures (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 881-883.

The dielectric constants and loss tangents of a number of castable dielectrics such as different epoxies were measured at 22 GHz at both room temperature and 77 K using a resonant cavity technique. It was found that these high-frequency values differ significantly from published low-frequency values, and that the losses decrease dramatically at cryogenic temperatures.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Characterization of Magnetic Materials in the Millimeter-Wave Range (60-90 GHz) (Short Papers)

B.C.S. Lint and A. Priou. "Characterization of Magnetic Materials in the Millimeter-Wave Range (60-90 GHz) (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 883-886.

It is shown that the measurement techniques of dielectric samples using open resonators can also be used to characterize ferrimagnetic materials. The parameters that are measured are the complex permittivity $\epsilon/\sub f/*$ and the ΔH ferrite gyromagnetic resonance linewidth. The principle of the techniques used and an evaluation of ferrite material parameters from 10 to 70 GHz are presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Measurement of Surface Resistance in Oversized Circular Waveguide at Millimeter Wavelengths (Short Papers)

S. Hatano and F. Nihei. "Measurement of Surface Resistance in Oversized Circular Waveguide at Millimeter Wavelengths (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 886-887.

The increase of the surface resistance of oversized circular waveguides has been accurately evaluated at millimeter wavelengths by measuring attenuations of TE/sub 0n/ modes. The ratios of the effective resistances to the ideal resistances of the wall were found to be 1.27, 1.42, and 1.54 at 40, 60, and 80 GHz, respectively.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

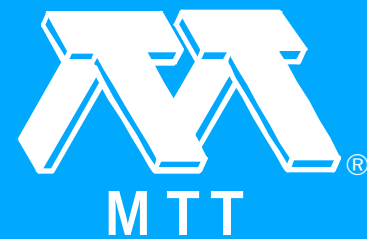
[Click on title for a complete paper.](#)



Abstracts

Contributors (Nov. 1976 [T-MTT])

M. Akaike, Y. Akaiwa, A.G. Cardiasmenos, A.A. Castro, A.C. Cheung, M.M. Chrepta, M.F. Chui, J.R. Cogdell, E. Constant, J. Edrich, D.L. English, R.D. Fairman, F.B. Fank, T.T. Fong, Y. Fukukawa, R.J. Hamilton, Jr., Y. Hirachi, J.P. Hollinger, T. Itoh, H. Jacobs, N. Kanmuri, H. Kato, A.R. Kaur, J.E. Kenney, J.E. Kietzer, R.M. Knox, E.L. Kollberg, N.B. Kramer, H.J. Kuno, D.H. Lee, B.J. Levin, P.T. Lewin, C.M. LoCascio, S.I. Long, Y. Matsuo, B.D. Moore, T. Nakagami, N. Nakajima, G. Novick, I. Ohtomo, M. Omori, C.R. Predmore, P.-A. Rolland, G. Salmer, N. Samardzija, M.V. Schneider, J.F. Shanley, W.W. Snell, Jr., I. Takase, F.J. Tischer, C.H. Townes, Y. Toyama, B.E. Troy, Jr., J.L. Vaterkowski, S.-Y. Wang, K.P. Weller, G.T. Wrixon, K. Yamamoto, R.S. Ying, K.S. Yngvesson and F.P. Ziolkowski. "Contributors (Nov. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): 888-895.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

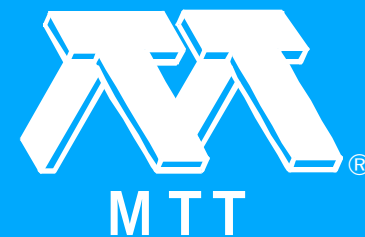
Click on title for a complete paper.



Abstracts

Annals of the IEEE (Advertisement) (Nov. 1976 [T-MTT])

"Annals of the IEEE (Advertisement) (Nov. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): b1-b4.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Join IEEE (Advertisement) (Nov. 1976 [T-MTT])

"Join IEEE (Advertisement) (Nov. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): b2-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

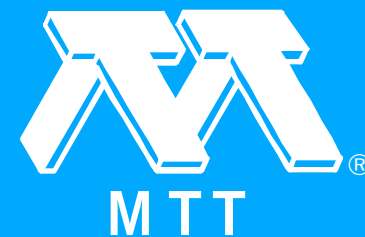
Click on title for a complete paper.



Abstracts

Back Cover (Nov. 1976 [T-MTT])

"Back Cover (Nov. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.11 (Nov. 1976 [T-MTT] (Special Issue on Millimeter Waves: Circuits, Components, and Systems)): b3-b4.



IEEE

Contents

Publications

Issues

Papers

Authors

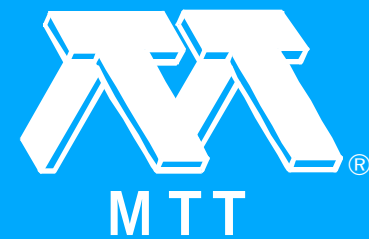
Click on title for a complete paper.



Abstracts

Front Cover (Dec. 1976 [T-MTT])

"Front Cover (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

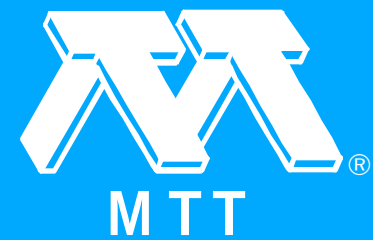
Click on title for a complete paper.



Abstracts

Table of Contents (Dec. 1976 [T-MTT])

"Table of Contents (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 900-900.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Editor's Overview (Dec. 1976 [T-MTT])

J.B. Horton. "Editor's Overview (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 901-901.

This issue of the Transactions is devoted to the 1976 International Microwave Symposium and, along with the Symposium Digest, serves as the archival record for the Symposium. The papers included in this issue are in all cases extensions of the summaries given in the Digest and cover more current information given at the presentations. Included here also are overview descriptions of the principal functions of the Symposium, the technical program, exhibits, social programs, and members of the committees responsible for the symposium. Our annual Awards Banquet is of particular interest since it is the one meeting at which we honor our outstanding contributors for the preceding year.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

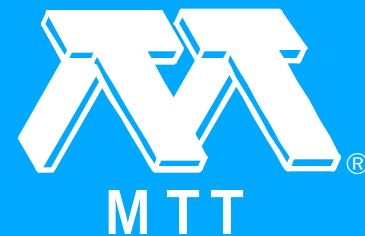


Abstracts

President's Message--A Quarter Century of Progress

G.P. Rodrigue. "President's Message--A Quarter Century of Progress." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 902-903.

The selection of Cherry Hill, NJ, near Philadelphia, PA, as the site of the 1976 International Microwave Symposium was prompted largely by the observance of the Bicentennial Year of the United States. In fact, this year's host committee adopted as their theme "The Bicentennial Symposium."



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The 1976 International Microwave Symposium (Dec. 1976 [T-MTT])

B.D. De Marinis and M. Caulton. "The 1976 International Microwave Symposium (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 904-909.

The 1976 MTT International Microwave Symposium was sponsored jointly by the North Jersey, Philadelphia, New York/Long Island, and New Jersey Coast chapters of MTT. The Symposium was held at the Cherry Hill Inn, Cherry Hill, NJ, on June 14-16, 1976. This year's Symposium was held just a few miles from Philadelphia, center of the nation's bicentennial celebration. The Symposium theme was appropriately selected as "The Bicentennial Symposium."



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

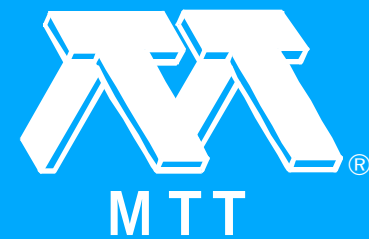
Click on title for a complete paper.



Abstracts

MTT Awards for 1975

"MTT Awards for 1975." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 910-912.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

The 1976 S-MTT National Lectureship

F. Sterzer. "The 1976 S-MTT National Lectureship." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 913-913.

Remarkable progress is being made in improving the performance of microwave solid-state devices used for signal processing and power generation. As a result, microwave solid-state amplifiers and oscillators are replacing low-noise and medium-power traveling-wave tubes (TWT's) and backward-wave oscillators (BWO's), and entirely new applications for microwave technologies are being created.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Acoustic Surface Waveguides and Comparisons with Optical Waveguides

A.A. Oliner. "Acoustic Surface Waveguides and Comparisons with Optical Waveguides." 1976 *Transactions on Microwave Theory and Techniques* 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 914-920.

An overview is presented first of the various types of waveguides for acoustic surface waves which have been studied theoretically and experimentally. Many of these waveguides resemble certain waveguiding structures proposed recently for use in integrated and fiber optics. The similarities and differences between corresponding waveguiding structures in the two different fields are then discussed from the standpoints of their properties and their mechanisms of operation.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Transferred Electron Logic Devices for Gigabit-Rate Signal Processing (Dec. 1976 [T-MTT])

C.L. Upadhyayula, R.E. Smith, J.F. Wilhelm, S.T. Jolly and J.P. Paczkowski. "Transferred Electron Logic Devices for Gigabit-Rate Signal Processing (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 920-926.

A new approach for designing transferred electron logic devices (TELD's) is presented and experimental results described. Electrolytic thinning of GaAs wafers has been used to maintain uniform thickness across the wafers and minimize variations in the device characteristics. TELD's have been fabricated and their performance studied. The devices are evaluated as threshold logic elements. The parameters studied are 1) switching characteristics, 2) shortest pulses that can be processed, and 3) device delay and dissipation. Experimentally, pulses as small as 80 ps wide have been processed through transferred electron logic gates (TELG's) with device delays of the order of 50 ps and delay-dissipation product of 5-10 pJ, which make them suitable for gigabit-rate signal processing.

Click on title for a complete paper.



Multiplexing and Demultiplexing Techniques with Gunn Devices in the Gigabit-Per-Second Range

K. Mause. "Multiplexing and Demultiplexing Techniques with Gunn Devices in the Gigabit-Per-Second Range." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 926-929.

In this paper a circuit is described which can process signals in the gigabit-per-second range for fast PCM applications. Such circuits will be interesting for future communication links, especially in connection with glass fibers. A monolithically integrated shift register with Gunn devices on GaAs is used. A circuit consisting of five stages is described and experimental results for bit rates near 2 Gbit/s are reported.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Diode Circuits for Pulse Regeneration and Multiplexing at Ultrahigh Bit Rates

U. Barabas, U. Wellens, U.K. Langmann and B.G. Bosch. "Diode Circuits for Pulse Regeneration and Multiplexing at Ultrahigh Bit Rates." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 929-935.

Clocked step-recovery diode (SRD) circuits are investigated for regenerating and multiplexing PCM-type signals in the range from 0.1 to a few gigabits per second. One regenerator type is particularly suited for operating with signals in the 1-V range, whereas a differential version employing a magic T was developed for handling signals of down to about 5 mV. By making use of line transformers as coupling networks, high-level versions have been cascaded. Experiments performed at 0.3 and 1 Gbit/s yielded voltage amplifications (peak amplitudes) of 2.5-5.5 for single stages, and insertion power gains of 7-11 dB for 2-3 stage cascades. Diode stages have also been used for multiplexing 4 and 2 individual bit streams to give a combined output signal at 1 and 2 Gbit/s, respectively. In a preliminary multiplexer experiment an output at 4.5 Gbit/s was obtained. Finally, possibilities are discussed for improving the performance of the regenerators/multiplexers and for their applications.

[Click on title for a complete paper.](#)

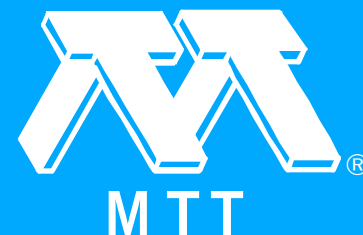


Abstracts

Microwave Power GaAs FET Amplifiers

H.Q. Tserng, V. Sokolov, H.M. Macksey and W.R. Wisseman. "Microwave Power GaAs FET Amplifiers." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 936-943.

The development of broad-band microwave amplifiers using state-of-the-art GaAs power FET's covering the 6-12-GHz frequency band is presented. A unique circuit topology incorporating an edge-coupled transmission line section for both impedance matching and input/output dc blocking is described. The microstrip circuit design of an X-band 1-W 22-dB-gain GaAs FET amplifier is also discussed. Microwave performance characteristics such as intermodulation, AM-to-PM conversion, and noise figure are included.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design, Fabrication, and Evaluation of BARITT Devices for Doppler System Applications

J.R. East, H. Nguyen-Ba and G.I. Haddad. "Design, Fabrication, and Evaluation of BARITT Devices for Doppler System Applications." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 943-948.

The properties of BARITT devices and their application in self-mixing Doppler systems are presented. A detailed comparison with IMPATT and Gunn devices indicates that the BARITT is superior in this particular application in many respects, particularly when prime power requirements are important. It is shown that, even though the BARITT device will not compete with existing devices with regard to power output and efficiency, it is the best available device for self-mixed Doppler radar applications and therefore should find wide usage in such applications. Simplified design criteria for BARITT devices are given and fabrication procedures for X-band devices with different operating voltages are described.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Millimeter-Wave Receivers with Subharmonic Pump

T.F. McMaster, M.V. Schneider and W.W. Snell, Jr.. "Millimeter-Wave Receivers with Subharmonic Pump." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 948-952.

Hybrid integrated downconverters which are pumped at half the frequency needed in a conventional downconverter have shown a conversion loss of 3 dB at 50 GHz and 6 dB at 100 GHz with a corresponding single-sideband (SSB) receiver noise figure of 7 dB at 50 GHz and 11 dB at 100 GHz. The circuits are linearly scaled from an optimized 5-GHz model. Each downconverter consists of a stripline conductor pattern, a novel transition from waveguide to stripline, and a Schottky-barrier diode pair. The circuits can be tuned over a useful RF bandwidth of 20 GHz, and they can be readily scaled to other frequency bands.

[Click on title for a complete paper.](#)



Abstracts

A 4-, 6-, 20-, and 30-GHz-Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (Dec. 1976 [T-MTT])

S. Shindo, I. Ohtomo and M. Koyama. "A 4-, 6-, 20-, and 30-GHz-Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 953-958.

This paper describes a four-frequency broad-band branching network for transferring microwave (4 and 6 GHz)- and millimeter-wave (20 and 30 GHz)-band signals between an antenna and transmitter-receivers in a satellite communication earth station. A filter for separating the microwave band from the millimeter-wave band employs a multilayer dielectric filter with matching layers and is included in the primary antenna feed system. The design method used for the multilayer dielectric filter and the construction and experimental results of the four-frequency broad-band branching network are described. Measurements show that its insertion loss, VSWR, and axial ratio are less than 1.2, 1.2, and 2.1 dB, respectively.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

The High-Power X-Band Planetary Radar at Goldstone: Design, Development, and Early Results

R. Hartop and D.A. Bathker. "The High-Power X-Band Planetary Radar at Goldstone: Design, Development, and Early Results." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 958-963.

Selected critical microwave components for a 400-kW very-long-pulse (several hours) X-band radar system are discussed from theoretical and practical viewpoints. Included are the special-sized waveguide and flanges, hybrid power combiner, couplers, switches, polarizer, rotary joints, feedhorn, and radome. The system is installed on the National Aeronautics and Space Administration/Jet Propulsion Laboratory 64-m-diam reflector antenna at Goldstone, CA.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

MLS--A Practical Application of Microwave Technology (Dec. 1976 [T-MTT])

R.M. Cox and J.R. Sebring. "MLS--A Practical Application of Microwave Technology (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 964-971.

A brief system overview of the U.S. candidate of the microwave landing system (NILS) is presented. Practical implementation of two types of ground antenna designs are presented, including measured data. Phased array designs are presented as high-performance implementations. Lens array designs have proven to be acceptable solutions for limited-scan medium-performance requirements.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Cryogenically Cooled GaAs FET Amplifier with a Noise Temperature Under 70 K at 5.0 GHz (Short Papers)

J. Pierro. "Cryogenically Cooled GaAs FET Amplifier with a Noise Temperature Under 70 K at 5.0 GHz (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 972-975.

A 4.5-5.0-GHz gallium arsenide field-effect transistor (GaAs FET) amplifier cryogenically cooled to approximately 70 K is described. A noise temperature of under 70 K is achieved over the band. Power gain for the two-stage amplifier is 20 dB. A noise analysis is performed to predict noise-temperature dependence on the temperature of the amplifier.

[Click on title for a complete paper.](#)



Abstracts

A Quasi-Linear Approach to the Design of Microwave Transistor Power Amplifiers (Short Papers)

K.L. Kotzebue. "A Quasi-Linear Approach to the Design of Microwave Transistor Power Amplifiers (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 975-978.

A method of large-signal transistor characterization and power amplifier design is described which allows the designer to predict the load and source terminations required for optimum added-power circuit efficiency, and to see graphically how efficiency and power gain change as a function of the load termination. Experimental results obtained with a 1-W bipolar junction transistor (BJT) amplifier at 1.3 GHz are presented.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides (Short Papers)

R. Rudokas and T. Itoh. "Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 978-981.

New directional couplers and ring resonators for millimeter-wave IC's were fabricated from the inverted strip (IS) dielectric waveguide. They were tested in the 75-80-GHz range, and the agreement between the theoretical and experimental results was found to be good.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Design, Implementation, and Performance Analysis of a Broad-Band V-Band Network Analyzer (Short Papers)

L.T. Yuan, G.M. Yamaguchi and J.E. Raue. "Design, Implementation, and Performance Analysis of a Broad-Band V-Band Network Analyzer (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 981-987.

A novel V-band network analyzer has been developed for circuit and/or device characterization in the 55-65-GHz frequency range. Swept frequency techniques are utilized to simplify device design and network analysis over a wide range of operating frequencies. The design, fabrication, and performance of the unit is presented along with an error analysis for verification of measurement accuracies.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Discussion of a 2-Gap Waveguide Mount (Short Papers)

R.L. Eisenhart. "Discussion of a 2-Gap Waveguide Mount (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 987-990.

An equivalent circuit is presented for a commonly used waveguide diode mount, providing the means for accurate theoretical analysis and design of components previously considered possible only by empirical means. Several applications are discussed and experimental confirmation is included for a variety of circuit configurations.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

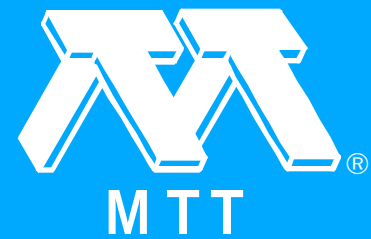


Abstracts

An Improved Solid-State Noise Source (Short Papers)

M. Kanda. "An Improved Solid-State Noise Source (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 990-995.

An improved solid-state noise source is discussed. By implementing such modifications as 1) heat sinking of a silicon avalanche noise diode, 2) proper dc RF decoupling, and 3) impedance matching, the stability of the National Bureau of Standards (NBS) solid-state noise source is improved significantly over that of typical commercial solid-state noise sources. These modifications, how they are implemented, and the resulting improvement in stability are described.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A New 34-GHz 3.5-mm Low-Cost Utility Coaxial Connector Featuring Low Leakage, Low Standing-Wave Ratio, and Long Life (Short Papers)

S.F. Adam, G.R. Kirkpatrick, N.J. Sladek and S.T. Bruno. "A New 34-GHz 3.5-mm Low-Cost Utility Coaxial Connector Featuring Low Leakage, Low Standing-Wave Ratio, and Long Life (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 995-997.

A utility 3.5-mm connector was designed to cover frequencies above 18 GHz in coaxial transmission lines. The superior cost/performance characteristics of this new connector are presented.



Contents

Publications

Issues

Papers

Authors

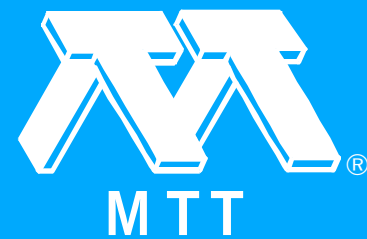
Click on title for a complete paper.



Abstracts

Contributors (Dec. 1976 [T-MTT])

U. Barabas, D.A. Bathker, B.G. Bosch, R.M. Cox, J.R. East, G.I. Haddad, R. Hartop, S.T. Jolly, M. Koyama, U.K. Langmann, H.M. Macksey, K. Mause, T.F. McMaster, H. Nguyen-Ba, I. Ohtomo, A.A. Oliner, J.P. Paczkowski, M.V. Schneider, J.R. Sebring, S. Shindo, R.E. Smith, W.W. Snell, Jr., V. Sokolov, H.Q. Tserng, C.L. Upadhyayula, U. Wellens, J.F. Wilhelm and W.R. Wisseman. "Contributors (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 997-1001.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

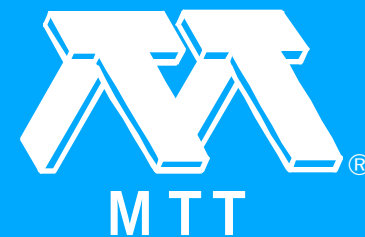
Click on title for a complete paper.



Abstracts

Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-24, 1976

*"Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-24, 1976."
1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976
Symposium Issue)): i-xiv.*



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

IEEE Press Books Coupon (Dec. 1976 [T-MTT])

"IEEE Press Books Coupon (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): b1-b4.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Join IEEE (Advertisement) (Dec. 1976 [T-MTT])

"Join IEEE (Advertisement) (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): b2-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

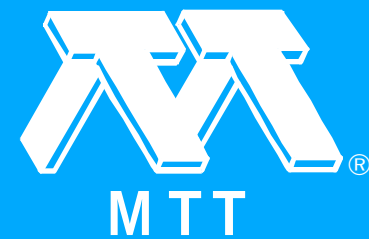
Click on title for a complete paper.



Abstracts

Back Cover (Dec. 1976 [T-MTT])

"Back Cover (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): b3-b4.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

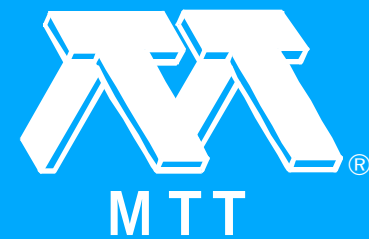
Click on title for a complete paper.



Abstracts

Front Cover (Jan. 1977 [T-MTT])

"Front Cover (Jan. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



A Legendre Approximation Method for the Circular Microstrip Disk Problem

S. Coen and G.M.L. Gladwell. "A Legendre Approximation Method for the Circular Microstrip Disk Problem." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 1-6.

The quasi-static solution for the circular microstrip disk is studied using a Galerkin solution to the Fredholm integral equation of the first kind derived by using the Green's function approach. The basis functions are modified Legendre polynomials combined with a reciprocal square root to provide the correct singularity in charge density at the edge of the disk. The integrals involving the singular part of the Green's function are evaluated exactly, the remainder by using Gaussian quadrature. The method is compared in computational efficiency with recent methods based either on a Galerkin approach in the spectral domain, or the use of dual integral equations. Numerical results are given for charge distribution and capacitance; they are compared to exact results and those obtained by others, and the limitations of those methods are discussed. Closed form expressions are given for the capacitance of a disk based on two simple charge distributions.



Abstracts

Coupled Transmission Lines

M. Kumar and B.N. Das. "Coupled Transmission Lines." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 7-10.

An analysis of coupling between a stripline and a rectangular waveguide is presented. Coupling is through small apertures in the form of a circular hole or a narrow rectangular slot. A closed form expression for the normalized field distribution in the stripline, required for the purpose of analysis, is also derived. The theoretical results show good agreement with the experimental results.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Analysis of Guided Waves Along the Cladded Optical Fiber: Parabolic-Index Core and Homogeneous Cladding

M. Hashimoto, S. Nemoto and T. Makimoto. "Analysis of Guided Waves Along the Cladded Optical Fiber: Parabolic-Index Core and Homogeneous Cladding." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 11-17.

This paper is concerned with the determination of the propagation characteristics of modes in the cladded optical fiber which consists of a parabolic-index core and a uniform cladding. The propagation constants of propagating modes are obtained analytically. The results are given in simple form. The asymptotic forms of the propagation constants are also given, which are valid for lower order mode propagation.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Modal Theory of Spatially Periodic Media

R.-S. Chu and J.A. Kong. "Modal Theory of Spatially Periodic Media." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 18-24.

The modal theory is developed for a slab periodic medium bounded by different media on both sides. Dispersion analysis is carried out for the various cases. Wave amplitudes are determined from boundary conditions for electromagnetic field components. The results are compared and reduced to the well-known theories under simplified conditions. Analysis and calculations are aimed at applications to grating couplers, electrooptical modulators, and distributed feedback systems in integrated optics.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Generalized Analysis of Parallel Two-Post Mounting Structures in Waveguide

O.L. El-Sayed. "Generalized Analysis of Parallel Two-Post Mounting Structures in Waveguide." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 24-33.

An analytical expression is obtained for the reactance of parallel two-post mounting structures having unsymmetrical strip and gap positions and different strip and gap widths. An equivalent circuit is derived and analytical expressions for its components established giving a physical insight into the problem of coupling between the two gaps. The analysis is based on deriving a variational expression for the structure reactance from the boundary conditions at the structure position. The theoretical results are experimentally verified for a wide range of coupling conditions. Exploitation of this model for the design of wide-band varactor-tuned negative resistance oscillators and multidiode parallel mounts in general is discussed.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Unified Approach to the Derivation of Variational Expression for Electromagnetic Fields

K. Morishita and N. Kumagai. "Unified Approach to the Derivation of Variational Expression for Electromagnetic Fields." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 34-40.

A unified procedure to derive the variational expressions for electromagnetic field problems is presented. It is shown that the variational expressions for a variety of electromagnetic parameters such as, for instance, a resonant frequency, a propagation constant, and an impedance matrix, can be formulated systematically all from "the principle of least action" point of view. It is pointed out that the Maxwell's equations themselves can also be derived from the least action principle.

[Click on title for a complete paper.](#)



Abstracts

Long-Wavelength Analysis of Plane Wave Irradiation of an Ellipsoidal Model of Man

H. Massoudi, C.H. Durney and C.C. Johnson. "Long-Wavelength Analysis of Plane Wave Irradiation of an Ellipsoidal Model of Man." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 41-46.

Expressions are derived for the induced electric fields in an ellipsoidal model of man, and experimental animals irradiated by an electromagnetic (EM) plane wave when the wavelength is long compared to the dimensions of the ellipsoid. Calculations of the power absorbed by an ellipsoidal model of man are given for six different orientations of the ellipsoid with respect to the incident plane wave field vectors. The results show that the induced fields and the absorbed power in the ellipsoid are strong functions of frequency, size, and orientation with respect to the incident EM field vectors. The results for the ellipsoidal model of man are also compared with those of the prolate spheroidal model.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Long-Wavelength Electromagnetic Power Absorption in Ellipsoidal Model of Man and Animals

H. Massoudi, C.H. Durney and C.C. Johnson. "Long-Wavelength Electromagnetic Power Absorption in Ellipsoidal Model of Man and Animals." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 47-52.

A previously developed long-wavelength analysis is applied to ellipsoidal models of humans and experimental animals to obtain the distribution of tissue power absorption and average power absorption for different frequencies and orientations of the model with respect to the field vectors. Curves showing the distribution of absorbed power inside the model, and the average absorbed power versus frequency are presented for several species. Comparisons of calculated data with preliminary experimental data on monkeys are given. The theoretical results show that the power absorption in the ellipsoidal model is a strong function of frequency and orientation with respect to the incident plane wave field vectors. The quantitative data presented here are valuable for estimating tissue electromagnetic (EM) power absorption in experimental animals and humans. These data may also be used in extrapolating EM induced effects measured in animals to those expected in humans.

[Click on title for a complete paper.](#)



Abstracts

New Method for Computing the Resonant Frequencies of Dielectric Resonators (Short Papers)

T. Itoh and R.S. Rudokas. "New Method for Computing the Resonant Frequencies of Dielectric Resonators (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 52-54.

A new method is develop for accurately predicting resonant frequencies of dielectric resonators used in microwave circuits. By introducing an appropriate approximation in the field distribution outside the resonator an analytical formulation becomes possible. Two coupled eigenvalue equations thus derived are subsequently solved by a numerical method. The accuracy of the results computed by the present method is demonstrated by comparison with previously published data.



[Contents](#)

[Publications](#)

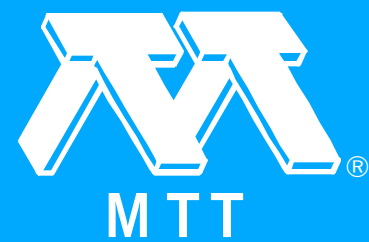
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Conversion Loss Limitations on Schottky-Barrier Mixers (Short Papers)

M. McColl. "Conversion Loss Limitations on Schottky-Barrier Mixers (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 54-59.

A new set of criteria involving diode area, material parameters, and temperature is introduced for the Schottky-barrier mixer diode that must be considered if its usage is to be extended to the submillimeter wavelength region or cryogenically cooled to reduce the noise contribution of the mixer. It has been well established that, in order to reduce the parasitic loss as the frequency is increased, it is necessary to reduce the area of the diode. What has not been analyzed heretofore is the effect that a reduction in diode area can have on the intrinsic conversion loss $L_{\text{sub } 0}$ of the diode resulting from its nonlinear resistance. This analysis focuses on the competing requirements of impedance matching the diode to its imbedding circuit and the finite dynamic range of the nonlinear resistance. As a result, $L_{\text{sub } 0}$ can increase rapidly as the area is reduced. Results are first expressed in terms of dimensionless parameters, and then some representative examples are investigated in detail. The following conclusions are drawn: a large Richardson constant extends the usefulness of the diode to smaller diameters, and hence, shorter wavelengths; cooling a thermionic emitting diode can have a very detrimental effect on $L_{\text{sub } 0}$; impedance mismatching is found, in general, to be a necessity for minimum conversion loss; and large barrier heights are desirable for efficient tunnel emitter converters.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Mode Classification of a Triangular Ferrite Post for Y-Circulator Operation (Short Papers)

Y. Akaiwa. "Mode Classification of a Triangular Ferrite Post for Y-Circulator Operation (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 59-61.

Resonance modes of a triangular ferrite post are classified into those which correspond to each eigen-excitation in order to select operation modes of the Y circulator. Resonance frequency splits for two rotational phase eigen-excitations are also discussed.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue (Short Papers)

T.-K. Wu and L.L. Tsai. "Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 61-65.

The electromagnetic field induced inside arbitrary cross-sectioned cylinders of biological tissue is analyzed by integral equation and moment method techniques. A TM or TE plane wave incidence is assumed, and the cylinders consist of bone or muscle and may be multilayered. The integral equations are of the surface type, and are derived via vector Green's theorem and boundary conditions. Surface and interior fields for both a one-layer and two-layer circular cylinder are found to have excellent agreements with the exact eigenfunction expansion results, thus validating the numerical method. Extensive results are presented for arbitrary cross-section cylinders, with among these an arm model composed of an elliptical outer muscle layer and a circular bone at the center. The field plots throughout the cylinder interior thus obtained should be useful in diagnostics of microwave hazards, particularly in predictions of the so-called "hot spots."

[Click on title for a complete paper.](#)



Abstracts

Field and Power Density Distributions of the Dipolar Modes in a Partially Filled Cylindrical Plasma Waveguide (Short Papers)

G.L. Yip and S. Le-Ngoc. "Field and Power Density Distributions of the Dipolar Modes in a Partially Filled Cylindrical Plasma Waveguide (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 65-70.

The field and power density distributions for the dipolar modes in a partially filled plasma waveguide have been studied at operating points in the vicinity of the plasma, the surface wave, and the gyro resonant frequencies. Results of both the quasi-static and exact analyses are presented. From the field distributions, the behavior of electrons at each resonance is clearly explained.



IEEE

[Contents](#)

[Publications](#)

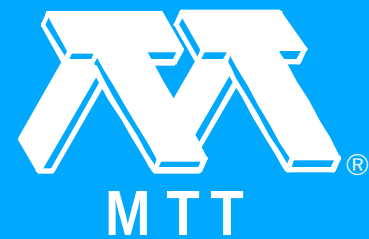
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Guided Waves on a Flattened Sheath Helix (Letters)

R.K. Arora, B. Bhat and S. Aditya. "Guided Waves on a Flattened Sheath Helix (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 71-72.

The "flattened sheath helix" considered in this letter consists of a pair of parallel unidirectionally conducting screens conducting in different directions and having different dielectric media in the sandwiched and outer regions. Special cases are 1) the normal flattened helix in which the inner medium is a solid dielectric and the outer medium is air, and 2) the inverted flattened helix with the two media interchanged. The guiding properties of such structures are studied.

Click on title for a complete paper.



Abstracts

Influence of Spatial Dispersion of the Shield Transfer Impedance of a Braided Coaxial Cable (Letters)

J.R. Wait and D.A. Hill. "Influence of Spatial Dispersion of the Shield Transfer Impedance of a Braided Coaxial Cable (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 72-74.

The effect of the dependence of the braid transfer impedance on the propagation constant is discussed for a coaxial cable located in a circular tunnel.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

MIC Coupler with Improved Directivity Using Thin-Film Bi/sub 2/O/sub 3/ Overlay (Letters)

R.N. Karekar and M.K. Pande. "MIC Coupler with Improved Directivity Using Thin-Film Bi/sub 2/O/sub 3/ Overlay (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 74-75.

Results of the effect of thin-film Bi/sub 2/O/sub 3/ overlay on a directional coupler at X band are reported. Directivity between 14 and 23 dB was obtained over the band.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Symmetry Experiments with Four-Mesa IMPATT Diodes (Letters)

C.T. Rucker, G.N. Hill, N.W. Cox and J.W. Amoss. "Symmetry Experiments with Four-Mesa IMPATT Diodes (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 75-76.

Experiments with four-mesa silicon p+-n-n+ IMPATT diodes have shown power saturation and reduced efficiency when connected and packaged in electrically asymmetrical configurations. The need for electrical symmetry is illustrated by experiments wherein seemingly trivial asymmetries caused severe saturation of the power output.

[Click on title for a complete paper.](#)



Abstracts

A New Edge-Mode Isolator in the Very High Frequency Range (Comments)

*R.A. Craig. "A New Edge-Mode Isolator in the Very High Frequency Range (Comments)."
1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 76-77.*

Test data taken on production models of fixed-tuned isolators operating in the 225-400-MHz frequency range are presented for comparison to those given in the referenced paper. Better electrical performance of this isolator as well as a smaller size compared to the edge-mode unit is shown.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

CIA (Circulator Analysis) (Computer Program Descriptions)

R.P. Meixner and J.P. Lawrence. "CIA (Circulator Analysis) (Computer Program Descriptions)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 77-78.

Frequency analysis and optimization of three-port waveguide junction circulators.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Transmission-Line Transformation Between Arbitrary Impedances (Comments)

M.H.N. Potok. "Transmission-Line Transformation Between Arbitrary Impedances (Comments)." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 77-77.

The solution given by the author of the above letter, for the characteristic impedance of the line transformer, has been given before (see H. Jasik, Antenna Engineering Handbook, McGraw-Hill, 1961, paragraph 31.3, p. 9). Jasik also gives the correct length of the transformer whereas Milligan and also apparently Day (IEEE Trans. Microwave Theory Tech., vol. MTT-23, p. 772, 1975) give the distance between load and source impedance along the impedance circle, which is not the length of the desired transformer since the transformer should produce at the source the conjugate of the source impedance if matching, which presumably means power matching is desired. Thus in the expression given by Milligan for length, $X/\text{sub } 2$ should be given as $-X/\text{sub } 2$, which will now agree with Jasik's expression.

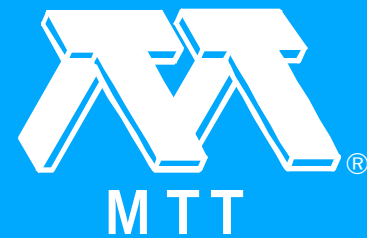
[Click on title for a complete paper.](#)



Abstracts

Contributors (Jan. 1977 [T-MTT])

Y. Akaiwa, R.-S. Chu, S. Coen, B.N. Das, C.H. Durney, O.L. El-Sayed, G.M.L. Gladwell, M. Hashimoto, T. Itoh, C.C. Johnson, J.A. Kong, N. Kumagai, M. Kumar, S. Le-Ngoc, T. Makimoto, H. Massoudi, M. McColl, K. Morishita, S. Nemoto, R.S. Rudokas, L.L. Tsai, T.-K. Wu and G.L. Yip. "Contributors (Jan. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): 79-82.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

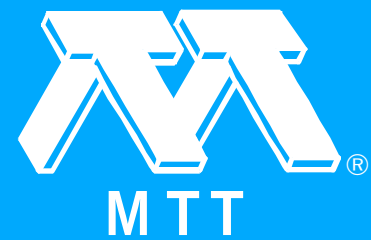
Click on title for a complete paper.



Abstracts

IEEE Membership (Advertisement) (Jan. 1977 [T-MTT])

"IEEE Membership (Advertisement) (Jan. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): b1-b3.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

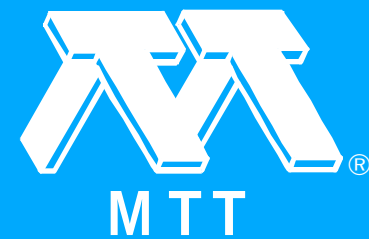
Click on title for a complete paper.



Abstracts

Back Cover (Jan. 1977 [T-MTT])

"Back Cover (Jan. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.1 (Jan. 1977 [T-MTT]): b2-b3.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Feb. 1977 [T-MTT])

"Front Cover (Feb. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Studies in Overhead Wire--Goubau Line Above Ground

J. Chiba. "Studies in Overhead Wire--Goubau Line Above Ground." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 83-93.

The transition theory which Kikuchi proposed first was improved and expanded in the range of the Sommerfeld line above ground and even the Goubau line (G line) above ground. Then it was proved by the experiment with the aid of the G line. The solution for the electromagnetic field produced by an overhead wire is derived using Maxwell's equations and treating the situation as a boundary value problem. In particular, the integrals which are caused by the finite conductivity of the earth and which are responsible for the distribution of the fields in the neighborhood of the surface of the earth are evaluated by means of the saddle-point method. Based on the field theory described above, the primary transmission line constants of the G line above ground (R , L , C , and G) and the secondary transmission line constants ($\gamma_0 = \alpha_0 + j\beta_0$ and Z_0) were obtained, and then the equivalent circuit for the G line above ground was given. The behavior of the line from an engineering standpoint is now completely determined by the usual simple circuit theory. The transition of the G line from a ground return transmission line of a surface-wave transmission line was proved experimentally.

[Click on title for a complete paper.](#)



Abstracts

Experimental Studies of the Losses and Radiations Due to Bends in the Goubau Line

J. Chiba. "Experimental Studies of the Losses and Radiations Due to Bends in the Goubau Line." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 94-100.

The losses due to the bending of the Goubau line (G line) are determined by experiments. The losses are measured for wide ranges of radius of curvature, bending angle, and the transmission frequency. These three variables determine the losses. It is believed that radiation from a surface-wave transmission line system occurs mainly from the bends and horn in the transmission line system. Directional patterns of such radiation were obtained from measurements.



IEEE

Contents

Publications

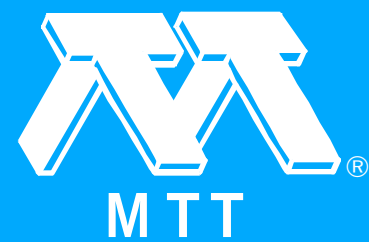
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

New Edge-Guided Mode Isolator Using Ferromagnetic Resonance Absorption (Feb. 1977 [T-MTT])

T. Noguchi. "New Edge-Guided Mode Isolator Using Ferromagnetic Resonance Absorption (Feb. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 100-106.

A new edge-guided (EG) mode isolator is described in which nonreciprocal attenuation is due to the ferromagnetic resonance absorption caused by a strong dc magnetic field applied locally at the short-circuited edge of a ferrite microstrip line. From modal analysis, including the magnetic losses of ferrite substrate and the transversal variation of the internal dc magnetic field, the dominant EG mode has been proved to propagate along not only the conventional ferrite stripline but also a stripline with one edge short circuited to the ground. Dispersion relations and RF electric field distribution have been calculated numerically, and the upper limit of isolator bandwidth has been discussed with several design parameters. Based on the results, a practical EG mode resonance isolator has been successfully developed, which has more than 25 dB isolation loss and less than 1.0 dB insertion loss over a 4.0-8.0-GHZ frequency band throughout the - 10/spl deg/C-+60/spl deg/C temperature range,

Click on title for a complete paper.



Abstracts

A Method for Calculating the Frequency-Dependent Properties of Microstrip Discontinuities

W. Menzel and I. Wolff. "A Method for Calculating the Frequency-Dependent Properties of Microstrip Discontinuities." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 107-112.

A method is described for calculating the dynamical (frequency-dependent) properties of various microstrip discontinuities such as unsymmetrical crossings, T junctions, right-angle bends, impedance steps, and filter elements. The method is applied to an unsymmetrical T junction with three different linewidths. Using a waveguide model with frequency-dependent parameters, a field matching method proposed by Kuhn is employed to compute the scattering matrix of the structures. The elements of the scattering matrix calculated in this way differ from those derived from static methods by a higher frequency dependence, especially for frequencies near the cutoff frequencies of the higher order modes on the microstrip lines. The theoretical results are compared with measurements, and theory and experiment are found to correspond closely.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Resonance Measurement of Single- and Coupled-Microstrip Propagation Constants

V. Rizzoli. "Resonance Measurement of Single- and Coupled-Microstrip Propagation Constants." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 113-120.

The application of resonant techniques to the measurement of microstrip-line propagation constants is described. A review of the basic theory is given first, showing the great generality of the underlying principle. Then the particular case of a transmission line is discussed and it is shown that excellent theoretical accuracy can be achieved despite the simplicity of the procedure and the mathematics involved. Both the cases of nondispersive and dispersive propagation are covered. Finally, it is shown that the basic method can be extended to the case of symmetrical coupled lines in a straightforward way. Some results concerning practical microstrip lines are presented and compared with theoretical data.

[Click on title for a complete paper.](#)



Abstracts

A Dual Mode Tuning Circuit for Microwave Transistor Oscillators

R.G. Rogers. "A Dual Mode Tuning Circuit for Microwave Transistor Oscillators." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 120-127.

A two-port circuit adjusting both even and odd mode fields, with orthogonal mode adjustment, can be used as an embedding circuit for a microwave transistor oscillator. The circuit, analyzed in TEM line, may also be realized in any other form of transmission line geometry, including two coexistent modes in a cavity. The resulting oscillator is stable, has low FM noise, and is readily tunable. Analyses of the tuning circuit and oscillator are presented, along with some experimental results and a discussion of methods using other than TEM transmission lines to produce the even and odd modes.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Large-Signal Theory for Broad-Band Frequency Converters Using Abrupt Junction Varactor Diodes

F. Abdullah and F.M. Clayton. "A Large-Signal Theory for Broad-Band Frequency Converters Using Abrupt Junction Varactor Diodes." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 127-136.

A multicurrent design theory is developed for square law varactor frequency converters having a pump frequency much greater than the input signal frequency. Efficiency limits are derived for upconverter operation, showing in particular that any broad-band mixer, where all sideband currents around the pump frequency are allowed to flow, must involve a conversion loss of at least 4.4 dB. Consideration of circuit interactions and their effect on upconverter responses leads to a design suitable for systems use in the 5.9-6.4 GHz communication band. Experimental studies of a microstrip realization of this mixer show close agreement with theoretical predictions of its behavior, including a conversion loss less than 7.5 dB over an operating range of 1.3 GHz.

[Click on title for a complete paper.](#)



Abstracts

The Capacitances and Surface Charge Distributions of a Shielded Unbalanced Pair (Short Papers)

J.D. Nordgard. "The Capacitances and Surface Charge Distributions of a Shielded Unbalanced Pair (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 137-140.

The capacitance matrix of an unbalanced shielded pair cable is determined theoretically. The wires of the cable are asymmetrically located about the axis of the shield and have different radii; however, the axes of the wires are restricted to lie on a line passing through the axis of the shield. The elements of the capacitance matrix are determined as particular elements of the inverse of a truncated infinite matrix, which relates the Fourier coefficients of the surface charge densities on the inner conductors and the shield to the applied voltage excitations on the cable conductors. The capacitances and surface charge distributions are evaluated numerically for a shielded pair cable, which, due to inaccuracies in the cable manufacturing processes, has one wire with a smaller or larger radius than the other wire of the pair and/or has one wire closer to or farther from the axis of the shield than the other wire of the pair.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Equivalent Circuits and Characteristics of Inhomogeneous Nonsymmetrical Coupled-Line Two-Port Circuits (Short Papers)

V.K. Tripathi. "Equivalent Circuits and Characteristics of Inhomogeneous Nonsymmetrical Coupled-Line Two-Port Circuits (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 140-142.

The equivalent circuits and the properties of nonsymmetrical coupled-line two-port prototype circuits in an inhomogeneous medium are presented. Potential applications include both symmetrical and non-symmetrical circuits for narrow- and wide-band applications as filters and impedance transformers.

[Click on title for a complete paper.](#)



Abstracts

Spectral Domain Solution of Arbitrary Coplanar Transmission Line with Multilayer Substrate (Short Papers)

J.B. Davies and D. Mirshekar-Syahkal. "Spectral Domain Solution of Arbitrary Coplanar Transmission Line with Multilayer Substrate (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 143-146.

A hybrid mode analysis is presented for a multilayer dielectric within a rectangular conducting box. An arbitrary set of conductors may be distributed along the lower surface of the top layer, so that single or coupled forms may be analyzed of slot line, microstrip, or coplanar waveguide. The analysis combines a transfer-matrix approach with the spectral domain method to give a versatile and efficient solution. CPU time on an IBM 360/65 is about 1 s per layer of substrate, for a single slot or strip, at one frequency.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Application of MIC Formulas to a Class of Integrated-Optics Modulator Analyses: A Simple Transformation (Short Papers)

E. Yamashita, K. Atsuki and T. Mori. "Application of MIC Formulas to a Class of Integrated-Optics Modulator Analyses: A Simple Transformation (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 146-150.

Modulation electric fields in a class of planar, lumped-parameter circuit or traveling-wave-type electrooptic modulators in integrated optics are analyzed by applying a simple transformation of variables to presently available formulas on microwave integrated circuits (MIC's). Example calculations are shown.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Central Metal Post in Stripline Circulators (Short Papers)

A.M. Hussein, M.M. Ibrahim and S.E. Youssef. "Central Metal Post in Stripline Circulators (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 150-152.

A central metal post of a suitable radius increases the bandwidth of a 3-port stripline circulator considerably. It helps to realize a compact circulator and gives more flexibility in the design.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Full-Band Low-Loss Continuous Tracking Circulation in K Band (Short Papers)

J.G. de Koning, R.J. Hamilton, Jr. and T.L. Hierl. "Full-Band Low-Loss Continuous Tracking Circulation in K Band (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 152-155.

The continuous tracking principle is applied to the design of a wide-band Y-junction stripline circulator for the 18-26.5-GHz frequency band. Near octave low-loss and high isolation performance is demonstrated without the need for repeated design cycles. Design data and construction details are presented.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Microwave Properties of Lithium Ferrites (Short Papers)

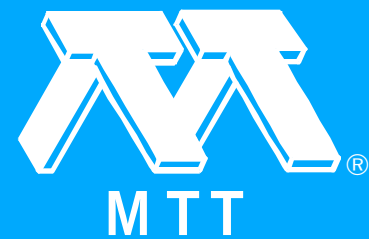
J.J. Green and H.J. Van Hook. "Microwave Properties of Lithium Ferrites (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 155-159.

Low-power loss and high-power threshold properties have been measured between 3.0 and 17.2 GHz on three Li-Ti ferrite compositions of magnetizations 1250, 2250, and 3600 G. In each composition the use of cobalt resulted in a linear increase in $\mu_{\text{sub } 0}$ and $h_{\text{sub crit}}$. Temperature measurements were performed at 9.2 GHz on the 2250-G material. An illustration of how the data might be applied is given.

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Approximate Determination of the Characteristic Impedance of the Coaxial System Consisting of a Regular Polygon Concentric with a Circle (Letters)

P.A.A. Laura and L.E. Luisoni. "Approximate Determination of the Characteristic Impedance of the Coaxial System Consisting of a Regular Polygon Concentric with a Circle (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 160-161.

This letter gives an approximate method for the determination of the characteristic impedance of an important family of coaxial systems. The approach makes use of the method of conformal mapping, and it has already been used in other technical applications by the first author and his associates.

[Click on title for a complete paper.](#)



Abstracts

An Application of Conformal Mapping to the Determination of the Characteristic Impedance of a Class of Coaxial Systems (Letters)

P.A.A. Laura and L.E. Luisoni. "An Application of Conformal Mapping to the Determination of the Characteristic Impedance of a Class of Coaxial Systems (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 162-163.

Numerical results for the characteristic impedance of the coaxial system consisting of a regular polygon concentric with a circle are presented. In the case of a square concentric with a circle the results are in excellent agreement with those obtained by Riblet.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Analysis of Straight Tapered Microstrip Transmission Lines---ASTMIC (Computer Program Descriptions)

K.N.S. Rae, V. Mahadevan and S.P. Kosta. "Analysis of Straight Tapered Microstrip Transmission Lines---ASTMIC (Computer Program Descriptions)." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 164-164.

The program ASTMIC calculates the input impedance of straight tapered microstrip transmission lines terminated with arbitrary loads.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

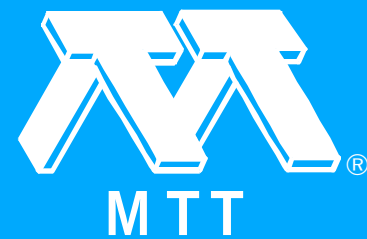
Click on title for a complete paper.



Abstracts

Contributors (Feb. 1977 [T-MTT])

F. Abdullah, K. Atsuki, J. Chiba, F.M. Clayton, J.B. Davies, J.G. de Koning, R.J. Hamilton, Jr., T.L. Hierl, A.M. Hussein, M.M. Ibrahim, W. Menzel, D. Mirshekar-Syahkal, T. Mori, T. Noguchi, J.D. Nordgard, V. Rizzoli, R.G. Rogers, V.K. Tripathi, H.J. Van Hook, I. Wolff, E. Yamashita, S.E. Youssef and J.J. Green. "Contributors (Feb. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): 165-167.



IEEE

Contents

Publications

Issues

Papers

Authors

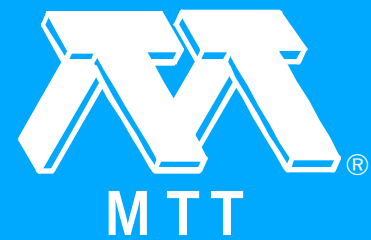
Click on title for a complete paper.



Abstracts

IEEE Membership (Advertisement) (Feb. 1977 [T-MTT])

"IEEE Membership (Advertisement) (Feb. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): b1-b3.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

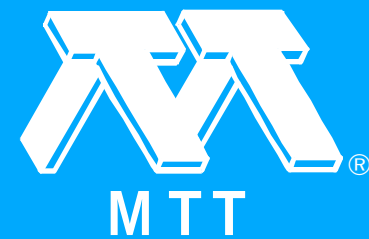
Click on title for a complete paper.



Abstracts

Back Cover (Feb. 1977 [T-MTT])

"Back Cover (Feb. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.2 (Feb. 1977 [T-MTT]): b2-b3.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Front Cover (Mar. 1977 [T-MTT])

"Front Cover (Mar. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analysis of Waveguide Post Configurations: Part I--Gap Immittance Matrices

J.S. Joshi and J.A.F. Cornick. "Analysis of Waveguide Post Configurations: Part I--Gap Immittance Matrices." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 169-173.

The reaction concept in electromagnetics is used to analyze two useful kinds of post-mounting structure in rectangular waveguide. The first is the general multiple-post arrangement with a gap in each post, the second being a single post with multiple gaps. The analysis derives equations for calculating the elements of the gap immittance matrices for these two structures.

[Click on title for a complete paper.](#)



Abstracts

Analysis of Waveguide Post Configurations: Part II--Dual-Gap Cases

J.S. Joshi and J.A.F. Cornick. "Analysis of Waveguide Post Configurations: Part II--Dual-Gap Cases." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 173-181.

The analysis given in Part I is applied to two particular structures of general interest. The first is the two-post case, each post having one gap, and the second is the single-post with two gaps. The impedance or admittance matrix elements are used to construct the gap port networks which are then used to obtain the waveguide obstacle representations. These latter representations are used to obtain experimental confirmation of the analysis.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Double Circulation Frequency Operation of Stripline Y-Junction Circulators

T. Nagao. "Double Circulation Frequency Operation of Stripline Y-Junction Circulators." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 181-189.

The double circulation frequency operation (DCFO) of stripline Y-junction circulators loaded with dielectric-ferrite composites is presented. The dielectric-ferrite composite is made by combining a dielectric puck with a ferrite ring. The DCFO is identified in the mode chart, and it is found that mode 1 and mode 1A, according to Davies and Cohen, play their respective roles in the circulation. Theoretical results of perfect circulation are derived, applying Bosma's Green's function to the junction mode impedances, and then, design and operation of the DCFO are studied. Finally, experimental examples are presented.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

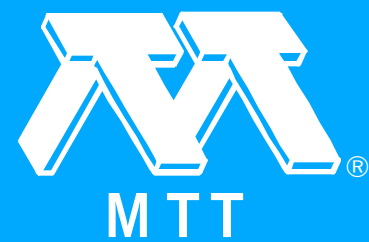
Waveguide Subsidiary Resonance Ferrite Limiters

J. Helszajn, R.W. Murray, E.G.S. Davidson and R.A. Suttie. "Waveguide Subsidiary Resonance Ferrite Limiters." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 190-196.

This paper gives an analysis of E-plane waveguide ferrite limiters under subsidiary resonance conditions. Since Suhl's high-power damping term is power sensitive, it is necessary to evaluate it in every part of the ferrite structure before forming the dispersion relation. This is done in this paper by dividing the waveguide assembly in small elements transverse and parallel to the direction of propagation and calculating it in each region. The dispersion relation in each section along the direction of propagation is then formed in conjunction with the appropriate Suhl damping constant by establishing the transverse resonance condition. The total output power is obtained by forming the input/output relation for each section one at a time along the structure. The theory has been found useful in describing both the onset of limiting and the dynamic range of a ferrite limiter mounted on one of the narrow walls of the waveguide.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Dispersion Characteristics of the Dipolar Modes in a Waveguide Partially Filled with a Magnetized Ferrite Column

S. Le-Ngoc, G.L. Yip and S. Nemoto. "Dispersion Characteristics of the Dipolar Modes in a Waveguide Partially Filled with a Magnetized Ferrite Column." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 197-209.

The electromagnetic wave propagation in a partially filled ferrite waveguide is studied by using both the quasi-static and exact analyses. Here, the ferrite is assumed to be lossless and completely magnetized. The cutoff and resonant frequencies are examined analytically to predict all possible modes, and numerical methods are then used to study the complete dispersion characteristics. Because of the geometrical generality of the problem, the fully filled ferrite waveguide and the ferrite column in free space can be considered as special cases. The classifications of the modes existing in various parametric regions are clarified. The effects of the ratio of the ferrite-to-waveguide radius and the dc axial magnetic field on the behaviors of the modes are studied and discussed. For large values of the phase constant, asymptotic dispersion equations can be derived, and turn out to be the same in both analyses. A comparison between the two sets of results is also made to examine the validity of the quasi-static analysis. The method of analysis used in this present paper is similar to the one used in the corresponding paper on partially filled plasma waveguides published previously.

Click on title for a complete paper.



Abstracts

Interaction of Signals in Ferromagnetic Microwave Limiters

P.R. Emtage and S.N. Stitzer. "Interaction of Signals in Ferromagnetic Microwave Limiters." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 210-213.

A weak secondary signal is partially absorbed in a ferromagnetic microwave limiter that is saturated by a strong primary signal; the absorption is greatest when the two signals are close in frequency. The width of this absorption is determined here, and is found to be proportional to the spin wave linewidth and to the square root of the excess power in the primary signal. The theory of this effect is presented and is found to agree well with experiment.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computer-Aided Synthesis of the Optimum Refractive-Index Profile for a Multimode Fiber

K. Okamoto and T. Okoshi. "Computer-Aided Synthesis of the Optimum Refractive-Index Profile for a Multimode Fiber." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 213-221.

In a multimode optical fiber, the so-called multimode dispersion (mode-delay difference) is the principal cause that widens the transmitted pulse. The multimode dispersion can be controlled by the refractive-index profile. However, the optimum profile that minimizes the multimode dispersion has not yet been determined. This paper describes the computer-aided trial-and-error synthesis of the optimum refractive-index profile. It is shown that the group delay is reduced to about 10^{-3} times the value obtained with the uniform core fiber, to about 10 ps/km. This value is comparable to the material dispersion obtained with an ordinary fused-silica fiber and a typical semiconductor laser. It is also shown that the optimum profile is a smoothed W-shaped one.

[Click on title for a complete paper.](#)



Abstracts

Propagation in Circular Waveguide Loaded with an Azimuthally Magnetized Ferrite Tube (Short Papers)

O. Parriaux and F.E. Gardiol. "Propagation in Circular Waveguide Loaded with an Azimuthally Magnetized Ferrite Tube (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 221-224.

A new computer method for the study of radially inhomogeneous guiding structures presenting circular symmetry is utilized to determine propagation properties of a ferrite loaded guide. The nonreciprocal characteristics obtained can be used to design latching rotators and differential phase shifters for polarization orthogonality restoration in high-frequency (above 10 GHz) communication systems with frequency reuse.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Behavior of the Magnetostatic Wave in a Periodically Corrugated YIG Slab (Short Papers)

M. Tsutsumi, Y. Sakaguchi and N. Kumagai. "Behavior of the Magnetostatic Wave in a Periodically Corrugated YIG Slab (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 224-228.

An analysis for the propagation characteristics of the magnetostatic wave in a YIG slab having periodically corrugated surfaces is presented. The Brillouin diagrams, close to the intersection point (ω, K) of $m = 0$ and $m = -1$ space harmonics, are obtained for different slab thicknesses, and the nonexistence of leaky wave modes has been established. Some discussions concerning the internal dc magnetic field and the propagation loss are also presented.

[Click on title for a complete paper.](#)



Abstracts

On the Theory and Application of the Dielectric Post Resonator (Short Papers)

M.W. Pospieszalski. "On the Theory and Application of the Dielectric Post Resonator (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 228-231.

This short paper deals with the modes of the dielectric post resonator when ϵ_r is large. The normalized frequency $F/\omega = (\pi D/\lambda_0) / \sqrt{\epsilon_r}$ as a function of D/L is discussed. The simple approximate expressions for the resonant frequencies of the lower order modes are given. The properties of the TE_{011} mode are discussed in detail from the point of view of its application to the measurement of the complex permittivity of microwave dielectrics. Curves and expressions for fast and simple determination of the maximum measurement errors are given.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Design of Coupled Microstrip Lines (Letters)

S.D. Shamasundara and N. Singh. "Design of Coupled Microstrip Lines (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 232-233.

An accurate and direct method for designing coupled microstrip lines for any substrate is given once the design curves for any other substrate are known.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Resonant Frequency of a Narrow-Gap Cylindrical Cavity (Letters)

H.E. Green. "The Resonant Frequency of a Narrow-Gap Cylindrical Cavity (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 233-234.

A recently proposed method for computing the resonant frequency of a narrow-gap reentrant cylindrical cavity is discussed. It is shown that provided that the cavity does not have too low a height-to-diameter ratio, its resonant frequency may also be computed with expectation of reasonable accuracy from numerical data which have been available in the literature for some time.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Evaluation of MTT Transactions (1976)(Letters)

M.E. Hines. "Evaluation of MTT Transactions (1976)(Letters)." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 234-235.

Editor's Note: Marion Hines was one of three individuals asked by the IEEE Publications Board to review recent volumes of the MTT Transactions and to provide an objective evaluation. Printed below is his evaluation in its entirety.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Different Representations of Dyadic Green's Functions for a Rectangular Cavity (Correction)

P. Rozenfeld. "Different Representations of Dyadic Green's Functions for a Rectangular Cavity (Correction)." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 235-235.

In the above paper, I noticed two small errors. The first one is the lack of the tilde over term $\nabla \times G(\bar{r}/\bar{r}/\bar{r}/\bar{r})$ in the surface integral of (20) (P. 599). The second one is the lack of the prime over I_0 in the expression for B_2 in the left column, fifth line from the bottom on p. 601.

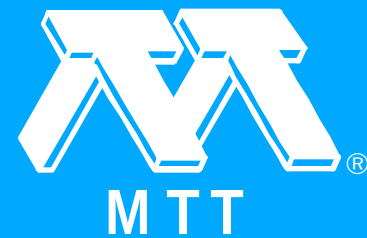
Click on title for a complete paper.



Abstracts

Contributors (Mar. 1977 [T-MTT])

J.A.F. Cornick, E.G.S. Davidson, P.R. Emtage, F.E. Gardiol, J. Helszajn, J.S. Joshi, N. Kumagai, S. Le-Ngoc, R.W. Murray, T. Nagao, S. Nemoto, K. Okamoto, T. Okoshi, O. Parriaux, M.W. Pospieszalski, Y. Sakaguchi, S.N. Stitzer, R.A. Suttie, M. Tsutsumi and G.L. Yip. "Contributors (Mar. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 236-237.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

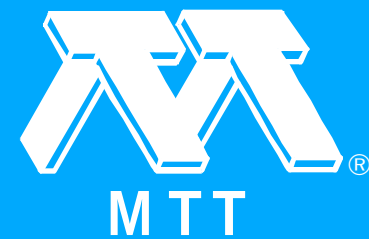
Click on title for a complete paper.



Abstracts

Call for Papers - Special Issue on Microwaves in Medicine (Mar. 1977 [T-MTT])

"Call for Papers - Special Issue on Microwaves in Medicine (Mar. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): 238-238.



IEEE

Contents

Publications

Issues

Papers

Authors

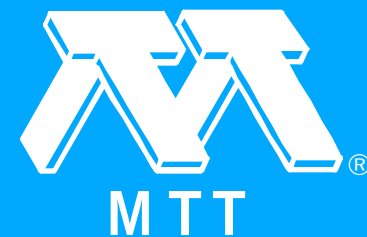
Click on title for a complete paper.



Abstracts

IEEE Membership (Advertisement) (Mar. 1977 [T-MTT])

"IEEE Membership (Advertisement) (Mar. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): b1-b3.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Mar. 1977 [T-MTT])

"Back Cover (Mar. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.3 (Mar. 1977 [T-MTT]): b2-b3.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

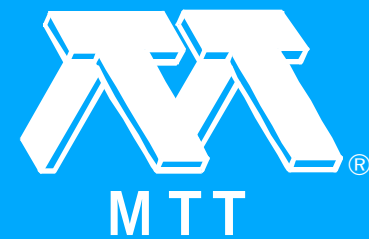
Click on title for a complete paper.



Abstracts

Front Cover (Apr. 1977 [T-MTT])

"Front Cover (Apr. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Foreword (Apr. 1977 [T-MTT])

J.J. Taub. "Foreword (Apr. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 241-242.

Low-noise technology at microwaves has been traditionally motivated by radar, terrestrial communication, and radio astronomy applications. In recent years satellite communications and remote sensing have placed added importance on low-noise reception.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Multiband Low-Noise Receivers for a Very Large Array

S. Weinreb, M. Balister, S. Maas and P.J. Napier. "Multiband Low-Noise Receivers for a Very Large Array." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 243-248.

The very large array (VLA), presently under construction by the National Radio Astronomy Observatory, is an array of 27 25-m-diam antennas. This paper describes the feed and low-noise, front-end systems used on the antennas. The receiving system allows operation at any one of the four frequency bands: 1.35-1.73 GHz, 4.5-5.0 GHz, 14.4-15.4 GHz, 22-24 GHz. The feed system uses an offset Cassegrain geometry so that the feeds for all four frequency bands can be in position on the antenna simultaneously. The front end comprises a cryogenically cooled parametric amplifier for the 4.5-5.0-GHz range. This paramp is preceded by cooled upconverters or cooled mixers for the other frequency ranges. Measured system performance is presented and some construction details are given.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

System Implications of Large Radiometric Array Antennas

C.A. Levis and H.-C. Lin. "System Implications of Large Radiometric Array Antennas." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 248-253.

Current radiometric earth and atmospheric sensing systems in the centimeter wavelength range generally employ a directive antenna connected through a single terminal pair to a Dicke receiver. It is shown that this approach does not lend itself to systems with greatly increased spatial resolution. Signal-to-noise considerations relating to antenna efficiency force the introduction of active elements at the subarray level; thus if Dicke switching is to be used, it must be distributed throughout the system. Some possible approaches are suggested. The introduction of active elements at the subarray level is found to ease the design constraints on time delay elements, necessary for bandwidth, and on multiplebeam generation, required in order to achieve sufficient integration time with high resolution.

[Click on title for a complete paper.](#)

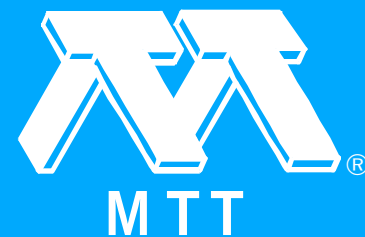


Abstracts

Low-Noise Receiver Design Trends Using State-of-the-Art Building Blocks

H.C. Okean and A.J. Kelly. "Low-Noise Receiver Design Trends Using State-of-the-Art Building Blocks." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 254-267.

The current state-of-the-art and the various design tradeoffs encompassing the variety of low-noise microwave and millimeter-wave receiver "building blocks" which have evolved during the past two decades are described. Key examples of these are the high-idler non-cryogenic parametric amplifier, the gallium arsenide field-effect transistor (GaAs FET) amplifier, and the image-enhanced Schottky-diode mixer. It is then shown how this inventory of building blocks can best be integrated into optimum receiver configurations for application in a multiplicity of future and present microwave and millimeter-wave communications, radar, and radiometer systems.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Low-Noise Millimeter-Wave Receivers

J.J. Whelehan. "Low-Noise Millimeter-Wave Receivers." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 268-280.

Over the past several years, significant improvements have been made in solid-state devices (that is, avalanche diodes, Gunn diodes, varactors, mixer diodes, etc.) that have enhanced the overall capability and low-noise performance of millimeter-wave receivers. With these improved devices, it is now possible to configure completely solid-state low-noise millimeter-wave receivers. As is similar in the microwave region, low-noise parametric amplifiers, broad-band low-conversion-loss mixers, and solid-state local oscillators are now available. Furthermore, cryogenically cooled parametric amplifiers and mixers are also being developed that will result in achieving the ultimate in system sensitivity. With the flexibility offered by these completely solid-state millimeter-wave components, it is now possible to design the optimum system configuration for the intended application whether it be an advanced communication system, a sophisticated EW application, a radar system, a radiometric system, or satisfying any of the numerous receiver requirements that are being evolved. This paper explores the trends that are being developed in the millimeter-wave region and their application to system design. The performance criterion of various receiver systems and their sensitivity requirements are presented. A review of the system operating noise temperature concept and the method by which it can be determined and its applicability to low-noise components is demonstrated. A review of the state-of-the-art of low-noise systems and experimental data obtained in the millimeter-wave region is also presented.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Cryogenically Cooled Two-Channel Paramp Radiometer for 47 GHz

J. Edrich. "A Cryogenically Cooled Two-Channel Paramp Radiometer for 47 GHz." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 280-285.

A field operational radiometer for 47 GHz with 18 K cooled degenerate paramps is described which has parallel channels for two ortholinear or circular polarizations. It exhibits an instantaneous RF bandwidth of 300 MHz and a tuning range up to 2 GHz. Its double-sideband system noise temperature of 100 K at midband and its minimum rms noise fluctuation of 0.16 K are several times lower than those of existing millimeter wave receivers.

[Click on title for a complete paper.](#)



Abstracts

The Super-Schottky Diode

F.L. Vernon, Jr., M.F. Millea, M.F. Bottjer, A.H. Silver, R.J. Pedersen and M. McColl. "The Super-Schottky Diode." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 286-294.

The super-Schottky-barrier diode, a superconductor-semiconductor tunneling junction, has been established as the most sensitive detector of microwaves. These record sensitivities were obtained in both the video and mixing modes of operation. Measurements at X-band have yielded a video NEP of 5×10^{-16} W/Hz/sup $1/2$ and a mixer input noise temperature of 6 K. The super-Schottky mixer provides a front-end component for ultralow-noise receivers that is superior in bandwidth to available parametric and maser amplifiers and yet has a comparable noise temperature. This article reports the design, fabrication, and measurement of Pb on p-GaAs super-Schottky diodes which perform as nearly ideal low-noise mixers at 9 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

The Measurement of Noise in Microwave Transmitters

J.R. Ashley, T.A. Barley and G.J. Rast, Jr.. "The Measurement of Noise in Microwave Transmitters." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 294-318.

A tutorial review of the basis for transmitter noise measurements shows that noise is best described and measured as AM and FM noise. The determination of RF spectrum is done by calculation after the AM and FM noise are known. The contribution of AM noise to RF spectrum shape is determined by the power spectral density shape of the AM noise. The contribution of FM noise to RF spectrum is to make the shape that of an RLC circuit resonant response rather than a delta function with a sideband structure. The measurement of AM noise is done with a direct detector diode. The measurement of FM noise for frequencies above 5 GHz is done with a discriminator based on a one-port cavity resonator. The measurement of FM noise below 5 GHz is done with an improved transmission line discriminator which is described in detail. Measurement of low-power low-noise signal sources is made possible with an injection-locked oscillator for a preamplifier to the discriminator. The most widely used baseband analyzer is the constant bandwidth superhetrodyne wave or spectrum analyzer. Most differences in measurement results are resolved by understanding the baseband analyzers. At least the baseband spectrum analysis of transmitter noise measurements can be automated with worthwhile savings in time and improvement of documentation.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Design of Stable, Very Low Noise, Cavity-Stabilized IMPATT Oscillators for C Band

B.F. van der Heyden. "Design of Stable, Very Low Noise, Cavity-Stabilized IMPATT Oscillators for C Band." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 318-323.

Two types of C-band IMPATT oscillators, which easily meet the noise and stability requirements for use as local oscillators in microwave FM communications equipment, are described. Both types use a transmission cavity-stabilization circuit as proposed by Kurokawa. In one of them a TE/sub 103/ mode rectangular invar cavity is used for stabilization, while in the other the coupling is made via a high-Q cylindrical TE/sub 011/, mode cavity. Although the Si IMPATT diode is inherently noisy, it is shown that a proper choice of circuit parameters and diode characteristics leads to measured FM noise levels of less than 0.2 Hz in a 100-Hz band. With respect to frequency stability, special attention is paid to hysteresis-free compensation of temperature effects and to the influence of changes with time and ambient temperature of the diode and of the internal atmosphere of the cavity. By careful processing and sealing, an average temperature stability of better than -0.4 ppm//spl deg/C was realized with temperature cycling between 26 and 51/spl deg/C over a period of 450 h.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Theory of Noise and Transfer Properties of IMPATT Diode Amplifiers

J.J. Goedbloed and M.T. Vlaardingerbroek. "Theory of Noise and Transfer Properties of IMPATT Diode Amplifiers." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 324-332.

A theory is formulated which describes quantitatively the noise and transfer properties of IMPATT diode reflection-type negative resistance amplifiers. This theory is based on the method used in the large-signal theory of noise in IMPATT diode oscillators by the present authors. The theory takes into account the signal dependence of the noise generation in the diode, the noise and/or modulation present in the input signal, and also the intermodulation effects occurring between the various frequency bands. The equations are conveniently arranged in matrix form; such a formulation makes it easier to obtain quantitative results in terms of measurable noise and modulation parameters. Agreement between measured and theoretically predicted AM and FM noise of injection-locked oscillators is good. The usefulness of the theory is illustrated by results of calculations on minimum attainable noise of a given amplifier, maximum noise allowable on the input signal, AM-FM conversion, phase distortion, bias modulation, and the correlation between various types of noise.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Aerospace Low-Noise Millimeter-Wave Spectral Line Receiver (Short Papers)

W.J. Wilson. "The Aerospace Low-Noise Millimeter-Wave Spectral Line Receiver (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 332-335.

A multichannel millimeter-wave receiver has been designed and built to study narrow-band signals from the natural background. This receiver is used with the Aerospace 4.6-m millimeter-wave antenna at El Segundo, CA. It is a superheterodyne mixer receiver which will tune over the 70-120-GHz frequency range with a system noise temperature of ~ 500 K (DSB). The spectral line receiver includes the RF system, the IF system, the local oscillator (LO) phase-locking system, the multichannel filter receivers, and the data processing system. This short paper describes the design and operation of the spectral line receiver and provides a sample of the results obtained.

[Click on title for a complete paper.](#)



Abstracts

Error Minimization in Network Analyzer Measurement of Varactor Quality (Short Papers)

W.S. Benson, Jr. and A. Uhler, Jr.. "Error Minimization in Network Analyzer Measurement of Varactor Quality (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 335-338.

Errors are minimized in the four-bias measurement of varactor quality by a holder designed so that $R/Z_0 \approx 1.5/Q$. The optimum intermediate biases depend upon the expected error in reflection coefficient measurements.



Contents
Publications
Issues
Papers
Authors

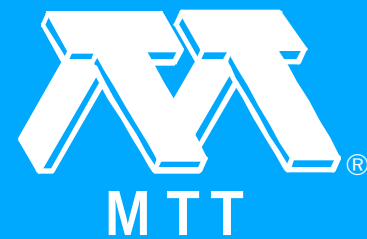
Click on title for a complete paper.



Abstracts

Contributors (Apr. 1977 [T-MTT])

J.R. Ashley, M. Balister, T.A. Barley, W.S. Benson, Jr., M.F. Bottjer, J. Edrich, J.J. Goedbloed, A.J. Kelly, C.A. Levis, H.-C. Lin, S. Maas, M. McColl, M.F. Millea, P.J. Napier, H.C. Okean, R.J. Pedersen, G.J. Rast, Jr., A.H. Silver, A. Uhler, Jr., B.F. van der Heyden, F.L. Vernon, Jr., M.T. Vlaardingerbroek, S. Weinreb, J.J. Whelehan and W.J. Wilson. "Contributors (Apr. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 338-342.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

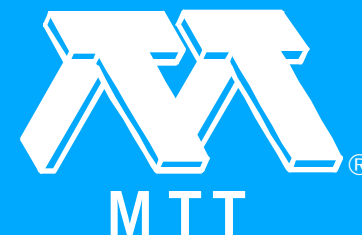
Click on title for a complete paper.



Abstracts

IEEE Membership (Advertisement) (Apr. 1977 [T-MTT])

"IEEE Membership (Advertisement) (Apr. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): b1-b3.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

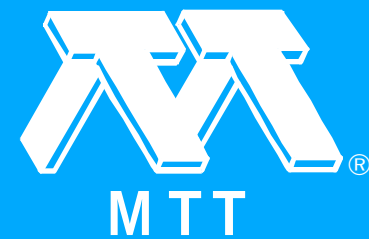
Click on title for a complete paper.



Abstracts

Back Cover (Apr. 1977 [T-MTT])

"Back Cover (Apr. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): b2-b3.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (May 1977 [T-MTT])

"Front Cover (May 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

IMPATT Diode Circuit Design for Parametric Stability

J. Gonda and W.E. Schroeder. "IMPATT Diode Circuit Design for Parametric Stability." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 343-352.

A new approach to IMPATT diode circuit design to achieve freedom from parametric instabilities is described. Necessary and sufficient conditions are described in the frequency domain for the load impedance presented to the diode terminals. A number of unconditionally stable circuits have been developed for flat-profile GaAs diodes using this approach. Three of these circuits have been built and tested experimentally in 11-GHz IMPATT oscillators and amplifiers. These experimental circuits have been free of parametric instability, even when driven into full RF saturation. In a systems application practical constraints such as cost, RF loss, and tunability will require compromises which will degrade the stability, and it may not always be possible to achieve complete stability for a given diode.

[Click on title for a complete paper.](#)

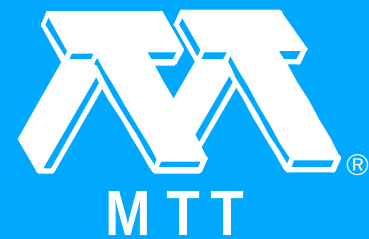


Abstracts

High-Order Triangular Finite Elements for Electromagnetic Waves in Anisotropic Media

A. Konrad. "High-Order Triangular Finite Elements for Electromagnetic Waves in Anisotropic Media." 1977 *Transactions on Microwave Theory and Techniques* 25.5 (May 1977 [T-MTT]): 353-360.

Specialized functional are introduced for traveling and circulating electromagnetic waves in planar and axisymmetric two-dimensional geometries, without recourse to complex arithmetic. The singularities in the functional for axisymmetric geometries are eliminated by a transformation of the field components. The transformed fields are approximated by high-order interpolation polynomials over triangular regions in the x-y and r-z coordinate planes. A matrix expression assembled from constant element matrices and geometric factors relating to triangle shape, size, and position is obtained which is the discretized equivalent of the original functional. The necessary element matrices have been computed to sixth-order polynomial approximation. The procedure for assembling a global problem is stated. Finally, a matrix equation is generated by minimizing the discretized functional.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

High-Azimuthal-Index Resonances in Ferrite MIC Disk Resonators

P. de Santis. "High-Azimuthal-Index Resonances in Ferrite MIC Disk Resonators." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 360-367.

This paper presents a study of the nonreciprocal high-azimuthal-index zero-radial-order modes which may resonate in ferrite MIC disk resonators magnetized perpendicularly to the ground plane. Both ferrite volume (FV) and edge-guided-wave (EGW) modes were investigated by using a suitable equivalent model. It is found that when the ferrite is saturated, a simple empirical parameter is sufficient to characterize the fringing-field effects at the disk's edge.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Experimental Measurement of Microstrip Transistor-Package Parasitic Reactances

R.J. Akello, B. Easter and I.M. Stephenson. "Experimental Measurement of Microstrip Transistor-Package Parasitic Reactances." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 367-372.

A resonance method of measurement is described for the determination of the parasitic reactance of a microwave transistor package mounted in microstrip. Results for two types of package obtained from normal-sized and from scaled-up models are presented. The influence of the parasitic on the characteristics of a typical microwave FET chip is briefly discussed.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Resonance Electromagnetic Absorption by Nonspherical Dielectric Objects

P.W. Barber. "Resonance Electromagnetic Absorption by Nonspherical Dielectric Objects." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 373-381.

The extended boundary condition method (EBCM) is used to develop a theoretical solution for the internal fields of isotropic and homogeneous nonspherical dielectric objects. The formulation is particularly effective for resonance-sized bodies. The computational capabilities of the technique are demonstrated by presenting numerical calculations of absorption efficiency versus electrical size (ka) and internal-field distributions at resonance for a number of lossy axisymmetric objects including spheres, spheroids, and a finite cylinder. The numerical limitations are discussed and a method is given which allows extension of the numerical technique to a larger class of problems.

[Click on title for a complete paper.](#)



Abstracts

Variational Finite-Element Solution for Dissipative Waveguides and Transportation Application

Al.D. McAulay. "Variational Finite-Element Solution for Dissipative Waveguides and Transportation Application." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 382-392.

A procedure is developed for determining the complex propagation constants and associated complex electromagnetic fields as a function of frequency for electromagnetic waves propagating along an inhomogeneous waveguide composed of dissipative materials and having a complicated shape. The wave equation, which is complex because of the presence of dissipative materials, is transformed for computer solution into a matrix eigenvalue equation by the application of the Rayleigh-Ritz variational method in conjunction with the finite-element method. The results are reviewed for several simple dissipative waveguides for which analytical results are computed for comparison. A novel proposal is then investigated in which a railroad track acts as a surface waveguide for a rapid-transit collision-avoidance system. The results illustrate the usefulness of the numerical method developed and suggest that the modified steering rail warrants further investigation for rapid-transit systems.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Aperture Coupling Between Microstrip and Resonant Cavities

D.S. James, G.R. Painchaud and W.J.R. Hoefer. "Aperture Coupling Between Microstrip and Resonant Cavities." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 392-396.

This paper presents a simple analysis for the coupling between microstrip and a cavity through an aperture located in the substrate ground plane. The analysis is based on Wheeler's equivalent-energy concept for small-hole coupling and an approximate parallel-plate waveguide model for the microstrip. The theory appears adequate for most design purposes, and has been used successfully in the design of stabilizing cavities for experimental 12-GHz low-noise FET oscillators.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A New Mixer Design for 140-220 GHz (Short Papers)

A.R. Kerr, R.J. Mattauch and J.A. Grange. "A New Mixer Design for 140-220 GHz (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 399-401.

A new Schottky-diode mixer is described which has low noise and conversion loss in the 140-220-GHz band. At 170 GHz mixer noise temperatures of 1100-1300 K [Single sideband (SSB)] have been measured, with 6.2-7.2-dB SSB conversion loss. The design should be usable up to -300 GHz with appropriate scaling. The mixer has been successfully used in airborne radiometers on the NASA Convair 990 and C-141 aircraft.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The Measurement of the Equivalent Admittance of 3-Port Circulators Via an Automated Measurement System (Short Papers)

G.P. Riblet. "The Measurement of the Equivalent Admittance of 3-Port Circulators Via an Automated Measurement System (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 401-405.

A derivation of the equivalent admittance of symmetrical 3-port circulators is given which is based on the requirement that the S-matrix eigenvalues be separated by 120° on the unit circle for perfect circulation. This quantity has the property that if a 2-port matching network is found which matches into this admittance, then the same matching network connected in each circulator arm will match the circulator. It was used in conjunction with a computerized measurement system to determine the optimal single-step transformer matching of a stripline 3.7-4.2-GHz circulator and resulted in a device with performance better than 30 dB over this band.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Dimensions of Microstrip Coupled Lines and Interdigital Structures (Short Papers)

T.A. Milligan. "Dimensions of Microstrip Coupled Lines and Interdigital Structures (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 405-410.

A method is presented for finding dimensions of coupled lines and interdigital structures on microstrip given the electrical properties. Both a graphical approach and computer approach using polynomial approximations are given. These results are within 1 percent of Bryant and Weiss' dimensions for coupled lines for most practical stripwidths and spacings. Experimental data for a 10-percent bandwidth microstrip interdigital filter are given.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Asymmetric Even-Mode Fringing Capacitance (Short Papers)

H.J. Riblet. "Asymmetric Even-Mode Fringing Capacitance (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 410-412.

An expression is given for the even-mode fringing capacitance of an infinite rectangular bar, asymmetrically located inside an infinite u-shaped outer conductor.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

An Analytical Comparison of Two Simple High-Q Gunn Oscillators (Short Papers)

I.D. Higgins and R. Davies. "An Analytical Comparison of Two Simple High-Q Gunn Oscillators (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 412-416.

This note compares and analyzes two commonly used simple waveguide Gunn oscillators in terms of their loaded Q-factors. Suitable design criteria are established for both, and two oscillators which were tested conformed well to these. It is concluded that although the more mechanically complex oscillator, which is in common use, has a greater flexibility, the simpler oscillator is adequate for most applications.



IEEE

Contents

Publications

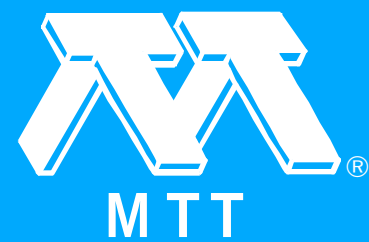
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Radiation Losses of Planar Circuit Resonators and the R/Q Parameter (Short Papers)

F.W. Schott and T. Yodokawa. "Radiation Losses of Planar Circuit Resonators and the R/Q Parameter (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 416-418.

The resonator parameter R/Q , the ratio of a shunt resistance to the unloaded Q , which might be termed a "mode-geometry" parameter, is a natural parameter for characterizing oscillation modes of planar-circuit resonators which are open circuited at the edges. These resonators are often excited by connection at the edge to a microstrip transmission line, and the appropriate shunt resistance is the equivalent resistance at resonance at these terminals for that mode. Losses in planar-circuit resonators include the ohmic (skin-effect and dielectric) losses of enclosed resonators plus a radiation-loss component. For a variety of planar resonators, the ohmic losses are easily calculated, but the radiation-loss determination is a difficult boundary-value problem. More specifically, the determination of either the unloaded Q or the radiation component of the unloaded Q is often readily accessible only through measurement. The knowledge of the R/Q parameter allows one, in effect, to replace the Q measurement with a shunt-resistance measurement, which is often more expedient to perform. Two simple planar-resonator configurations, the circular disk, and the square plate are studied. The radiation component of the Q is evaluated by using the measured shunt resistance and the R/Q parameter to calculate the total unloaded Q and thence the radiation component of the unloaded Q . A comparison is made between these results and those obtained from direct Q measurements.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Measurement of Microwave Loss Tangent by Means of Microwave Resonator Bridge (Short Papers)

I. Kneppo and M. Weis. "Measurement of Microwave Loss Tangent by Means of Microwave Resonator Bridge (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 418-423.

A new cavity method of measurement of microwave loss tangent of a low-loss material is described. The method consists of the comparison of the reflection coefficient of the resonator filled with dielectric with the reflection coefficient of the reference resonator by means of microwave resonator bridge. Basic theoretical relations of a simplified resonator bridge are derived, a fundamental scheme of the measuring set is given, and some results of verified measurements presented. The obtained results confirm the suitability of the proposed method, especially for measuring low-loss dielectric materials, since the principle of comparison renders the method highly sensitive to small parameter differences of the resonator brought about by the measured sample.

[Click on title for a complete paper.](#)



Comparison Method of Measurement Q of Microwave Resonators (Short Papers)

I. Kneppo. "Comparison Method of Measurement Q of Microwave Resonators (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 423-426.

A method for the measurement of the quality factor of microwave resonators is given. It is based on the comparison of the transmitted power of the measured resonator with that of a reference resonator. The characteristics obtained by simultaneous display of the transmitted powers of the two resonators in Cartesian coordinates are analyzed. The relationship between the shape of the resulting curve and the parameters of the reference and measured resonators is discussed. The principal scheme of the X-band measuring microwave set and the measurement procedure are described. Some verification of the measurement results are presented. The method described is especially convenient for measuring small relative changes in the quality factor. It can be utilized for measuring the microwave loss tangent of materials by perturbation resonator methods.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Gaussian-Beam Launcher for Microwave Exposure Studies (Short Papers)

P.S. Neelakantaswamy, K.K. Gupta and D.K. Banerjee. "A Gaussian-Beam Launcher for Microwave Exposure Studies (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 426-428.

A practical method of producing a focused-microwave exposure field in biological experiments, for selective partial-body irradiation, is described. The proposed structure consists of a dielectric sphere placed in front of, but displaced from, the open end of a corrugated pipe with quarter-wave teeth, carrying the HE/sub 11/ mode. It is shown that this launcher produces a near-circular Gaussian beam in the proximity of the dielectric sphere, with a high on-axis gain factor. Theoretical expressions are derived for the EM fields of the focused beam-wave, and experimental results obtained from a practical launcher confirm the theoretical calculations made.

[Click on title for a complete paper.](#)



Abstracts

A Microwave Irradiation Chamber for Scientific Studies on Agricultural Products (Short Papers)

R.G. Olsen, G.A. Geithman and D.H. Schrader. "A Microwave Irradiation Chamber for Scientific Studies on Agricultural Products (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 428-433.

The design and testing of a chamber for uniform heating of objects with an intense microwave field is described. Methods for direct and inferred measurement of temperature in the microwave field during irradiation are discussed. A theoretical analysis was made to determine the range of electrical parameters for which heating will be uniform. This analysis was verified experimentally. Curves for determining the rate of energy absorption in cylindrical posts are given for a wide range of electrical parameters.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Multiple-Animal Array for Equal Power Density Microwave Irradiation (Short Papers)

S.A. Oliva and G.N. Catravas. "A Multiple-Animal Array for Equal Power Density Microwave Irradiation (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 433-436.

The introduction of multiple subjects into a microwave field invariably results in perturbations and interference patterns which make it difficult to accurately determine power densities at any specified location. To overcome this problem, investigators have restricted the number of subjects, which is inefficient, or used techniques to illuminate large volumes, which still results in large variations in power density due to curvature of the microwave field. An exposure array has been devised that negates these disadvantages and enables simultaneous irradiations of multiple animals at uniform average power density (± 5 percent). The array consists of microwave transparent cages positioned in accordance with the natural characteristics of the microwave field and separated sufficiently to insure minimum interaction between animals due to microwave reflection. The results of testing the array in an anechoic chamber at a frequency of 2450 MHz using an isotropic field probe are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Computer Analysis of Gradually Tapered Waveguide with Arbitrary Cross Sections (Short Papers)

S.S. Saad, J.B. Davies and O.J. Davies. "Computer Analysis of Gradually Tapered Waveguide with Arbitrary Cross Sections (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 437-440.

This short paper presents a general computer analysis of gradually tapered waveguide with arbitrarily shaped cross sections. The technique combines coupled-mode theory with numerical methods for solving the uniform waveguide problem. The coupling coefficients are computed by using eigenvalues and eigenfunctions obtained numerically. The mode amplitudes are obtained either by numerical solution of a set of differential equations or from a closed-form solution. The applicability of this technique is illustrated by the analysis and measurement of two transitions. It is shown that theoretical prediction of coupled-mode amplitudes is reliable for gradual tapers where the flare angle is small. For large flare angles, more rigorous coupled-mode theory has to be employed.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

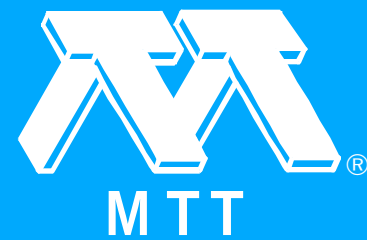


Abstracts

Synthesis of Certain Transmission Lines Employed in Microwave Integrated Circuits (Letters)

R. Crampagne and G. Khoo. "Synthesis of Certain Transmission Lines Employed in Microwave Integrated Circuits (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 440-442.

With a quasi-TEM approximation, the characteristic parameters of numerous structures used as hyperfrequency microelectronics transmission lines can be calculated with the aid of conformal mapping. Simple theoretical formulas are rarely used since they bring into play the function $K(k)/K'(k)$ where $K(k)$ is the complete elliptic integral of the first type, $K'(k)$ its complementary function, and k its argument.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computation of the Hecken Impedance Function (Letters)

J.H. Cloete. "Computation of the Hecken Impedance Function (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 440-440.

The Dolph-Chebyshev impedance function derived by Klopfenstein has discontinuities at the taper ends which introduce unwanted effects in certain applications. The Hecken impedance function is not optimum in the Dolph-Chebyshev sense, but achieves matching without impedance steps. For any bandwidth and maximum magnitude of reflection coefficient in the passband, the Hecken taper is only slightly longer than the optimum taper. Hecken's near-optimum taper is therefore an attractive alternative to the optimum taper when impedance discontinuities are undesirable.

[Click on title for a complete paper.](#)



Abstracts

A Two- or Three-Dimensional Green's Function which can be Applied to Hyperfrequency Microelectronic Transmission Lines (Letters)

R. Crampagne and J.-L. Guiraud. "A Two- or Three-Dimensional Green's Function which can be Applied to Hyperfrequency Microelectronic Transmission Lines (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 442-444.

Knowing Green's function and the charge density found on different conductors, the diverse capacities can eventually be calculated by solving an integral equation. This has been dealt with only for simple dielectric-conductor configurations. In Coen's article, the integral representation of $\log(Z)$ is employed in calculating Green's function for microstrips (with or without an upper ground plane). Electrostatically speaking, the boundary conditions along conductors or dielectric interfaces are represented by means of infinite charge series.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Locus of Points of Constant VSWR When Renormalized to a Different Characteristic Impedance (Letters)

J.A.G. Malherbe. "The Locus of Points of Constant VSWR When Renormalized to a Different Characteristic Impedance (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 444-445.

The locus of points of constant VSWR with respect to an impedance $Z_{1/}$, when measured with equipment of characteristic impedance $Z_{0/}$, other than $Z_{1/}$, is found to be a circle that is easily constructed on a Smith chart. The use of a transparent overlay with various such circles converts any network analyzer with a Smith chart display to read swept VSWR values to the new impedance.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

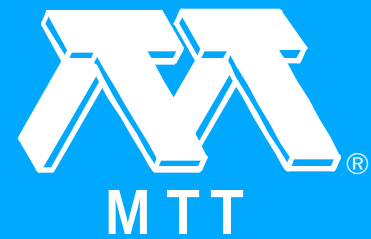


Abstracts

Efficient Calculation of Exact Group Delay Sensitivities (Correction)

J.W. Bandler, M.R.M. Rizk and H. Tromp. "Efficient Calculation of Exact Group Delay Sensitivities (Correction)." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 445-445.

In the above paper, on page 190, the following corrections should be made.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

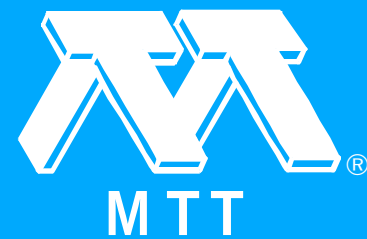
[Click on title for a complete paper.](#)



Abstracts

Contributors (May 1977 [T-MTT])

R.J. Akello, D.K. Banerjee, P.W. Barber, G.N. Catravas, J.B. Davies, O.J. Davies, R. Davies, P. de Santis, B. Easter, G.A. Geithman, J. Gonda, J.A. Grange, K.K. Gupta, I.D. Higgins, W.J.R. Hoefer, D.S. James, A.R. Kerr, I. Kneppo, A. Konrad, R.J. Mattauch, Al.D. McAulay, T.A. Milligan, P.S. Neelakantaswamy, S.A. Oliva, R.G. Olsen, G.R. Painchaud, G.P. Riblet, H.J. Riblet, S.S. Saad, F.W. Schott, D.H. Schrader, W.E. Schroeder, I.M. Stephenson, M. Weis and T. Yodokawa. "Contributors (May 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 446-450.



IEEE

Contents

Publications

Issues

Papers

Authors

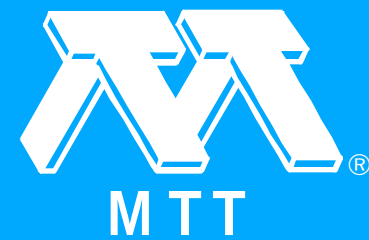
Click on title for a complete paper.



Abstracts

New Editorial Policy (Announcement) (May 1977 [T-MTT])

D. Parker. "New Editorial Policy (Announcement) (May 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 451-453.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

New from the IEEE Press, Turning Points in American Electrical History (Advertisement) (May 1977 [T-MTT])

"New from the IEEE Press, Turning Points in American Electrical History (Advertisement) (May 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 452-452.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

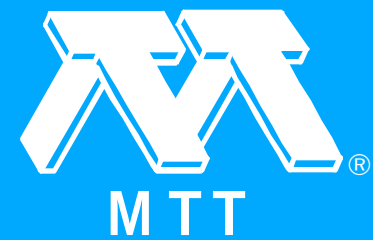
Click on title for a complete paper.



Abstracts

IEEE Membership (Advertisement) (May 1977 [T-MTT])

"IEEE Membership (Advertisement) (May 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): 453-453.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

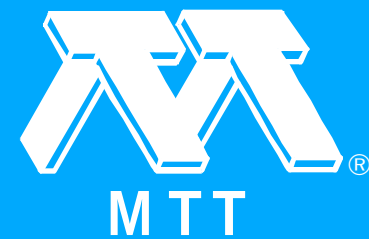
Click on title for a complete paper.



Abstracts

Back Cover (May 1977 [T-MTT])

"Back Cover (May 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.5 (May 1977 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

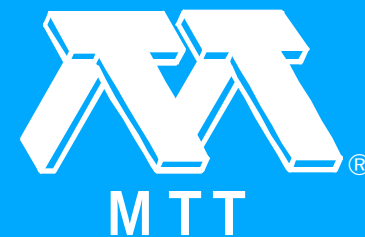
Click on title for a complete paper.



Abstracts

Front Cover (Jun. 1977 [T-MTT])

"Front Cover (Jun. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

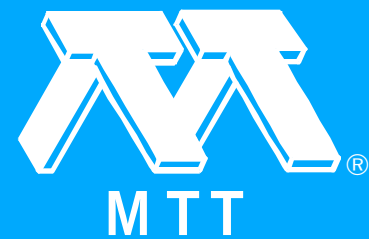
[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

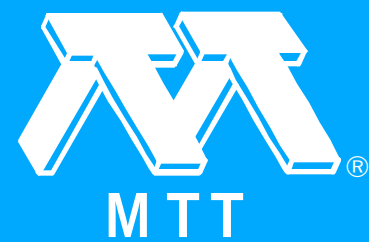
Foreword - Part I (Jun. 1977 [T-MTT])

K.J. Button. "Foreword - Part I (Jun. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 455-456.

The success of the San Juan Conference (Submillimeter II) has assured the continuance of the series. They will be held alternately, hereafter, in Europe and in North America. Thus Submillimeter III will be held at the University of Surrey, Guildford, England, March 28 - April 1, 1978. Guildford is just 30 minutes, by train, southwest of London's Waterloo Station. Then, Submillimeter IV will be held again in North America, December 10-15, 1979. By choosing such dates and locations, it has been shown that a foreign conference need not be as prohibitively expensive as when held at a big city hotel in high season.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Schottky-Barrier Diodes for Submillimeter Heterodyne Detection

B.J. Clifton. "Schottky-Barrier Diodes for Submillimeter Heterodyne Detection." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 457-463.

The fabrication and packaging techniques which were used to produce high-reliability mixer diodes for millimeter-wave satellite communications systems have been extended to produce Schottky-barrier mixer diodes for use in the submillimeter-wave region from 1 to 0.1 mm. The influence of material and circuit parameters on the performance of Schottky-barrier diodes as heterodyne detectors in the submillimeter-wave region has been considered. The semiconductor material parameters have been optimized and new packaging concepts have been investigated. A new diode package has been developed which incorporates both an integral stripline filter on 0.05-mm-thick quartz and a section of overmoded waveguide. The new package has the advantage of being replaceable in the mixer circuits, and yet it can provide a low-loss interface between the diode package and the mixer circuit. A new surface-oriented device has been developed in which the contact to the Schottky barrier is formed by photolithographic techniques onto the same surface as the ohmic contact. The surface-oriented devices exhibited heterodyne detection into the submillimeter region.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Submillimeter-Wave Detection with Submicron-Size Schottky-Barrier Diodes

M. McColl, D.T. Hoidges and W.A. Garber. "Submillimeter-Wave Detection with Submicron-Size Schottky-Barrier Diodes." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 463-467.

Schottky-barrier diode detection has been extended to 7.2 THz (42 μm) using 0.5- μm diam diodes. The diodes were fabricated on bulk-doped n-type GaAs using electron lithographic techniques; diameters as small as 1000 $\text{\AA}$ have been achieved. A new approach in Schottky-barrier design, the contact array diode, is proposed. The diode is fabricated from readily available bulk doped material, and a performance is indicated that is competitive to the conventional epitaxial Schottky-barrier mixer well into the submillimeter wavelength region. A scanning electron microscope (SEM) photograph of diode array structures is shown.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Comparison of Methods for Sensitivity Determination of Point-Contact Diodes at Submillimeter Wavelength

E. Sauter and G.V. Schultz. "Comparison of Methods for Sensitivity Determination of Point-Contact Diodes at Submillimeter Wavelength." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 468-470.

Three independent methods were used: 1) mixing of two HCN lasers; 2) mixing of the sixth harmonic of a klystron with an HCN laser; and 3) the incremental-loss method. The results are given. The most sensitive configuration was obtained using a corner reflector. The influence of local-oscillator (LO) power on the conversion losses of the diodes are investigated.

[Click on title for a complete paper.](#)



Abstracts

Design of Printed Resonant Antennas for Monolithic-Diode Detectors

K. Mizuno, Y. Daiku and S. Ono. "Design of Printed Resonant Antennas for Monolithic-Diode Detectors." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 470-472.

Model experiments at 10-GHz band have been performed to obtain optimum structures of printed resonant antennas for monolithic GaAs Schottky-diode detectors in the submillimeter-wave region. Design charts for antenna structures, which are also useful for a thin-film metal-to-metal diode structure on a dielectric substrate, are presented.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

The Josephson Self-Oscillator Mixer as a Submillimeter and Far-Infrared Detector

G. Vernet, J.C. Henaux and R. Adde. "The Josephson Self-Oscillator Mixer as a Submillimeter and Far-Infrared Detector." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 473-476.

The Josephson self-oscillator mixer has potential detector applications at submillimeter frequencies. A quantitative investigation of noise effects and of its physical origin is performed with measurements of monochromatic radiation in the frequency range 0.1-2 THz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Results, Potentials, and Limitations of Josephson-Mixer Receivers at Millimeter and Long Submillimeter Wavelengths

J. Edrich, D.B. Sullivan and D.G. McDonald. "Results, Potentials, and Limitations of Josephson-Mixer Receivers at Millimeter and Long Submillimeter Wavelengths." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 476-479.

Millimeter-wave mixers using Josephson point contacts are described, which exhibit a conversion loss $L_{\text{sub } c} = 9.5 \text{ dB}$ and a noise temperature $T \sim 223 \text{ K}$ for $\lambda \geq 0.95 \text{ mm}$. Their potentials and limitations in noise, bandwidth, drive power, and stability for receiver applications are discussed.

[Click on title for a complete paper.](#)



Theory of an Efficient Electronic Phase Shifter Employing a Multilayer Dielectric-Waveguide Structure

A.B. Buckman. "Theory of an Efficient Electronic Phase Shifter Employing a Multilayer Dielectric-Waveguide Structure." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 480-483.

Multilayer dielectric-waveguide theory is applied to the design of a submillimeter phase shifter driven by a p-i-n diode. In a three-layer structure, proper choice of layer thicknesses can yield a predicted phase shift/unit length about ten times that possible from a single slab at the same frequency. In a properly specified four-layer structure, still larger shifts, limited primarily by the required excursion in effective refractive index, are shown to be possible. A further advantage of the four-layer structure is that it can be designed to have a very thin active region, thus lowering diode power/unit phase shift, which is proportional to the cross section of the intrinsic region of the p-i-n diode.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Calculations of Antenna Temperature, Horizontal Path Attenuation, and Zenith Attenuation Due to Water Vapor in the Frequency Band 150-700 GHz

R.W. McMillan, J.J. Gallagher and A.M. Cook, Jr.. "Calculations of Antenna Temperature, Horizontal Path Attenuation, and Zenith Attenuation Due to Water Vapor in the Frequency Band 150-700 GHz." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 484-488.

The results of calculations of antenna temperature at zenith, both with and without the sun viewed as a source, are given. Horizontal path and total zenith attenuation are also calculated. Each of these calculations was made over the frequency band 150-700 GHz, using data from the 24 water-absorption lines between 150 and 1000 GHz.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Measurement of the Surface Resistivity of Evaporated Gold at 890 GHz

R.J. Batt, G.D. Jones and D.J. Harris. "The Measurement of the Surface Resistivity of Evaporated Gold at 890 GHz." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 488-491.

A modified pyroelectric detector is used to measure the surface resistivity of evaporated gold at 890 GHz. The value of 0.65 Ω square yields a ratio of measured-to-theoretical surface resistivity of approximately 2.2.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Reflectivity of Common Materials in the Submillimeter Region

M.D. Blue and S. Perkowitz. "Reflectivity of Common Materials in the Submillimeter Region." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 491-493.

The appearance of an illuminated scene at submillimeter wavelengths is determined by surface reflectivity. Reflectivities of some man-made and natural materials have been measured. The results provide some insight for evaluating possible applications of submillimeter radiation.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes

R.A. Murphy, C.O. Bozler, C.D. Parker, H.R. Fetterman, P.E. Tannenwald, B.J. Clifton, J.P. Donnelly and W.T. Lindley. "Submillimeter Heterodyne Detection with Planar GaAs Schottky-Barrier Diodes." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 494-495.

Planar surface-oriented Pt/GaAs Schottky-barrier diodes have been fabricated and used to detect signals at submillimeter wavelengths. Video detection has been observed up to frequencies as high as 890 GHz. Harmonic mixing between the ninth harmonic of a 74.21-GHz signal and the second harmonic of 333.95-GHz radiation has also been obtained.

[Click on title for a complete paper.](#)



Abstracts

Dielectric Measurements in the Submillimeter Region and a Suggested Interpretation of the Poley Absorption

G.W. Chantry. "Dielectric Measurements in the Submillimeter Region and a Suggested Interpretation of the Poley Absorption." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 496-500.

Modern activity in the field of extra-high-frequency dielectric measurements on polar liquids is briefly reviewed and the means for carrying them out briefly described. It is now possible to determine the complex permittivity (and hence the complex refractive index) over the range 10^8 - 10^{13} Hz to an absolute precision of 1 percent and it is therefore worthwhile to reexamine the "liquid-lattice" theory which was put forward some time ago as an explanation for the additional Poley absorption. This theory is found to give a good account of the absorption spectrum of liquid chlorobenzene in the microwave, millimeter, and submillimeter regions.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

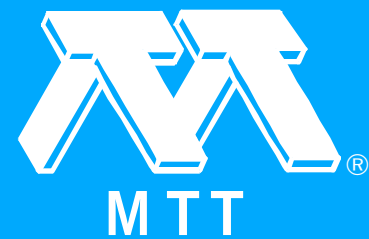


Application of Submillimeter Spectroscopy to Magnetic Excitations

R. Geick. "Application of Submillimeter Spectroscopy to Magnetic Excitations." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 500-505.

Magnetic excitations are the collective excitations of the magnetic moments in ferro- and antiferromagnets. The frequencies are mostly in the far-infrared spectral range. Their study is of current interest with respect to the properties of phase transitions, since in ordinary 3-dimensional crystals the dominating exchange interactions can be 3-dimensional ($\text{MnF}/\text{sub } 2/$, NiO) or may be restricted to 2 dimensions ($\text{K}/\text{sub } 2/\text{MnF}/\text{sub } 4/\text{CoCl}/\text{sub } 2/$ or even to 1 dimension ($\text{CsNiF}/\text{sub } 3/$, $\text{CoCl}/\text{sub } 2/ 2\text{H}/\text{sub } 2/\text{O}$). In this paper, an introduction and a review is given of the results on $q = 0$ magnon modes (ferro- or antiferromagnetic resonance) which can be studied rather directly by submillimeter-wave spectroscopy. Some results about 2 magnon bands are also mentioned. Experimentally, grating monochromators, Fourier-transform interferometers, FIR laser, and microwave techniques have been employed. In the past, not only pure materials have been studied but also doped crystals where localized magnon modes can occur ($\text{MnF}/\text{sub } 2/:\text{Co}/\text{sup } 2+/, \text{CoF}/\text{sub } 2/:\text{MnF}/\text{sub } 2/$, $\text{NiO}:\text{Co}/\text{sup } 2+/$).





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dispersive Fourier Transform Spectrometry with Variable-Thickness Variable-Temperature Liquid Cells

M.N. Afsar, D.D. Honijk, W.F. Passchier and J. Goulon. "Dispersive Fourier Transform Spectrometry with Variable-Thickness Variable-Temperature Liquid Cells." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 505-508.

Dispersive Fourier transform spectrometry (DFTS) of liquids with variable-thickness variable-temperature cells is described. Different evaluative and computational methods are discussed and comparisons with the free layer method are shown with the aid of experimental results. Data for germanium and liquid chlorobenzene are presented.

[Click on title for a complete paper.](#)



Abstracts

Precise Dielectric Measurements of Low-Loss Materials at Millimeter and Submillimeter Wavelengths

M.N. Afsar and G.W. Chantry. "Precise Dielectric Measurements of Low-Loss Materials at Millimeter and Submillimeter Wavelengths." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 509-512.

Transmission dispersive Fourier transform, spectrometry (DFTS) has been used for the measurements of both real and imaginary parts of the complex relative permittivity of low-loss materials at millimeter and submillimeter wavelengths. The materials investigated include cis and trans decalin and polypropylene.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

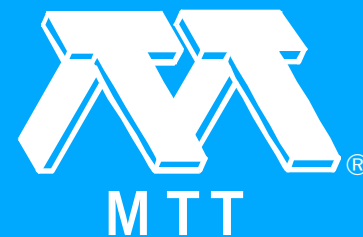


Abstracts

Foreword - Part II (Jun. 1977 [T-MTT])

V.L. Granatstein and S.P. Schlesinger. "Foreword - Part II (Jun. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 513-513.

At the first conference in this series which was held in Atlanta, GA, in the spring of 1974, our group at the Naval Research Laboratory (NRL) reported an initial observation of strong submillimeter radiation from an intense relativistic electron beam. In a conference that was dominated by discussions of molecular laser sources, this was the only paper describing a source based on relativistic electron beams.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

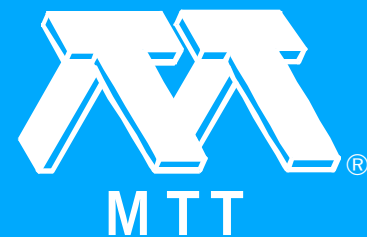


Abstracts

The Gyrotron

V.A. Flyagin, A.V. Gaponov, M.I. Petelin and V.K. Yulpatov. "The Gyrotron." 1977 *Transactions on Microwave Theory and Techniques* 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 514-521.

This paper describes the genealogical tree of the gyrotron, stimulated emission of cyclotron radiation in microwave electronics from magnetron to gyrotron, and arrangement of the gyrotron. The structure of the alternating field in the gyrotron is also given, along with motion and bunching of electrons near cyclotron resonance, equations of the gyrotron, and varieties of the gyrotron. A review of experimental studies is discussed, with problems of utilization of stimulated emission cyclotron radiation.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Electron Cyclotron Maser--An Historical Survey

J.L. Hirshfield and V.L. Granatstein. "The Electron Cyclotron Maser--An Historical Survey." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 522-527.

It has taken nearly twenty years for practical development of the electron cyclotron maser. The initial theoretical notions were put forward by R. Q. Twiss in 1958, but the first clear experimental demonstration did not take place until 1964. Today, in the USSR, these devices are being built which deliver kilowatt-level CW power at submillimeter wavelengths with high efficiency. This paper traces these developments. After the first decade, Western device development became rather somnolent, and the initiative passed to the Soviet scientists. But a healthy resurgence of interest is now growing universally, due to a number of factors including device potential in practical systems. It has been shown recently that the cyclotron maser mechanism can explain a wide range of observations on intense relativistic electron beams, including the generation of gigawatt bursts. Furthermore, theoretical interest is again growing, especially as regards the nonlinear behavior of the interaction.

[Click on title for a complete paper.](#)



The Linear and Self-Consistent Nonlinear Theory of the Electron Cyclotron Maser Instability

P. Sprangle and A.T. Drobot. "The Linear and Self-Consistent Nonlinear Theory of the Electron Cyclotron Maser Instability." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 528-544.

In this paper the linear and nonlinear theory of the electron cyclotron maser instability is considered. The configuration used to study the maser instability consists of relativistic electrons gyrating about and drifting along a uniform magnetic field within a parallel plate waveguide. Relativistic effects associated with the gyrating electrons are responsible for excitation of the transverse electric mode in the waveguide. Linear theory shows that the growth rate maximizes when the axial beam velocity coincides with the axial wave group velocity of the excited electromagnetic wave. This allows us to perform the nonlinear analysis in a frame where both the axial wave number and axial beam velocity vanish. We have found that the maser instability exists only if the perpendicular beam energy exceeds a threshold value. Our analysis also describes the temporal nonlinear evolution of the field amplitude and frequency of a single excited wave. The nonlinear wave dynamics are self-consistently determined from the nonlinear particle orbits through the force and wave equations. The nonlinear analysis shows that there are two possible mechanisms for the saturation of the unstable wave: 1) depletion of the available free energy associated with the rotating particles and 2) phase trapping of the gyrating electrons in the wave. The initial beam parameters determine which of the two mechanisms is responsible for saturation. Competition between the two saturation mechanisms leads to a peaking in the energy conversion efficiency as a function of beam energy. Numerical results of the nonlinear formalism show that energy conversion efficiencies from the particles to the wave can be as high as 60 percent in the beam frame. Furthermore, by appropriately contouring the external magnetic field, among other things, efficiencies as high as 70 percent can be realized.



Abstracts

Mechanisms for Coherent Scattering of Electromagnetic Waves from Relativistic Electron Beams

V.L. Granatstein and P. Sprangle. "Mechanisms for Coherent Scattering of Electromagnetic Waves from Relativistic Electron Beams." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 545-550.

We review recent studies in which powerful submillimeter radiation has been produced by coherently scattering relatively long wavelength radiation from relativistic electron beams. Various physical mechanisms responsible for the scattering are described and the relationship between them is discussed.



IEEE

[Contents](#)

[Publications](#)

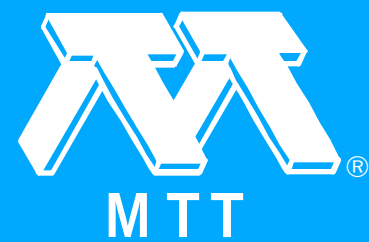
[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Application of Stimulated Electromagnetic Shock Radiation to the Generation of Intense Submillimeter Waves

S. Schneider and R. Spitzer. "Application of Stimulated Electromagnetic Shock Radiation to the Generation of Intense Submillimeter Waves." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 551-555.

A new synergistic effect, resulting in tunable high-frequency high-power narrow-band radiation, is described. The effect, called stimulated electromagnetic shock radiation (SESR), combines the Doppler shift in frequency of Compton backscattering of electromagnetic radiation from moving electrons with the formation of an electromagnetic shock front in a medium in which the Mach condition is satisfied. The underlying physical mechanism of SESR is contrasted with those of Cerenkov radiation and laser action. The characteristics of SESR and Cerenkov radiation are compared. It is found that SESR is tunable in frequency and can be generated with much greater intensity and in a much narrower frequency band than Cerenkov radiation. The efficiency of conversion of electron energy into SESR is expected to be high (greater than 50 percent) under suitable conditions wherein the process is made self-limiting. The potential of SESR for generating submillimeter and far-infrared waves is discussed qualitatively.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

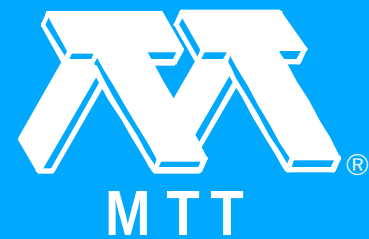
Submillimeter-Wave Production by Upshifted Reflection from a Moving Ionization Front

M. Lampe, E. Ott, W.M. Manheimer and S. Kainer. "Submillimeter-Wave Production by Upshifted Reflection from a Moving Ionization Front." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 556-558.

The Doppler shift and reflection coefficients are calculated for reflection of an electromagnetic (EM) wave from a moving ionization front in a stationary gas. It is suggested that this process can be used to upshift microwaves to submillimeter waves.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front

J.M. Buzzi, H.J. Doucet, B. Etlicher, J.C. Faure, P. Haldenwang, A. Huetz, H. Lamain, C. Rouille, J.C. Cabe, J. Delvaux, J.C. Jouys, C. Peugnet and M. Roche. "Experimental Evidence of Relativistic Doppler Frequency Conversion on a Relativistic Electron Beam Front." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 559-560.

Frequency conversion of microwaves from X to Ka band is observed upon their reflection from the front of an intense relativistic electron beam in two different machines. The incident X-band microwaves derive from emission of the beam itself. The results are in qualitative agreement with the expected beam front velocity monitored from variable gas pressure, and a pulse compression, associated with beam front reflection, is observed.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Relativistic Electron-Beam-Generated Coherent Submillimeter Wavelength Cerenkov Radiation

J.E. Walsh, T.C. Marshall, M.R. Mross and S.P. Schlesinger. "Relativistic Electron-Beam-Generated Coherent Submillimeter Wavelength Cerenkov Radiation." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 561-563.

The possibility of using intense relativistic electron-beam-driven dielectric-loaded waveguides as submillimeter wavelength radiation sources is discussed.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave Generation Using Sheet Relativistic Electron Beams

G. Providakes, J.A. Nation and M.E. Read. "Microwave Generation Using Sheet Relativistic Electron Beams." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 563-566.

Potential advantages in the use of a sheet electron beam for generation of high-power microwave signals are discussed and preliminary experiments to establish their applicability are reported. An examination indicates that sheet beams probably have greatest utility in the frequency, range 10-100 GHz.

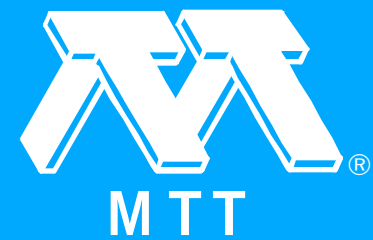
[Click on title for a complete paper.](#)



Abstracts

Back Cover (Jun. 1977 [T-MTT])

"Back Cover (Jun. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): b1-b2.



IEEE

Contents

Publications

Issues

Papers

Authors

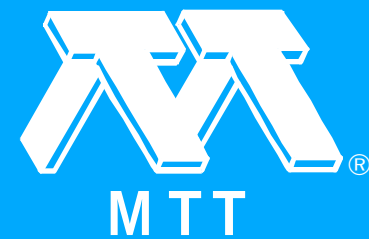
Click on title for a complete paper.



Abstracts

Front Cover (Jul. 1977 [T-MTT])

"Front Cover (Jul. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Theory and Applications of Coupled Optical Waveguides Involving Anisotropic or Gyrotropic Materials

K. Kitayama and N. Kumagai. "Theory and Applications of Coupled Optical Waveguides Involving Anisotropic or Gyrotropic Materials." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 567-572.

Coupled optical waveguides consisting of two isotropic dielectric slab waveguides coupled through anisotropic or gyrotropic materials inserted between them, are treated theoretically in detail. The properties of reciprocal and nonreciprocal TE-TM mode conversion and a nonreciprocal phase shift for TM modes are shown. As an example of application of this type of coupled waveguide, a nonreciprocal optical integrated circuit (IC) mode converter is proposed. It is shown that a circulator and an isolator which require neither mode separators nor mode filters can be constructed by utilizing the proposed nonreciprocal mode converter. The numerical design examples are also given.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Linear Power Responses of an Optical Fiber

C. Vassallo. "Linear Power Responses of an Optical Fiber." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 572-576.

It is known that an optical fiber behaves linearly in terms of power when the modulation frequency is smaller than the spectrum width of the light source. In order to calculate the impulse or frequency power responses with a modal calculation, it is shown that the powers carried by the different modes are independent in usual cases. Different formulas are proposed for the linear responses when there is no mode coupling, and the corresponding validity conditions are given.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Numerical Solution of the Coupled-Power Equation in Step-Index Optical Fibers

M. Rousseau and L. Jeunhomme. "Numerical Solution of the Coupled-Power Equation in Step-Index Optical Fibers." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 577-585.

By use of the finite-difference method of numerical analysis, a simple numerical solution is obtained for the coupled-power equation in optical fibers. For a specified arbitrary coupling coefficient and launching condition, the solution yields all the quantities of interest in the interior of the fiber: power distribution, attenuation, and far-field radiation pattern as functions of length. Results for buffered and cabled Corning fibers are reported. Attention is mainly focused on the influence of the microbends on the optical losses.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Modes and Cutoff Frequencies of Crossed Rectangular Waveguides

Q.C. Tham. "Modes and Cutoff Frequencies of Crossed Rectangular Waveguides." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 585-588.

One complete solution is presented for determining the electromagnetic field of a generalized crossed rectangular waveguide. The method adopted is that of partial regions. Cutoff frequencies of symmetrical crossed waveguides are presented as an example. The results, even for low-order approximations, correspond well with the only experimental results available in the literature.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

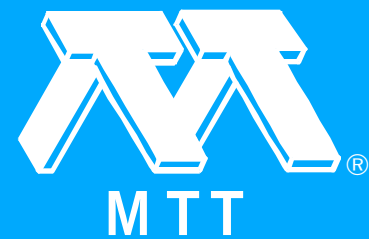
Resonant Frequency and Q of an Open-Ended Rectangular Cavity

D.M. Pozar. "Resonant Frequency and Q of an Open-Ended Rectangular Cavity." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 589-593.

A field analysis of the TE _{10m} resonant mode in an open-ended rectangular cavity is presented. The cavity geometry consists of rectangular waveguide with thick H-plane bifurcations for the terminations at each end. The bifurcation problem is solved by the method of modal analysis and a resonance criterion is established. Expressions for the cavity fields are written and used to compute stored energy, power lost, and Q. Calculated values for resonant frequency and Q are given and compared with experimental data.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Ferrite Planar Circuits in Microwave Integrated Circuits

T. Miyoshi, S. Yamaguchi and S. Goto. "Ferrite Planar Circuits in Microwave Integrated Circuits." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 593-600.

The ferrite planar circuit to be discussed in this paper is a general planar circuit using ferrite substrates magnetized perpendicular to the ground conductors. The main subject of this paper is the analysis of an arbitrarily shaped triplate ferrite planar circuit. In particular, the circuit parameters of the equivalent multiport are determined. To analyze ferrite planar circuits in general, two approaches are possible. One approach is based upon a contour-integral solution of the wave equation. In the other approach the fields in the circuit are expanded in terms of orthonormal eigenfunctions. Examples of the application of such analyses are described.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Energy Analysis for the Amplification Phenomena of Magnetostatic Surface Waves in a YIG-Semiconductor Coupled System

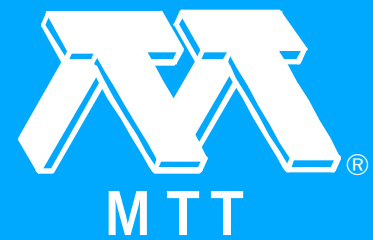
S. Yamada, N.S. Chang and Y. Matsuo. "Energy Analysis for the Amplification Phenomena of Magnetostatic Surface Waves in a YIG-Semiconductor Coupled System." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 600-605.

Amplification phenomena of magnetostatic surface waves (MSSW's) in a ferrite-semiconductor system are analyzed in detail for the first time from an energy view point. For the interactions between MSSW's containing a backward branch and carrier streams in a semiconductor, the dispersion relations are given and the energy conservation law is applied to the system. The results in terms of energy quantities are found to be consistent with the solutions of the dispersion equation and well explain the amplifying mechanism microscopically. We conclude that this kind of interaction is a negative energy dissipation type of instability.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

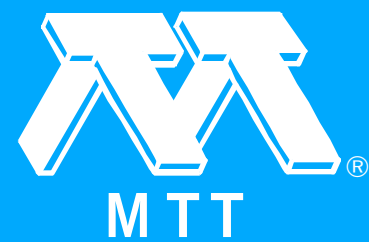
On Microwave-Induced Hearing Sensation

J.C. Lin. "On Microwave-Induced Hearing Sensation." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 605-613.

When a human subject is exposed to pulsed microwave radiation, an audible sound occurs which appears to originate from within or immediately behind the head. Laboratory studies have also indicated that evoked auditory activities may be recorded from cats, chinchillas, and guinea pigs. Using a spherical model of the head, this paper analyzes a process by which microwave energy may cause the observed effect. The problem is formulated in terms of thermoelasticity theory in which the absorbed microwave energy represents the volume heat source which depends on both space and time. The inhomogeneous thermoplastic motion equation is solved for the acoustic wave parameters under stress-free surface conditions using boundary value technique and Duhamel's theorem. Numerical results show that the predicted frequencies of vibration and threshold pressure amplitude agree reasonably well with experimental findings.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Rank Reduction of Ill-Conditioned Matrices in Waveguide Junction Problems

D.N. Zuckerman and P. Diament. "Rank Reduction of Ill-Conditioned Matrices in Waveguide Junction Problems." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 613-619.

A new low-rank spectral expansion technique for solving the ordinarily intractable matrix equations obtained from waveguide field equivalence theorem decompositions is described. The method facilitates the analysis of waveguide discontinuity problems that resist ordinary methods of solution. The technique is illustrated for the problem of scattering at a slant interface in a rectangular waveguide.

Click on title for a complete paper.



Abstracts

The New Similarity Rules Applied to Argon Microwave Noise Sources

R.E. Guentzler. "The New Similarity Rules Applied to Argon Microwave Noise Sources." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 619-621.

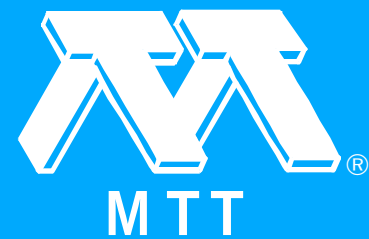
It is shown that when the noise temperatures of argon plasma noise generators, operated at fixed current/radius ratios, are plotted as $1/T_{\text{sub } N}$ versus $\ln(p_r)$, the experimental data form a straight line.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Interdependence of Gain and Idler Conversion Loss in Parametric Amplifiers (Letters)

D.N. Singh. "Interdependence of Gain and Idler Conversion Loss in Parametric Amplifiers (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 621-622.

Interdependence of gain and idler conversion has been experimentally investigated in parametric amplifiers having, single diode circuit configuration. The results indicate that for high gain amplifiers, the inherent idler rejection is inadequate, and larger lengths of pump waveguide, designed to be below cutoff at idler frequency, are to be used for reducing the effect of pump sideband noise on the noise temperature of the parametric amplifiers.

Click on title for a complete paper.



Abstracts

Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies (Comments)

H.I. Bassen and A. Cheung. "Experimental and Theoretical Studies on Electromagnetic Fields Induced Inside Finite Biological Bodies (Comments)." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 623-624.

The above paper states unequivocally: "When a probe is immersed in a finite biological body to measure the induced electric field, the output of the probe becomes location dependent, especially at the edge of the body." This statement is only true for an electrically large dipole antenna with a relatively low impedance detector as a load. We have developed a set of probe design criteria for implantable electric field probes. These criteria have been applied to produce a miniature isotropic probe which is neither location dependent nor calibration dependent with respect to the dielectric properties of the surrounding media. This calibration independence is analyzed as a function of dipole insulation thickness by Smith.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

On the Design of Dielectric Loaded Waveguides (Comments)

*F.E. Gardiol. "On the Design of Dielectric Loaded Waveguides (Comments)." 1977
Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 624-625.*

In the above paper, the authors show that, by loading a rectangular waveguide with an E-plane dielectric slab, its theoretical power-handling capacity can be significantly increased. Their conclusion may come as a surprise to experimenters designing high-power E-plane devices such as ferrite isolators or phase shifters. It is a well-known fact that such structures tend to exhibit breakdown at power levels well below those of the empty waveguide.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Discussion of "The Resonant Frequency and Tuning Characteristics of a Narrow-Gap Reentrant Cylindrical Cavity" (Letters)

J.R.M. Vaughan. "Discussion of "The Resonant Frequency and Tuning Characteristics of a Narrow-Gap Reentrant Cylindrical Cavity" (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 625-625.

After programming the working equations given in the Appendix to this paper, and finding that I could not reproduce the numerical results given in Table I, I have corresponded directly with the author. He informs me that there are four errors in the equation given on p. 187.



- Contents
- Publications
- Issues
- Papers
- Authors

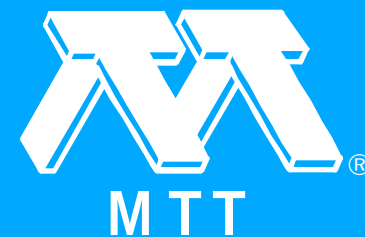
Click on title for a complete paper.



Abstracts

Contributors (Jul. 1977 [T-MTT])

N.S. Chang, P. Diament, S. Goto, R.E. Guentzler, L. Jeunhomme, K. Kitayama, N. Kumagai, J.C. Lin, Y. Matsuo, T. Miyoshi, D.M. Pozar, M. Rousseau, Q.C. Tham, C. Vassallo, S. Yamada, S. Yamaguchi and D.N. Zuckerman. "Contributors (Jul. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 626-627.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

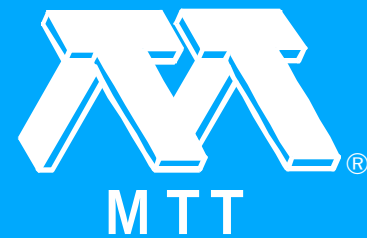
Click on title for a complete paper.



Abstracts

New from the IEEE Press, Turning Points in American Electrical History (Advertisement) (Jul. 1977 [T-MTT])

"New from the IEEE Press, Turning Points in American Electrical History (Advertisement) (Jul. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 628-628.



IEEE

Contents

Publications

Issues

Papers

Authors

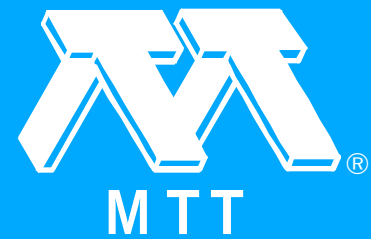
Click on title for a complete paper.



Abstracts

IEEE Membership (Advertisement) (Jul. 1977 [T-MTT])

"IEEE Membership (Advertisement) (Jul. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 629-629.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Jul. 1977 [T-MTT])

"Back Cover (Jul. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

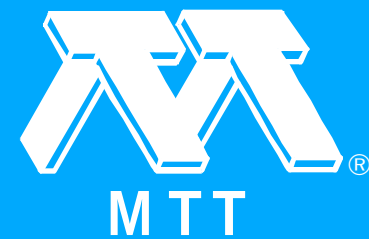
Click on title for a complete paper.



Abstracts

Front Cover (Aug. 1977 [T-MTT])

"Front Cover (Aug. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

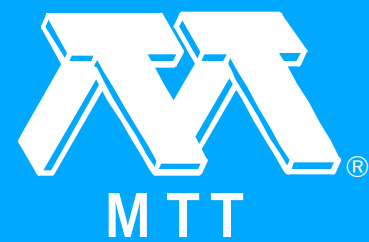
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

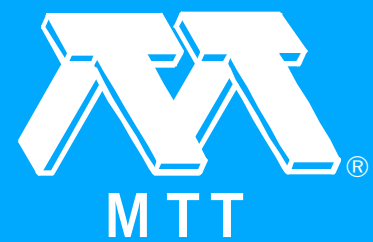
Transmission-Line Properties of a Strip on a Dielectric Sheet on a Plane

H.A. Wheeler. "Transmission-Line Properties of a Strip on a Dielectric Sheet on a Plane." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 631-647.

The subject is a strip line formed of a strip and a parallel ground plane separated by a dielectric sheet (commonly termed "microstrip"). Building on the author's earlier papers all the significant properties are formulated in explicit form for practical applications. This may mean synthesis and/or analysis. Each formula is a close approximation for all shape ratios, obtained by a gradual transition between theoretical forms for the extremes of narrow and wide strips. The effect of thickness is formulated to a second-order approximation. Then the result is subjected to numerical differentiation for simple evaluation of the magnetic-loss power factor from the skin depth. The transition formulas are tested against derived formulas for overlapping narrow and wide ranges of shape. Some of these formulas are restated from the earlier derivations and others are derived herein. The latter include the second-order approximation for a narrow thin strip, and a close approximation for a narrow or wide square cross section in comparison with a circular cross section. Graphs are given for practical purposes, showing the wave resistance and magnetic loss for a wide range of shape and dielectric. For numerical reading, the formulas are suited for programming on a digital pocket calculator.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Dissipation Loss Effects in Isolated and Coupled Transmission Lines

B.E. Spielman. "Dissipation Loss Effects in Isolated and Coupled Transmission Lines." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 648-656.

This paper describes a computer-aided analysis of dissipation losses in uniform isolated or coupled transmission lines for microwave and millimeter-wave integrated-circuit applications. The analysis employs a quasi-TEM model for isolated transmission lines and for the even- and odd-mode transmission lines associated with coupled-line structures. The conductor and dielectric losses are then related to equivalent charge density distributions, which are evaluated using a method-of-moments solution. The transmission lines treated by this analysis may contain any number of lossy conductors and inhomogeneous dielectrics, consisting of any number of different homogeneous dielectric regions. A development is provided to explicitly relate the four-port terminal-electrical performance of directional couplers to evaluated even- and odd- mode loss coefficients. Examples of evaluated losses are presented in graphical form for isolated lines of inverted microstrip and trapped inverted microstrip and edge-coupled microstrip with a dielectric overlay. The analysis accuracy has been confirmed using microstrip and coplanar waveguide configurations. A comparison is made of the total loss characteristics for microstrip, coplanar waveguide, inverted microstrip, and trapped inverted microstrip. Calculations are compared with measurements for the coupled-line structure. Accuracy of the solution and suggested refinements are discussed. Five computer programs are documented.

Click on title for a complete paper.



Abstracts

Analysis of Distributed-Lumped Strip Transmission Lines

T. Sugiura. "Analysis of Distributed-Lumped Strip Transmission Lines." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 656-661.

A calculation method for obtaining characteristic impedances and phase velocities of striplines, which are regarded as consisting of distributed-lumped elements such as so-called wiggly lines, is presented with numerical results. The numerical calculations have been carried out for a) single stripline with slots at the outer edges, b) coupled stripline with rectangular wiggling, and c) coupled stripline with slots at the outer edges. Experimental work has also been accomplished to verify the present method. Results show good agreement with calculations.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Optimization of the Matching Network for a Hybrid Coupler Phase Shifter

J.P. Starski. "Optimization of the Matching Network for a Hybrid Coupler Phase Shifter." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 662-666.

A new theory is presented for how to find the optimum data for a transmission line used as a matching network for a hybrid coupler phase shifter. The theory gives a smaller phase-shift error and a greater bandwidth than already known methods. Two methods for equalization of the diode losses for a hybrid coupler phase shifter are described.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Method for Broad-Band Matching of Microstrip Differential Phase Shifters

B. Schiek and J. Kohler. "A Method for Broad-Band Matching of Microstrip Differential Phase Shifters." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 666-671.

Meander-line phase shifters in microstrip are not well matched, because of the phase-velocity difference between the odd and the even mode in the coupled-line region. A stepped impedance design is introduced which allows one to realize, for example, a quarter-wavelength 90/spl deg/ Schiffman phase shifter with three sections, having, theoretically, a return loss better than 30 dB over a 1:5 bandwidth. Design equations are given and are confirmed by measurements on microwave integrated circuits in the frequency range 2-10 GHz.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Extending the Realizable Bandwidth of Edge-Coupled Stripline Filters

P.A. Kirton and K.K. Pang. "Extending the Realizable Bandwidth of Edge-Coupled Stripline Filters." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 672-676.

This paper discusses the physical realizability of wide-band parallel-coupled filters in edge-coupled stripline form. Based on the sine-plane approximation, a design procedure that permits the presently realizable bandwidth to be extended from 20 to 45 percent is developed. The new design optimizes the interior impedance level and replaces the end-coupled line sections by quarter-wavelength transformers.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A Statistical Measure for the Stability of Solid State Noise Sources

M. Kanda. "A Statistical Measure for the Stability of Solid State Noise Sources." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 676-682.

A statistical measure for the stability of solid state noise sources is discussed. Its applicability is demonstrated. Two independent techniques, a cross correlation technique and a triangulation technique, are employed to estimate the instabilities of individual noise sources. An analysis for the validity of the cross correlation technique for separating the instability of the noise source from that of the measurement system is also given.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

30-GHz-Band Periodic Branching Filter Using a Traveling-Wave Resonator for Satellite Applications

H. Kumazawa and I. Ohtomo. "30-GHz-Band Periodic Branching Filter Using a Traveling-Wave Resonator for Satellite Applications." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 683-687.

A periodic branching filter consisting of three directional couplers, a traveling-wave resonator, and connecting waveguides is used as a band diplexer with a broad 3-dB bandwidth and sharp selectivity for a satellite communication system application. This paper describes a theoretical analysis, a design method, and experimental results for this periodic branching filter. The fabricated periodic branching filter for separating the 30-GHz frequency band 27.0-29.2 GHz into two subbands of equal 3-dB bandwidth of about 900 MHz has sharp frequency selectivity. Measured branching losses and relative delay time are 0.35-0.5 dB and 0.4 ns, respectively, within each frequency subband ($f_{\text{sub } 1,2} \pm 300 \text{ MHz}$). The 96-g diplexer is made of thin-walled aluminum. Its size is 15 x 9 x 4 cm.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Modeling Rectangular Waveguide Junctions by the Eigenfunction Method

A.H. Nalbandoglu. "Modeling Rectangular Waveguide Junctions by the Eigenfunction Method." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 688-694.

A method to determine the impedance and admittance matrices of a certain class of rectangular waveguide junctions is presented. First, general matrices are obtained relating all of the modes that may exist in the waveguides connected to the ports. The expressions for the matrix entries are given in terms of the eigenfunctions of the volume occupied by the junction and the fields at the ports. Second, to obtain a relationship between the propagating modes of the connecting waveguides, a numerical iterative procedure is developed to eliminate the evanescent modes from the general matrices. Practical applications have shown that the results agree well with the previous ones, and the method can readily be used to analyze different types of junctions in any required frequency range.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High-Efficiency Millimeter-Wave Bolometer Mount

T. Inoue and T. Nemoto. "High-Efficiency Millimeter-Wave Bolometer Mount." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 694-697.

A bolometer mount is described for measuring TEO/sub 01/-mode waveguide power at a frequency of 100 GHz. This device is called an eight-fan-type bolometer mount. By dividing the electrode of the element into eight segments, the generation of an unwanted mode was suppressed, and, by minimizing the electrode area, heat loss due to the electrode was decreased. As a result, good matching characteristics and high effective efficiency were obtained. This mount is sufficiently useful for a precision power measurement in the millimeter-wave region.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Complex Permittivity of GaAs and CdTe at Microwave Frequencies

W.E. Courtney. "Complex Permittivity of GaAs and CdTe at Microwave Frequencies." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 697-701.

The microwave dielectric constant and loss tangent of Cr-doped semi-insulating GaAs have been measured in the frequency range 2.5-36.0 GHz and the temperature range 300-400 K. The room temperature dielectric constant is 12.95 and the temperature coefficient α ($1/\epsilon \text{ equiv } d\epsilon/dT$) is $1.6 \times 10^{-4} / \text{K}$. The dielectric constant and loss tangent of CdTe have been measured as functions of temperature at 15.95 GHz. The room temperature dielectric constant is 10.39 ± 0.04 and the temperature coefficient α is $2.5 \times 10^{-4} / \text{K}$.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Precise Calibration of Plane-Wave Microwave Power Density Using Power Equation Techniques

H.I. Bassen and W.A. Herman. "Precise Calibration of Plane-Wave Microwave Power Density Using Power Equation Techniques." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 701-706.

A power-density calibration methodology utilizing an anechoic chamber, high-power transmitter, and truncated pyramidal horn antenna is described. Plane-wave power density is accurately computed in the far field of the antenna, based upon precise measurements of antenna gain, absolute transmitted power, and multipath reflections. The application of power equation techniques enables direct precise measurements of system mismatches and the accurate transfer of calibration of special bolometers. Several considerations, unique to hazard probe calibrations, are discussed. Absolute power density uncertainties are estimated at 0.56 dB, at 2450 MHz, and 0.76 dB, at 915 MHz, under worst case conditions. A discussion of second-order error sources and their elimination includes the effects of antenna alignment, antenna sidelobes, multipath reflections, field curvature at noninfinite distances, and scattering from test apparatus.

Click on title for a complete paper.

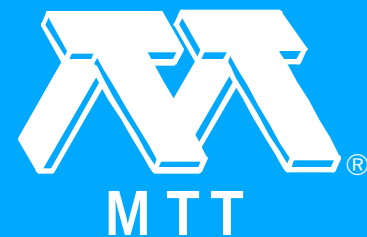


Abstracts

Measurements of 1.8--2.7-GHz Microwave Attenuation in the Human Torso

I. Yamaura. "Measurements of 1.8--2.7-GHz Microwave Attenuation in the Human Torso." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 707-710.

For the purpose of diagnostic application of microwaves, establishment of techniques to measure the signal transmission through the human torso is attempted. Leakage effects are the most troublesome measuring problem above 1 GHz because of high attenuation within the body. Swept-frequency measurement and close coupling between the flanged aperture antenna and the body assure that the results are free from leakage effects. Experimentally obtained attenuation constants of the abdomen and left thorax are almost the same as those of muscle tissues. In the thorax record, changes of attenuation caused by heartbeats or respirations are observed.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

An Alternate Derivation of Lewin's Formula (Letters)

H.J. Riblet. "An Alternate Derivation of Lewin's Formula (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 711-712.

The reflection coefficient at the junction between a uniform waveguide and one which tapers linearly in the plane of the electric field can be evaluated by a suitable integration of the differential reflection coefficient. When the limit of this infinite integral is determined as the "flare" angle approaches zero, the relative susceptance at the discontinuity is found to be the well-known expression $B/Y_{\text{sub } 0} = \tan \theta/kb$.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue (Correction)

T.K. Wu and L.L. Tsai. "Electromagnetic Fields Induced Inside Arbitrary Cylinders of Biological Tissue (Correction)." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 712-712.

In the above paper, Fig. 8 is not correct. The corrected Fig. 8 is presented here.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

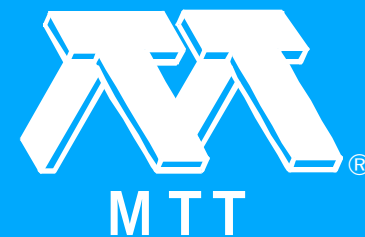


Abstracts

Analytical IC Metal-Line Capacitance Formulas (Correction)

W.H. Chang. "Analytical IC Metal-Line Capacitance Formulas (Correction)." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 712-712.

In the above paper, equation (13) should have read.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Waveguide Bend Spurious Mode Program (Computer Program Descriptions)

G. Govindarajan and E. Bahar. "Waveguide Bend Spurious Mode Program (Computer Program Descriptions)." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 713-713.

To calculate the magnitude and phase of propagating modes in H-plane waveguide bends using annular modal analysis. This program can be used for the design of waveguide bends used in high powered multimode microwave systems where it is necessary to suppress spurious mode generation.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

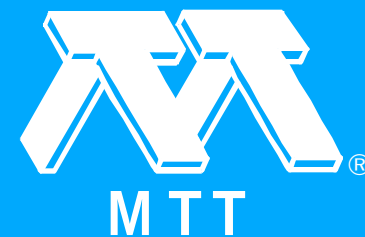
Click on title for a complete paper.



Abstracts

Contributors (Aug. 1977 [T-MTT])

H.I. Bassen, W.E. Courtney, W.A. Herman, T. Inoue, M. Kanda, P.A. Kirton, J. Kohler, H. Kumazawa, A.H. Nalbandoglu, T. Nemoto, I. Ohtomo, K.K. Pang, B. Schiek, B.E. Spielman, J.P. Starski, T. Sugiura, H.A. Wheeler and I. Yamaura. "Contributors (Aug. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 714-716.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Realization of Elliptic Function Bandstop Filters by Means of a Resonated Prototype

J.A.G. Malherbe. "Realization of Elliptic Function Bandstop Filters by Means of a Resonated Prototype." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 717-717.

Elliptic function bandstop filter realizability is normally improved by the use of a resonated prototype. It is indicated that if unit element transforms are performed before the bandstop transform is performed, a simpler procedure results, as well as exact realizations for cases of $N = 5$ or higher.

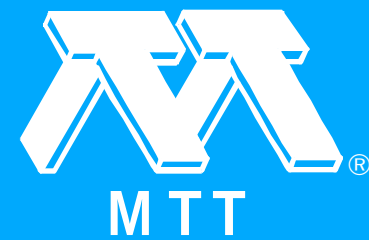
Click on title for a complete paper.



Abstracts

Basic Parameters of Nonsymmetrical Coplanar Line

I. Kneppo and J. Gotzman. "Basic Parameters of Nonsymmetrical Coplanar Line." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): 718-718.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

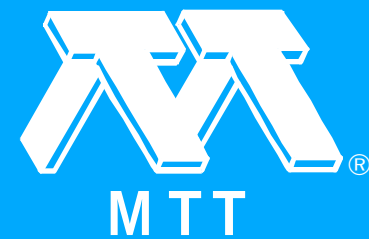
Click on title for a complete paper.



Abstracts

Back Cover (Aug. 1977 [T-MTT])

"Back Cover (Aug. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.8 (Aug. 1977 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

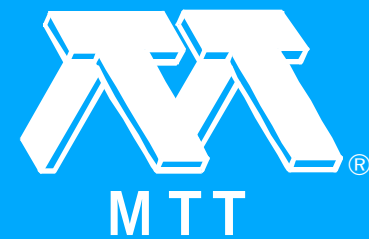
Click on title for a complete paper.



Abstracts

Front Cover (Sep. 1977 [T-MTT])

"Front Cover (Sep. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Radiation of Electromagnetic Power by Microstrip Configurations

L.J. Van Der Pauw. "The Radiation of Electromagnetic Power by Microstrip Configurations." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 719-725.

A new technique for calculating the radiation losses of microstrip configurations is presented. The method applies if the wavelength is large compared to the width of the conducting strip and the thickness of the dielectric wafer. It is shown that the radiated power, which is partly carried by "space waves" and partly by "surface waves," can be computed in terms of the specific inductance and the specific capacitance of the transmission line, without making any assumptions regarding the current distribution in the microstrip. It appears that the fraction of the radiated power carried by surface waves contains the frequency to a higher power than does the fraction carried by space waves and is therefore relatively small. The investigated configurations are the infinitely long transmission line excited by a voltage-slit, the half-wavelength straight resonator, the full-wavelength circular resonator, and the quarter-wavelength hair-pin resonator. It follows that the quality factor of the straight resonator and the circular resonator are inversely proportional to the square of the frequency, whereas the quality factor of the hairpin resonator is inversely proportional to the fourth power of the frequency.

[Click on title for a complete paper.](#)



Abstracts

On the Analysis of Symmetrical Three-Line Microstrip Circuits

V.K. Tripathi. "On the Analysis of Symmetrical Three-Line Microstrip Circuits." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 726-729.

The immittance parameters for the case of symmetrical coupled three-line microstrip or other inhomogeneous six-port structures are derived in terms of the normal modes of the coupled system. The analytical results obtained reduce to the heretofore known results when the line parameters are interrelated in a specified manner, and should be useful in the study and accurate design of three-line couplers and other microwave circuit elements.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Intermodulation Distortion Analysis of Reflection-Type IMPATT Amplifiers Using Volterra Series Representation

A. Javed, B.A. Syrett and P.A. Goud. "Intermodulation Distortion Analysis of Reflection-Type IMPATT Amplifiers Using Volterra Series Representation." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 729-734.

Intermodulation distortion generated in a stable IMPATT amplifier is analyzed using Volterra series representation. An IMPATT amplifier model, which takes into account the interaction between the nonlinearities of the diode and its embedding circuitry, is described. The Volterra transfer functions are derived for this model. Nonlinear terms up to and including the fifth order are considered. Intermodulation distortion products are calculated for a low-level input signal consisting of two tones. The results of this analysis are extrapolated into the direction of increasing output power in order to obtain the third-order intercept point. Further, closed form expressions for the third-order intermodulation $IM_{3/}$ and intercept point $P_{1/}$ are derived. The distortion of a specific 6-GHz IMPATT amplifier is evaluated for illustrative purposes; the predicted distortion behavior compares favorably with experimental results.

[Click on title for a complete paper.](#)



Abstracts

Effects of Depletion-Layer Modulation on Spurious Oscillations in IMPATT Diodes

D. Tang and G.I. Haddad. "Effects of Depletion-Layer Modulation on Spurious Oscillations in IMPATT Diodes." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 734-741.

A theoretical analysis of the effects of depletion-layer modulation on spurious oscillations in IMPATT diodes is given. The relationship between the magnitude of the depletion-layer modulation, circuit impedance and threshold for degenerate instabilities is presented.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

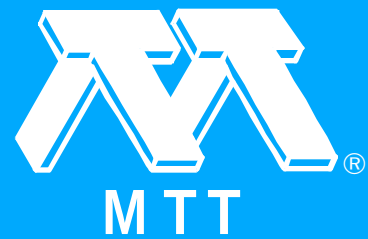
[Click on title for a complete paper.](#)



Abstracts

Model for Some Nonthermal Effects of Radio and Microwave Fields on Biological Membranes

F.S. Barnes and C.-L.J. Hu. "Model for Some Nonthermal Effects of Radio and Microwave Fields on Biological Membranes." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 742-746.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Internal EM Field and Absorbed Power Density in Human Torsos Induced by 1-500-MHz EM Waves

K.-M. Chen and B.S. Guru. "Internal EM Field and Absorbed Power Density in Human Torsos Induced by 1-500-MHz EM Waves." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 746-756.

Numerical results on the internal electromagnetic (EM) field and absorbed power density inside a human torso induced by EM waves of frequencies ranging from 1 to 500 MHz and of both vertical and horizontal polarizations are presented. The induced fields inside the torso are shown to be dependent on the frequency and the torso geometry. Theoretical results are obtained based on the tensor integral equation method and some theoretical predictions are compared to existing experimental results.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

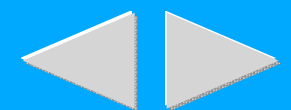
[Authors](#)

Modal Characteristics of Crossed Rectangular Waveguides

F.-L.C. Lin. "Modal Characteristics of Crossed Rectangular Waveguides." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 756-763.

The modal solution for the crossed rectangular waveguide is presented. Cutoff frequencies and modal fields are determined by formulating an integral eigenvalue equation which can be solved by application of the Ritz-Galerkin method. Field equations are given for both TE and TM modes. The calculated cutoff frequencies of several lower order modes agree very well with the available experimental results in the literature.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Iterative Solutions of Waveguide Discontinuity Problems

M.F. Iskander and M.A.K. Hamid. "Iterative Solutions of Waveguide Discontinuity Problems." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 763-768.

The method of overlapping regions, together with Schwarz's technique, is applied to waveguide discontinuity problems to illustrate its potential and basic advantages and disadvantages over other methods. The method reasonably corrects an arbitrary initial assumption of field distribution in the plane of discontinuity to the final value in a small number of iterations. The advantages are illustrated for a waveguide bend and dumbbell shaped waveguide as examples of transverse and longitudinal discontinuities, respectively. Numerical results for the case where only the electric field is parallel to the sharp edge discontinuity are presented and compared with available data, while extension to the case where only the magnetic field is parallel to the edge is discussed.

[Click on title for a complete paper.](#)



Abstracts

Analysis of a Waveguide Hybrid Junction by Rank Reduction

D.N. Zuckerman and P. Diament. "Analysis of a Waveguide Hybrid Junction by Rank Reduction." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 768-773.

Exact equations characterizing a waveguide hybrid junction traversed by a dielectric sheet are formulated by waveguide field-equivalence decomposition. A new reduced-rank spectral expansion technique avoids inversion of a large ill-conditioned matrix in the calculation of the scattering matrix. Arbitrary sheet thicknesses and permittivities are treated, accounting fully for waveguide boundaries and offset. For illustrative purposes, numerical results are presented for a rectangular waveguide hybrid, when only the dominant mode propagates.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Propagation Losses of Guided Modes in an Optical Graded-Index Slab Waveguide with Metal Cladding

M. Masuda, A. Tanji, Y. Ando and J. Koyama. "Propagation Losses of Guided Modes in an Optical Graded-Index Slab Waveguide with Metal Cladding." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 773-776.

Analytical results for propagation losses of guided modes in a graded-index slab waveguide (GISW) with metal cladding are presented. When the permittivity in the guiding layer decreases linearly away from the metal surface, the attenuation constant α_{G} of well-guided modes, TE and TM, is approximately proportional to only the ratio $(\Delta \epsilon_i / \epsilon_0) / d_i$, where $\Delta \epsilon_i$ is the increment in the permittivity at the metal surface in the direction of the polarization of optical waves, d_i is the diffusion depth in this direction, and ϵ_0 is the permittivity of free space.

[Click on title for a complete paper.](#)



Abstracts

Transient Analysis of Systems with Exponential Transmission Lines

J.L. Hill and D. Mathews. "Transient Analysis of Systems with Exponential Transmission Lines." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 777-783.

Two computer solutions are given for pulse propagation along exponentially tapered transmission lines with arbitrary nonlinear sending and receiving networks. The solutions allow series and shunt loss terms per unit of length of the line. The method of characteristics is shown to be computationally superior to the cubic spline method in terms of accuracy and efficiency.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part I: Full-Height Ferrite Configuration

M.E. El-Shandwily, A.A. Kamal and E.A.F. Abdallah. "General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part I: Full-Height Ferrite Configuration." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 784-793.

In this paper an exact field theory treatment for the N-port E-plane full-height ferrite rod junction circulators is presented. Field expressions are written in each region of the junction in the form of infinite modes. Matching of the fields at the common boundaries is used to get a set of infinite nonhomogeneous equations in these mode amplitudes. The point matching technique is used to obtain an approximate solution for the field amplitudes by taking a finite number of modes in each region. Three types of junctions have been analyzed by this technique. These junctions are the symmetrical Y junction and two types of T junctions. Experimental measurements have been carried out to verify the obtained numerical results.

[Click on title for a complete paper.](#)



Abstracts

General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part II: Two-Disk Ferrite Configuration

M.E. El-Shandwily, A.A. Kamal and E.A.F. Abdallah. "General Field Theory Treatment of E-Plane Waveguide Junction Circulators--Part II: Two-Disk Ferrite Configuration." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 794-803.

This paper presents an analysis of the two-disk ferrite E-plane waveguide junction circulator as a boundary value problem. The junction is divided into different regions and the electromagnetic fields are obtained in each region. Matching of the fields at the common boundaries is used to obtain the characteristic modes in the ferrite-dielectric region. Point matching technique, at an imaginary boundary chosen between the center region of the junction and the waveguides, is used to obtain the circulator characteristics. Measurements carried out show good agreement between theory and experiment.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

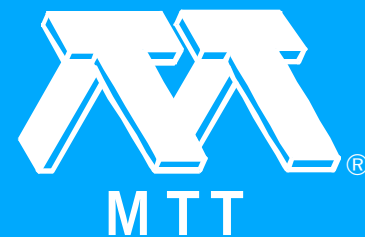
[Click on title for a complete paper.](#)



Abstracts

Contributors (Sep. 1977 [T-MTT])

E.A.F. Abdallah, Y. Ando, F.S. Barnes, K.-M. Chen, P. Diamant, M.E. El-Shandwily, P.A. Goud, B.S. Guru, M.A.K. Hamid, J.L. Hill, C.-L.J. Hu, M.F. Iskander, A. Javed, A.A. Kamal, J. Koyama, F.-L.C. Lin, M. Masuda, D. Mathews, B.A. Syrett, D. Tang, A. Tanji, V.K. Tripathi, L.J. Van Der Pauw, D.N. Zuckerman and G.I. Haddad. "Contributors (Sep. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): 804-806.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

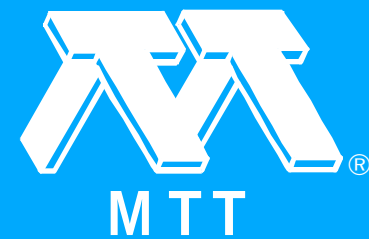
Click on title for a complete paper.



Abstracts

Back Cover (Sep. 1977 [T-MTT])

"Back Cover (Sep. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.9 (Sep. 1977 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Oct. 1977 [T-MTT])

"Front Cover (Oct. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Direct Design Formulas for Asymmetric Bandpass Channel Diplexers

J.L. Haine and J.D. Rhodes. "Direct Design Formulas for Asymmetric Bandpass Channel Diplexers." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 807-813.

This paper gives direct design formulas for asymmetric bandpass channel diplexers, which allow rapid design of diplexers using narrow-band direct-coupled resonator filters. Computed results for a prototype diplexer are given, and results are presented for a 5.8-GHz asymmetric waveguide diplexer, which demonstrate the high performance possible using this design technique.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computer-Aided Synthesis of Planar Circuits

F. Kato, M. Saito and T. Okoshi. "Computer-Aided Synthesis of Planar Circuits." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 814-819.

This paper presents a fully computer-oriented iterative synthesis of an open-boundary planar circuit having an impedance matrix with prescribed poles and residues. A starting circuit pattern is given first, and it is represented by a finite number of parameters. Those parameters (and hence, the pattern) are then iteratively modified by using the Newton-Raphson method to realize the prescribed circuit characteristics. When the numbers of given poles and coupling ports are relatively small, the results are satisfactory both in the computing time and accuracy. Some numerical examples are given.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Equivalent Circuit Capacitance of Microstrip Step Change in Width

C. Gupta and A. Gopinath. "Equivalent Circuit Capacitance of Microstrip Step Change in Width." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 819-822.

Calculated results which extend existing data on the capacitance of step discontinuity are presented for $w_{\text{sub } 1}/H$ of value 0.1, 0.5, 1.0, and 2.0, for relative dielectric constants of 15.1, 9.0, 4.0, and 2.3, and for $w_{\text{sub } 2}/H$ in the range 0.1-10.0. The quasi-static method of calculation is used, and the excess capacitance associated with the steps is determined by the solution of the integral equation using Green's functions.

[Click on title for a complete paper.](#)



Abstracts

Equivalent Series Inductivity of a Narrow Transverse Slit in Microstrip

W.J.R. Hoefer. "Equivalent Series Inductivity of a Narrow Transverse Slit in Microstrip." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 822-824.

The series inductivity introduced by a narrow transverse slit in a microstrip transmission line has been evaluated theoretically, and a simple formula for this inductivity is presented. Experimental results for slits of different depth obtained with the resonant ring method compare well with theory. Applications of such a slit include the fine tuning of the electrical length of stubs and the compensation of excess capacitances at discontinuities.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Wide-Band Balanced Line Microwave Hybrids

S. Rehnmark. "Wide-Band Balanced Line Microwave Hybrids." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 825-830.

Wide-band balanced line microwave hybrids each consisting of lossless two-ports and a "reversed-phase hybrid ring" are presented. The two-ports can be designed for wide-band match and the new device is shown to have the same frequency independent properties as the basic hybrid ring. Two special two-ports are treated: one consists of open-circuited series stubs and short-circuited shunt stubs while the other consists of transmission-line cascades. The hybrid ring with matching stubs has been described previously, but is difficult to realize. The hybrid ring matched with transmission-line cascades is a new development which simplifies the practical realization. A complete synthesis procedure is presented and design data for 3-, 6-, 10-, and 15-dB coupling are tabulated.

[Click on title for a complete paper.](#)



Abstracts

Upper Bound on Cell Size for Moment-Method Solutions

M.J. Hagmann, O.P. Gandhi and C.H. Durney. "Upper Bound on Cell Size for Moment-Method Solutions." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 831-832.

When pulse functions are used in moment-method solutions, failure to allow for variation of the field within each cell limits the maximum usable electrical size of the cells. Appreciable error is expected for $|k|l \geq 2$ in one or two dimensions and $|k|l \geq \sqrt{6}$ in the three-dimensional problem where l is the side of a cell and k is the propagation constant in the material.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Thermographic and Behavioral Studies of Rats in the Near Field of 918-MHz Radiations

J.C. Lin, A.W. Guy and L.R. Caldwell. "Thermographic and Behavioral Studies of Rats in the Near Field of 918-MHz Radiations." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 833-836.

Patterns of thermalized energy of rat carcasses exposed to 918-MHz CW radiation in the near zone have been determined using a computerized thermograph. Peak absorption of energy in the body was estimated to be 0.9 W/kg per mW/cm² of incident energy. Operant responses of irradiated rats to schedules of fixed-ratio (food) reinforcement under the same conditions as the dosimetric test were observed to occur at averaged power densities of 30-40 mW/cm². This range of densities corresponds to absorbed peaks of energy of 27-36 W/kg. No change in behavior was observed for incident power densities and peaks of absorbed energy to 20-30 mW/cm² and to 18-27 W/kg, respectively, and all changes at higher values were reversible.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Transfer Function Approximations for a New Class of Bandpass Distributed Network Structures

M.E. Mokari-Bolhassan and W.H. Ku. "Transfer Function Approximations for a New Class of Bandpass Distributed Network Structures." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 837-847.

Characteristic functions for a new class of prototype bandpass transmission-line structures have been derived for both the maximally flat and equiripple or Chebyshev characteristics. The class of bandpass distributed structures considered in this paper consists of commensurate transmission lines with constraints in the form of a shunt open-circuited stub and/or a series short-circuited stub. The gain-bandwidth restrictions imposed by the reactance constraints have been derived and some explicit results are presented for the synthesis of this class of bandpass transmission-line networks. Results presented in this paper are directly applicable to the design of broad-band microwave passive and active networks. In particular, the results are applied to the design of broad-band matching networks for octave-band GaAs FET amplifiers.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Gain-Bandwidth Limitations and Synthesis of Single-Stub Bandpass Transmission-Line Structures

M.E. Mokari-Bolhassan and W.H. Ku. "Gain-Bandwidth Limitations and Synthesis of Single-Stub Bandpass Transmission-Line Structures." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 848-852.

Gain-bandwidth limitations and synthesis of a class of bandpass transmission-line structures with a single shunted stub and n cascaded commensurate lines are presented in this paper. With a shunt shorted stub as the reactive constraint, the optimum gain bandwidth is derived for an ideal bandpass gain characteristic. Explicit gain-bandwidth and synthesis results have been obtained for the class of single-stub cascaded line structures with one and two cascaded lines for both maximally flat and Chebyshev characteristics. For the general case of n cascaded lines approximate gain-bandwidth limitations have also been derived. The explicit results including gain-bandwidth limitations and element values can be used for the design of this class of bandpass transmission-line networks for broad-band matching of the reactive constraint as well as impedance transformation.



Abstracts

Noise Calibration Repeatability of an Airborne Third-Generation Radiometer (Letters)

H.-J.C. Blume. "Noise Calibration Repeatability of an Airborne Third-Generation Radiometer (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 852-855.

A third-generation S-band radiometer has been calibrated at intervals over 3-1/2 years. The built-in stabilization concepts have proven to be very effective. In spite of some nonideal conditions (on runway, in wind, and in rain), an rms value of 0.7 K calibration repeatability has been observed with an average temperature deviation (bias error) of 0.03 K.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Resonant Cavities Used as Frequency Selective Phase Shifters

N.A. McDonald. "Resonant Cavities Used as Frequency Selective Phase Shifters." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 855-856.

An application of resonant cavities as frequency selective phase shifters in a multicoupler configuration is described.

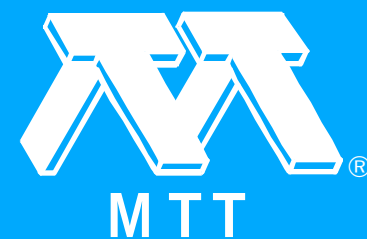
[Click on title for a complete paper.](#)



Abstracts

Contributors (Oct. 1977 [T-MTT])

C.H. Durney, O.P. Gandhi, A. Gopinath, C. Gupta, A.W. Guy, M.J. Hagmann, J.L. Haine, W.J.R. Hoefer, F. Kato, W.H. Ku, J.C. Lin, M.E. Mokari-Bolhassan, T. Okoshi, S. Rehnmark, J.D. Rhodes, M. Saito and L.R. Caldwell. "Contributors (Oct. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 856-859.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Overseas Abstracts (Oct. 1977 [T-MTT])

"Overseas Abstracts (Oct. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 859-864.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Directional Filter Diplexer Using Optical Techniques for Millimeter to Submillimeter Wavelengths

N.R. Erickson. "A Directional Filter Diplexer Using Optical Techniques for Millimeter to Submillimeter Wavelengths." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): 865-866.

An optical diplexer for injection of a local oscillator into a mixer, useful in the submillimeter and short millimeter range, is described. It has very low insertion loss for both the signal and local oscillator (L.O.) and high rejection of L.O. noise. Measured performance of a unit tested at 337 GHz indicates ~ 0.2 dB loss for both inputs and 20 dB noise rejection.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Oct. 1977 [T-MTT])

"Back Cover (Oct. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.10 (Oct. 1977 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

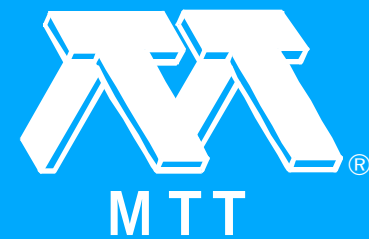
Click on title for a complete paper.



Abstracts

Front Cover (Nov. 1977 [T-MTT])

"Front Cover (Nov. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): f1-f2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Fundamental Limits on Conversion Loss of Double Sideband Resistive Mixers

A.J. Kelly. "Fundamental Limits on Conversion Loss of Double Sideband Resistive Mixers." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 867-869.

Although the resistive mixer has been the subject of numerous studies, these have all dealt with specific cases for terminations at the higher order mixing products (idlers). This paper deals with the general case of the double sideband mixer, and demonstrates that when no energy is dissipated at the idler frequencies the fundamental limit on conversion loss is 3 dB, with the lost energy being equally divided between conversion to the image and reflection loss at the signal port. Also treated is the case where matched loads are presented to each idler. It is shown that, in this case, the theoretical limit on conversion loss is 3.92 dB ($20 \log \pi/2$), independent of the mixer configuration.

Abstracts

Analysis of Frequency-Conversion Techniques in Measurements of Microwave Transistor Noise Temperatures

G. Caruso and M. Sannino. "Analysis of Frequency-Conversion Techniques in Measurements of Microwave Transistor Noise Temperatures." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 870-873.

Frequency-conversion effects on microwave effective noise temperature measurements are analyzed and conditions under which they are noticeable are given. When necessary, the experimental data can be corrected using the analytical relationships derived here.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

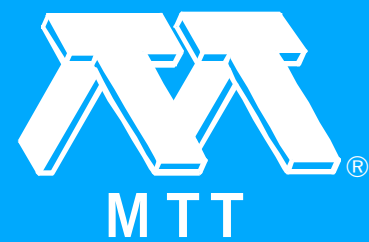
Numerical Analysis of the Rectangular Dielectric Waveguide and its Modifications

K. Ogusu. "Numerical Analysis of the Rectangular Dielectric Waveguide and its Modifications." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 874-885.

Dielectric waveguides suitable for millimeter and submillimeter wave integrated circuits are analyzed by applying the generalized telegraphist's equations. The dielectric waveguides treated in this paper are the rectangular dielectric image line, the cladded rectangular dielectric image line, the insulated image guide, and the strip dielectric guide. Numerical results of the propagation constant, the power distribution, and the field configuration in these dielectric waveguides are presented. Values for the propagation constants obtained by our method are compared with other theoretical results. Although this work is based on a closed waveguide model, it may be applicable to wide classes of dielectric waveguides with arbitrary dielectric profiles and cross sections.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Solutions of the Vector Wave Equation for Inhomogeneous Dielectric Cylinders--Scattering in Waveguide

G. Cicconi and C. Rosatelli. "Solutions of the Vector Wave Equation for Inhomogeneous Dielectric Cylinders--Scattering in Waveguide." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 885-892.

Some solutions of the vector wave equation for an inhomogeneous dielectric cylinder, suitable for numerical calculations of the scattered electromagnetic (EM) field in waveguide, are presented in cases where the cylinder axis is parallel, or perpendicular, to the incident electric field vector. The scattered field, given in terms of normal modes of the rectangular waveguide, permits easy determination of the transmission and reflection coefficients for the structure. The dielectric susceptibility may be considered as variable along the cylinder radius according to a parabolic function (Luneberg-type profile). Finally, numerical results of the scattered near field are presented for Teflon cylinders of different diameters, in the case of parallel polarization. They are compared with laboratory measurements in the microwave X band made as a reliability test of the computational program. The agreement between measured and computed values is satisfactory within a deviation of 10 percent in the whole frequency band.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Some Effects of Field Perturbation Upon Cavity-Resonance and Dispersion Measurements on MIC Dielectrics

P.H. Ladbrooke. "Some Effects of Field Perturbation Upon Cavity-Resonance and Dispersion Measurements on MIC Dielectrics." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 892-903.

An analysis is presented of field perturbations in MIC resonators in order to examine the errors which occur in permittivity measurements made by cavity-resonance methods: Q factor, coupling effects, fringing fields, crystal misalignment (for anisotropic materials), changes in ambient temperature are all considered. Analysis of a cavity with mixed boundary conditions shows that the resonant-mode frequencies depend to the first order on that part of $Q_{\text{sub } 0}$ associated with imperfect electric (metal) walls, but to the second order on that part associated with imperfect magnetic (open-circuit) walls. A new expression is given for the Q of an open-ended microstrip resonator when surface waves are excited in the dielectric, and it is shown that the unloaded Q ($Q_{\text{sub } 0}$) can be dominated by this phenomenon. It is further shown that these Q-related effects, together with reactive perturbations arising from fringing, coupling structures, are the principal source of error in measurements for epsilon or epsilon/sub eff/. Such reactive effects may be treated semiquantitatively by applying Slater's perturbation theorem to the affected region. These procedures lead to the following revised values for the crystal permittivity of sapphire (monocrystalline Al/sub 2/O/sub 3/) in the microwave region: epsilon/sub // (parallel to the c axis) = 11.6; epsilon/sub /spl perp// (base-plane) = 9.4.



Analysis of an Inhomogeneously Loaded Rectangular Waveguide with Dielectric and Metallic Losses

F. Gauthier, M. Besse and Y. Garault. "Analysis of an Inhomogeneously Loaded Rectangular Waveguide with Dielectric and Metallic Losses." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 904-907.

A dielectric loaded rectangular guide (Fig. 1) is analyzed taking into account the losses of the line, the substrate, and the metallic shield. For this study, Schelkunoff's method is used in considering the propagation modes as a convenient combination of coupled modes of the empty waveguide. Computations and experimental measurements are made for two different lines.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dispersion in Shielded Planar Transmission Lines on Two-Layer Composite Substrate

P.K. Saha. "Dispersion in Shielded Planar Transmission Lines on Two-Layer Composite Substrate." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 907-911.

The singular integral equation technique has been used to analyze a shielded planar transmission line, which allows one to calculate the dispersion characteristics of shielded microstrips on two-layer substrates as well as the effect of shielding on coplanar waveguides. Dispersion curves for suspended substrate microstrips and the variation of the relative phase velocity, with frequency, of coplanar waveguide (CPW) on alumina substrates of finite thicknesses and variable ground plane positions are presented. The results of computations with the lowest order 4 x 4 determinant show good agreement with the available data.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Random Discrete Imperfections in Millimeter Waveguide Systems

G. Falciasecca and S. Rogai. "Random Discrete Imperfections in Millimeter Waveguide Systems." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 911-915.

A method has been developed to compute the increase of attenuation due to imperfections of finite length randomly distributed in a link. As a limit for the vanishing length the formulas yield the result for random discontinuities. The approach is quite general and can apply to a circular waveguide link as well as to other cases, where the statistics of the problem are described by the power spectrum of the deformation. The applications presented here show how random spacing of the deformations causes significant modifications on the attenuation results; as a particular case some expressions are found to be in agreement with others previously derived. The results are interesting in determining what random variation in the waveguide lengths is sufficient to avoid a serious frequency dependent effect in the attenuation characteristic of a circular waveguide link.

[Click on title for a complete paper.](#)



Abstracts

Accurate Resonant Frequencies of Dielectric Resonators

P. Guillon and Y. Garault. "Accurate Resonant Frequencies of Dielectric Resonators." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 916-922.

The applications of dielectric resonators are currently of considerable interest in microwave integrated circuits. The design of a dielectric resonator depends on its natural resonant frequencies. Since exact solutions of dielectric rectangular and cylindrical resonators cannot be rigorously computed a new and more accurate method has been developed to solve this problem. In this method all the surfaces are simultaneously considered as imperfect magnetic walls. Theoretical values agree very well with experimental results. The difference being less than 1 percent.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Coupling Between Guided Surface Waves, Lateral Waves, and the Radiation Fields by Rough Surfaces--Full-Wave Solutions

E. Bahar. "Coupling Between Guided Surface Waves, Lateral Waves, and the Radiation Fields by Rough Surfaces--Full-Wave Solutions." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 923-931.

In this paper explicit expressions are presented for the guided surface waves and lateral waves that are excited when radiation fields are incident upon rough surfaces. Similarly, expressions are presented for the radiation fields scattered by rough surfaces that are excited by surface waves and lateral waves. In addition, coupling between the surface waves and the lateral waves due to surface irregularities is considered in detail. The solutions, which are based on a full-wave approach to the problem, are subject to the exact boundary conditions at the irregular interface. These are shown to be consistent with the reciprocity relationship in electromagnetic theory. The validity of the approximate impedance boundary condition is examined and consideration is given to excitation at the grazing incidence, the Brewster angle, and to waves incident at the critical angle for total internal reflection. Optimum conditions are determined for coupling between the radiation fields, the surface waves, and the lateral waves incident upon irregular boundaries. Thus this work is applicable to problems of radio wave propagation near an irregular interface between two media and excitation of guided waves by irregular dielectric structures.

Click on title for a complete paper.



Abstracts

Traveling Waves in Coupled Yagi Structures

C.C. Lee and L.C. Shen. "Traveling Waves in Coupled Yagi Structures." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 931-933.

The propagating mode in a coupled Yagi-Uda array of cylindrical wires is studied. The current distribution in each element, the phase velocity; and the cutoff frequency of the propagating mode are found, firstly by a numerical method and secondly by a method based on an assumed current distribution. These two methods yield essentially the same results. Mutual coupling between the arrays is studied. The characteristics of the propagating waves in the coupled Yagi-Uda structure have been measured. The experimental K-beta diagram of the waves is obtained and is found to be in good agreement with the theory.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Coupling of Circuit Structures to Magnetostatic Modes of Ferromagnetic Resonators

N.J. Moll. "Coupling of Circuit Structures to Magnetostatic Modes of Ferromagnetic Resonators." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 933-938.

The coupling between a current-carrying circuit structure and the magnetostatic modes of a general ferromagnet, such as a YIG resonator, is examined. A small-signal theory is presented that describes the excitation of an arbitrary mode in terms of an effective susceptibility matrix; this description leads to a simple method for calculating the z parameters of the resonator and coupling structure combination. This result is tested by comparison with other theory and with experiment. Applied to the case of a uniform field exciting the uniform mode of an ellipsoidal resonator, it reduces to Carter's well-known formula. Applied to the case of a particular nonuniform field exciting the main mode of a thin square resonator, it predicts the experimental finding that the coupling strength depends only on the resonator's thickness. This last case illustrates the extended generality of our result which allows the treatment of situations where the RF magnetization and field are not uniform.

[Click on title for a complete paper.](#)



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Further Studies on the Microwave Auditory Effect

J.C. Lin. "Further Studies on the Microwave Auditory Effect." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 938-943.

Auditory signals generated in humans and animals who are irradiated with short rectangular pulses of microwave energy have been studied. Assuming that the effect arises from sound waves generated in the tissues of the head by rapid, thermal expansion caused by microwave absorption, and using a technique described previously, the governing equations are solved for a homogeneous spherical model of the head under constrained-surface conditions. The results indicate that the frequency of the auditory signal is a function of the size and acoustic property of the head only. While the amplitude and frequency of the microwave-induced sound are higher than those predicted by the stress-free boundary condition formulation, they are compatible with the experimental results reported to date.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Theoretical Analysis of Acoustic Signal Generation in Materials Irradiated with Microwave Energy

D.E. Borth and C.A. Cain. "Theoretical Analysis of Acoustic Signal Generation in Materials Irradiated with Microwave Energy." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 944-954.

Stress gradients generated by thermal expansion, electrostriction, and radiation pressure are sources of elastic waves in microwave irradiated materials. A theoretical analysis taking into account induced volume and surface forces due to these interaction mechanisms is presented. Complete solutions of the dynamical equations for the one-dimensional special case are given for different boundary conditions. The closed-form solutions were found to consist of both a stationary part, whose effect is important only in the immediate region of the incident electromagnetic wave, and a traveling part which propagates through the elastic material. Expressions for the Fourier transforms of these solutions are also given. To quantify these results, pressure and displacement waveforms in microwave irradiated physiological saline were computed. Thermal expansion was considerably more effective than either electrostriction or radiation pressure in converting electromagnetic energy to acoustic energy.

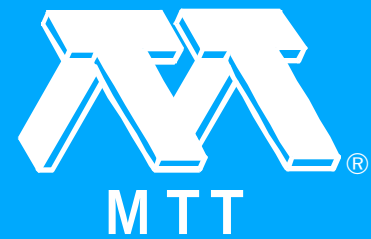
Click on title for a complete paper.



Abstracts

Input Impedance of Coaxial Line to Circular Waveguide Feed

M.D. Deshpande and B.N. Das. "Input Impedance of Coaxial Line to Circular Waveguide Feed." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 954-957.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

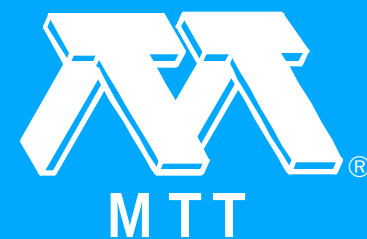


Abstracts

Coupled Transmission Lines (Correction)

M. Kumar and B.N. Das. "Coupled Transmission Lines (Correction)." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 958-958.

In the above paper, the sentence following equation (6) should read: where $(\overline{l/spl deg})$ is a 90/spl deg/ rotation dyadic given by.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Perturbation Theory Generalized to Arbitrary (p,l) Modes in a Fabry-Perot Resonator (Letters)

C.W. Erickson. "Perturbation Theory Generalized to Arbitrary (p,l) Modes in a Fabry-Perot Resonator (Letters)." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 958-959.

The first-order perturbation calculation that was carried out to include the effects of the usually neglected $\delta^2 \psi / \delta z^2$ term in the wave equation for pure radial modes ($l = 0$) is generalized to the case of arbitrary p,l modes. The result, although requiring more algebra, is similar to that of the $l = 0$ case; the correction term is a monotonically increasing function of both p and l, and reduces to the original expression as $l \rightarrow 0$.

[Click on title for a complete paper.](#)



Abstracts

Planar Network Analysis Programs-- PNAP1 and PNAP2 (Computer Program Descriptions)

P. Silvester and A. Konrad. "Planar Network Analysis Programs-- PNAP1 and PNAP2 (Computer Program Descriptions)." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 959-959.

To compute the admittance matrices of planar microwave networks as a function of frequency by the finite element method.



IEEE

Contents

Publications

Issues

Papers

Authors

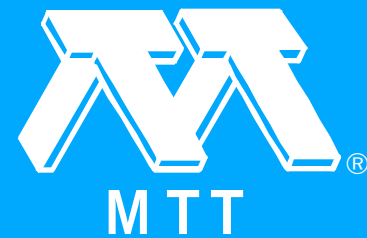
Click on title for a complete paper.



Abstracts

Contributors (Nov. 1977 [T-MTT])

E. Bahar, M. Besse, D.E. Borth, C.A. Cain, G. Caruso, G. Cicconi, B.N. Das, M.D. Deshpande, G. Falciasacca, Y. Garault, F. Gauthier, P. Guillon, A.J. Kelly, P.H. Ladbrooke, C.C. Lee, J.C. Lin, N.J. Moll, K. Ogusu, S. Rogai, C. Rosatelli, P.K. Saha, M. Sannino and L.C. Shen. "Contributors (Nov. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 960-962.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Nov. 1977 [T-MTT])

"Back Cover (Nov. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Dec. 1977 [T-MTT])

"Front Cover (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Table of Contents (Dec. 1977 [T-MTT])

"Table of Contents (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 963-964.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Editor's Overview (Dec. 1977 [T-MTT])

G. Schaffner. "Editor's Overview (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 965-965.

This issue of the Transactions presents a synopsis of the 1977 International Microwave Symposium. While the Symposium Digest gives in entirety the 152 papers, a few papers were selected for expansion and are contained herein. Also included is a resume of the Symposium functions, including the technical program, exhibits, social programs, and members of the Steering and Program Committees. Special attention is given to those we honored at the awards banquet.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The 1977 Microwave Symposium (Dec. 1977 [T-MTT])

D. Rubin and G. Schaffner. "The 1977 Microwave Symposium (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 966-969.

After three years of planning, working, and worrying, it appears that the 1977 MTT-S Symposium came off without a hitch.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

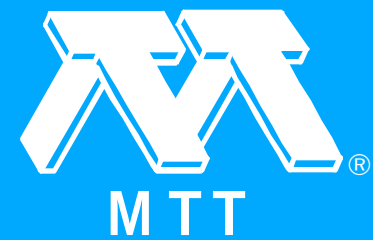
Click on title for a complete paper.



Abstracts

1976 MTT Awards (Dec. 1977 [T-MTT])

"1976 MTT Awards (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 970-972.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

High Power GaAs IMPATT Amplifier (Dec. 1977 [T-MTT])

K. Nishitani, H. Sawano, T. Ishii, S. Mitsui, E. Kaji and A. Amano. "High Power GaAs IMPATT Amplifier (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 973-977.

10-W p-n junction GaAs IMPATT diodes with MTTF more than 10^6 h, have been developed. Using these diodes, amplifiers of 5-W output power, 10-dB gain, 17-percent efficiency, 150-MHz bandwidth, and 80-dB signal-to-noise ratio (S/N ratio) have been constructed.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A New Look at Noise in Transferred Electron Oscillators (Dec. 1977 [T-MTT])

H.R. Gnerlich and J. Ondria. "A New Look at Noise in Transferred Electron Oscillators (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 977-981.

Low-frequency current and voltage fluctuations have been measured, and it has been confirmed that noise in packaged transferred electron devices (TED's) is due to three distinct noise mechanisms: flicker, generation-recombination, and thermal noise. For transferred electron oscillators (TEO's), this low-frequency noise is upconverted into the microwave frequency range and adds to the intrinsic RF noise. We have found that between 1 kHz and 1 MHz off the carrier, temperature-dependent generation-recombination noise is the main contributor to the total noise. A model of a noisy TEO is presented. This model permits the calculation of AM and FM noise spectra from device and circuit parameters for measured low-frequency noise or the derivation of device characteristics from noise and circuit parameter measurements.



[Contents](#)

[Publications](#)

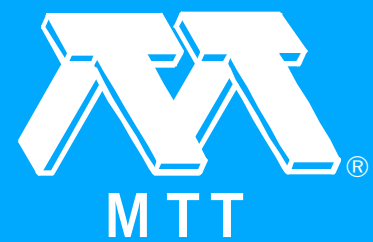
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design of GaAs MESFET Oscillator Using Large-Signal S-Parameters (Dec. 1977 [T-MTT])

Y. Mitsui, M. Nakatani and S. Mitsui. "Design of GaAs MESFET Oscillator Using Large-Signal S-Parameters (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 981-984.

A design method of GaAs MESFET oscillator using large-signal S-parameters has been discussed. Together with the measurement results of the dependence of large-signal S-parameters on power levels and bias conditions, computer analysis of the equivalent circuit for MESFET'S has qualitatively clarified the large signal properties of MESFET'S. On the basis of these findings, S-parameters have been designed for the MESFET oscillator over the frequency range of 6-10 GHz, which has resulted in power output of 45 mW at 10 GHz with 19-percent efficiency, and 350 mW at 6.5 GHz with 26-percent efficiency, respectively. Good agreements between predicted and obtained performances of MIC positive feedback oscillator have been ascertained, verifying the validity of the design method using large-signal S-parameters.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (Dec. 1977 [T-MTT])

C. Chao, R.L. Bernick, E.M. Nakaji, R.S. Ying, K.P. Weller and D.H. Lee. "Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 985-991.

This paper describes circuit, packaging, and device techniques used in the development of tunable CW IMPATT diode oscillators in the 170-260 GHz range. A quartz standoff package with optimum values for parasitics has been developed. A tuning range of nearly 30 GHz has been achieved with an IMPATT diode in such a package.

Click on title for a complete paper.



Abstracts

An Environmentalized Low-Noise Parametric Amplifier (Dec. 1977 [T-MTT])

E.C. Niehenke. "An Environmentalized Low-Noise Parametric Amplifier (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 992-994.

A 14-oz low-noise, X-band parametric amplifier has been developed for an airborne environment (-55 to +71/slp deg/C). This unit exhibits a 1.8-dB noise figure at 10 GHz and, at 18-dB peak gain, a 3-dB single-tuned bandwidth of 230 MHz that is electronically tunable over 700 MHz. A 1-dB gain compression occurs at -27-dBm input power. Performance is achieved through use of unique upper sideband terminated circuitry and a new low-parasitic, hermetic varactor package.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Low-Noise and Linear FET Amplifiers for Satellite Communications

D.A. Cowan, P. Mercer and A.B. Bell. "Low-Noise and Linear FET Amplifiers for Satellite Communications." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 995-1000.

FET amplifiers with ambient noise figures as low as 4.8 dB at 12 GHz, 35-dB gain, and intercept points as high as +28 dBm have been developed for use in communications satellites. Predicted mean time to failure is in excess of 10^6 h.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A 12-GHz Low-Cost Earth Terminal for Direct TV Reception from Broadcast Satellites (Dec. 1977 [T-MTT])

R.J. Douville. "A 12-GHz Low-Cost Earth Terminal for Direct TV Reception from Broadcast Satellites (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1000-1008.

A low-cost 12-GHz receiver for TV reception from high-power broadcast satellites is described. System designs using 0.6- and 1.2-m parabolic dishes with high-efficiency Cassegrain and prime-focus feed configurations have been studied. The front end consists of an MIC image-enhanced mixer, 1.2-GHz low-noise amplifier, and a Gunn diode LO. The signal is then fed to an indoor unit which has been designed using both surface acoustic wave (SAW) and lumped element 70-MHz bandpass filters and demodulators. Audio and video receiver outputs are fed directly to the baseband circuitry of a standard receiver.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

New N-Way Hybrid Power Dividers (Dec. 1977 [T-MTT])

N. Nagai, E. Maekawa and K. Ono. "New N-Way Hybrid Power Dividers (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1008-1012.

A new n-way planar hybrid power divider (henceforth HPD) and an n-way coaxial-type HPD are proposed, and the synthesis methods of three-way and four-way planar HPD's are shown. As for the three-way planar HPD, the isolation characteristics among three ports show more than 20 dB, and the VSWR'S of four ports show less than 1.4 in 2:1 bandwidth. The experimental characteristics are in good agreement with the theoretical analysis.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

New Application of Evanescent Mode Wave-Guide to Filter Design (Dec. 1977 [T-MTT])

R.V. Snyder. "New Application of Evanescent Mode Wave-Guide to Filter Design (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1013-1021.

Evanescent waveguide (rectangular or round) sections are used in conjunction with an admittance inverter synthesis technique incorporating frequency variable turns ratios to realize wide-band microwave (up to 1 octave) and low-frequency (60-MHz) low-loss bandpass filters. This work extends and corrects previous published information.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dual-Mode Canonical Waveguide Filters (Dec. 1977 [T-MTT])

A.E. Williams and A.E. Atia. "Dual-Mode Canonical Waveguide Filters (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1021-1026.

This paper introduces a new form of dual-mode narrow-bandpass waveguide cavity filter. The filters, which can be constructed from either dual mode circular or square waveguide cavities, can realize the optimum transfer functions (including the exact elliptic function response). One of the unique features of these filters is that all the intercavity coupling irises may take the form of circular holes rather than long narrow slots. Several alternative input-output configurations are described. Experimental results on several filters indicate excellent agreement with theory.

[Click on title for a complete paper.](#)



Abstracts

Components for Microwave Integrated Circuits with Evanescent-Mode Resonators (Dec. 1977 [T-MTT])

K. Schunemann, R. Knochel and G. Begemann. "Components for Microwave Integrated Circuits with Evanescent-Mode Resonators (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1026-1032.

The electrical performance of active microwave components for radio link systems, which have been realized utilizing evanescent-mode resonators, is described. This waveguide-below-cutoff technique is shown to be an alternative to the techniques established before now.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Short-Circuit Tuning Method for Singly Terminated Filters (Dec. 1977 [T-MTT])

M.H. Chen. "Short-Circuit Tuning Method for Singly Terminated Filters (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1032-1036.

This paper describes a filter tuning method based upon the match of measured and computed input impedances for a short-circuited filter. Two singly terminated filters, an 8-pole Chebyshev filter, and a 6-pole pseudoelliptic function filter tuned by using this method have demonstrated excellent performance.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Design of a Class of Microwave Filters Using Lumped and Distributed Elements

M.I. Sobhy and M. Safi. "The Design of a Class of Microwave Filters Using Lumped and Distributed Elements." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1037-1041.

The design and performance of ladder networks containing both lumped and distributed elements are described. The necessary and sufficient conditions on the coefficients of the characteristic polynomial have been obtained and a suitable low-pass to band-pass transformation has been developed. The design procedure was then applied to the design of microwave filters and the measured performances show good agreement with the theoretical predictions.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Broad-Band Operation of Stripline Y Circulators

T. Nagao. "Broad-Band Operation of Stripline Y Circulators." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1042-1047.

The broad-band operation of stripline Y circulators is treated from the viewpoint of the double circulation frequency operation (DCFO) which is performed with conductor-dielectric-ferrite composites (CDF composites), without any broad-banding circuit externally connected. It is recognized that the conductive post inserted inside the dielectric-ferrite composite (DF composites--a CDF composite is made thereby) is effective to improve the isolation characteristics of a CDF composite circulator to achieve the broad-band operation. The experiments showed that the frequency band was continuously broad-banded by sequentially changing the biasing magnetic field intensity; whereupon the frequency band reached about 45 percent. The largest broad-band operation was obtained when four circulation frequencies were put into use. In this paper, all ferrites are biased magnetically above resonance.



[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design and Performance Analysis of an Octave Bandwidth Waveguide Mixer

L.T. Yuan. "Design and Performance Analysis of an Octave Bandwidth Waveguide Mixer." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1048-1054.

A new broad-band mixer capable of operating over two full adjacent waveguide bands (18 to 26.5 GHz and 26.5 to 40 GHz) is described. Within the octave bandwidth from 20 to 40 GHz, the maximum conversion loss is 6.5 dB with a corresponding average DSB noise figure of 5.7 dB. A theoretical analysis is given to treat quantitatively the performance of the octave bandwidth waveguide mixer.

[Click on title for a complete paper.](#)



Abstracts

A Broad-Band Frequency Divider Using Microwave Varactors

R.G. Harrison. "A Broad-Band Frequency Divider Using Microwave Varactors." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1055-1059.

A novel configuration using GaAs varactors in a balanced circuit configuration incorporating both coplanar waveguide and microstrip elements permits the construction of microwave frequency dividers which have near-octave divide-by-two bandwidth and excellent response to pulsed RF inputs.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A Nonlinear Analysis of Schottky-Barrier Diode Upconverters

M. Akaike and K. Ohnishi. "A Nonlinear Analysis of Schottky-Barrier Diode Upconverters." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1059-1062.

A nonlinear computer analysis of Schottky-barrier diode upconverters by means of obtaining the steady-state solutions of differential equations characterized by the diode and connected circuits is shown. Both the nonlinearities of barrier resistance and capacitance are taken into consideration. The waveforms of the voltage and current at the diode, impedance, and input-output power relationships are computed for 120-GHz upconverters.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Propagating Modes Along a Thin Wire Located Above a Grounded Dielectric Slab (Dec. 1977 [T-MTT])

E.F. Kuester and D.C. Chang. "Propagating Modes Along a Thin Wire Located Above a Grounded Dielectric Slab (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1065-1069.

The possible propagating modes supported by a wire located parallel to a grounded dielectric slab are investigated. While at low frequencies, a "quasi-TEM" behavior is exhibited, it is shown numerically that under certain conditions, a very different "surface-attached" character emerges. These results suggest the possibility of similar behavior occurring in the related, but more difficult to analyze configuration of open microstrip lines. The particular structure we analyze here is of interest mainly because of its potential application in air strip ground radar monitoring systems, which conceivably can consist of a horizontal wire located above a reinforced concrete slab lying above a conducting earth surface.

[Click on title for a complete paper.](#)





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Network Analyzer Incorporating Two Six-Port Reflectometers

C.A. Hoer. "A Network Analyzer Incorporating Two Six-Port Reflectometers." 1977 *Transactions on Microwave Theory and Techniques* 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1070-1074.

This paper outlines the theory and design of a microwave network analyzer capable of measuring the network parameters of any linear reciprocal or nonreciprocal, active or passive two port. An RF signal from one source is applied at the same time to two six-port reflectometers which measure the incident and reflected waves at the ports of the two port being measured. An experimental dual six-port network analyzer for the 2-18-GHZ range has been completed and is described briefly. Some advantages of the proposed design over existing network analyzer designs are 1) only one source is needed, 2) no phase detectors are required, 3) no flexible cables or arms are used between the reflectometers and the two port being measured, and 4) self-calibration techniques are readily applied.

[Click on title for a complete paper.](#)



Abstracts

The Six-Port Reflectometer: An Alternative Network Analyzer (Dec. 1977 [T-MTT])

G.F. Engen. "The Six-Port Reflectometer: An Alternative Network Analyzer (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1075-1080.

Although the six-port measurement technique is rapidly gaining the attention of the microwave community, the theoretical development, to date, yields but limited practical insight into its operation. Following a brief review of the prior art, such that the six-port techniques may be placed in proper perspective, this paper presents an alternative introduction leading to much better insight, and to design criteria for a six-port circuit which optimally exploits the concept.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

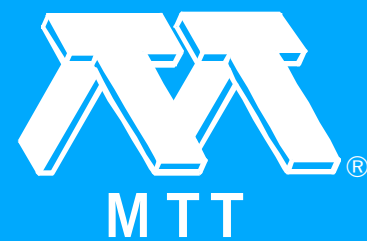


Abstracts

An Improved Circuit for Implementing the Six-Port Technique of Microwave Measurements (Dec. 1977 [T-MTT])

G.F. Engen. "An Improved Circuit for Implementing the Six-Port Technique of Microwave Measurements (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1080-1083.

In a companion paper, circuit design criteria were developed which lead to optimal performance in applying the six-port technique to the measurement of microwave parameters. A circuit which approximately satisfies these new design goals is described. Together with its several variants, it promises to become, in many applications, the "preferred" six-port circuit.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Semiautomated Six Port for Measuring Millimeter-Wave Power and Complex Reflection Coefficient

M.P. Weidman. "A Semiautomated Six Port for Measuring Millimeter-Wave Power and Complex Reflection Coefficient." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1083-1085.

A six-port system has been developed and applied to the precision measurement of power and complex reflection coefficient in WR-15 (50-75 GHz) waveguide. The system is automated except for frequency and switching control for the signal source. This system provides a timesaving factor of at least five as compared to a tuned reflectometer with little, if any, degradation in accuracy.

[Click on title for a complete paper.](#)



Abstracts

A Six-Port Automatic Network Analyzer (Dec. 1977 [T-MTT])

H.M. Cronson and L. Susman. "A Six-Port Automatic Network Analyzer (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1086-1091.

This paper describes the analysis, design, and testing of a six-port automatic network analyzer. A new calibration procedure is derived from a matrix description of the six-port network. The calibration constants appear as the solution of an eigenvalue problem resulting in new insights and faster numerical computation. A programmable calculator-controlled six-port system was designed to measure S_{11} and S_{21} over the frequency range 2-18 GHz without perturbing the device under test. Measurements on the completed system taken from 7-12 GHz show that results within 1 percent can be obtained.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

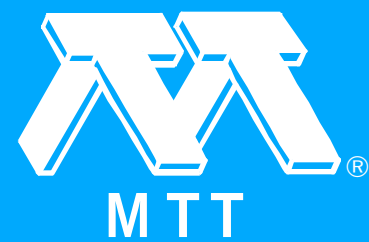
Dielectric Measurements on Polymeric Materials by Using Superconducting Microwave Resonators

W. Meyer. "Dielectric Measurements on Polymeric Materials by Using Superconducting Microwave Resonators." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1092-1099.

This paper deals with the theoretical and practical investigation of a test method using superconducting cavity and helical resonators in an oscillator loop, which allows precision measurements to be performed on solid dielectrics in the range of 0.1-10 GHz, and below 9 K. The underlying formulas are an extension of the well-known perturbation formalism and are not restricted to low temperatures. Our experiments resulted in unloaded quality factors of $Q = 5 \cdot 10^7$, between 0.2 and 10 GHz, with a maximum Q (2.2 K, 0.19 GHz) of $9 \cdot 10^8$, which enabled us to observe the smallest loss tangent so far: $\tan \delta$ (2.2 K, 6.5 GHz) = $(3.7 \pm 5 \text{ percent}) \cdot 10^{-7}$ in polyethylene.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A Generalization of the TSD Network-Analyzer Calibration Procedure, Covering n-Port Scattering-Parameter Measurements, Affected by Leakage Errors

R.A. Speciale. "A Generalization of the TSD Network-Analyzer Calibration Procedure, Covering n-Port Scattering-Parameter Measurements, Affected by Leakage Errors." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1100-1115.

The basic philosophy of the through-short-delay (TSD) calibration procedure for two-port automated network analyzers has been extended to n-port scattering-parameter measurements, while also accounting for the errors due to possible signal leakage between all port pairs. The system errors are represented by the scattering response of a $2n$ -port virtual error network, having n ports connected to the device under test and n ports connected to an ideal error-free multiport network analyzer. The $(2n)^2$ T-parameters of the error network are explicitly expressed in blocks of n^2 at a time, as matricial functions of the $3n^2$ S-parameters of three n -port standards, sequentially replacing the device under test during system calibration. The possibility has also been investigated of correcting the errors due to repeatable measurement-port mismatch changes, typical of switching scattering-parameter test sets. This capability has been introduced and tested in the classical two-port TSD calibration algorithm, by means of a minor modification and data postprocessing, applied after the removal of conventional errors.





IEEE

Contents

Publications

Issues

Papers

Authors

High Directivity CTL-Couplers and a New Technique for the Measurement of CTL-Coupler Parameters (Dec. 1977 [T-MTT])

S. Rehnmark. "High Directivity CTL-Couplers and a New Technique for the Measurement of CTL-Coupler Parameters (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1116-1121.

A very powerful method to measure the parameters of a one-section Coupled Transmission Line (CTL) coupler is presented. Three transmission measurements at the frequency of maximum coupling is sufficient to give the even- and odd-mode impedances ($Z_{\text{sub } e}$, $Z_{\text{sub } o}$) and the even- and odd-mode lengths ($\Theta_{\text{sub } e}$, $\Theta_{\text{sub } o}$). Explicit equations are presented for the necessary calculations. Data for some stripline couplers measured with the new method are presented. The data show a very significant length difference between the even and odd modes, although boards with the same dielectric constant (measured according to the MIL standard) were used. Improved dielectric-constant measurement techniques for thin boards have been developed. The presented methods give more relevant information of dielectric constant and Q value of the thin boards. A new method for wide-band improvement of CTL-coupler directivity when $\Theta_{\text{sub } e} / \sin \theta \neq \Theta_{\text{sub } o}$ has been developed. The theory is presented with all necessary equations and it covers both $\Theta_{\text{sub } e} > \Theta_{\text{sub } o}$ (microstrip) and $\Theta_{\text{sub } e} < \Theta_{\text{sub } o}$. The new method makes use of short compensating sections in the coupler to achieve a directivity pole at an arbitrary frequency. The wanted bandwidth determines the optimum location of the pole. Several examples with design data are given.

Click on title for a complete paper.



Abstracts

Performance Characteristics of an Automated Broad-Band Bolometer Unit Calibration System

E.L. Komarek. "Performance Characteristics of an Automated Broad-Band Bolometer Unit Calibration System." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1122-1127.

The arbitrary six-port reflectometer concept has been applied to an automated broad-band system in the 1-18-GHz frequency range for the calibration of bolometer units. Performance evaluation results show an improvement in precision over other automated and manually operated measurement systems used at the National Bureau of Standards. Initial evaluation results reported here show a single measurement standard deviation of 0.02 to 0.41 percent from 2-18 GHz. The system is currently used for the calibration of coaxial and waveguide bolometer unit effective efficiency.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A Cost-Effective Modular Downconverter for S-Band WEFAX Reception (Short Papers)

H.P. Shuch. "A Cost-Effective Modular Downconverter for S-Band WEFAX Reception (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1127-1131.

The relocation of weather satellite facsimile downlinks from VHF into S-band has generated a requirement for reliable, low-cost microwave receiving equipment. This paper explores many of the design tradeoffs encountered in developing one such receiver system.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theoretical Analysis of a Ridged-Waveguide Mounting Structure (Short Papers)

S. Mizushina, N. Kuwabara and H. Kondoh. "Theoretical Analysis of a Ridged-Waveguide Mounting Structure (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1131-1134.

The driving-point impedance of a single-gap thin conductor strip, a model of the ribbon-and-pedestal of diode package, mounted across the gap of a ridged waveguide has been derived using the induced EMF method. The dyadic Green's function for the ridged waveguide is derived to facilitate the analysis. An equivalent circuit is developed which involves an infinite array of transformers representing the couplings between the conductor strip and the waveguide normal modes. Numerical results for a typical example are presented to discuss the validity of the analytical results and also to demonstrate a remarkably smooth behavior of the driving-point impedance of the mount over a frequency range from 5.4 to 25.4 GHz.

[Click on title for a complete paper.](#)



Abstracts

Application of Gratings in a Dielectric Waveguide for Leaky-Wave Antennas and Band-Reject Filters (Short Papers)

T. Itoh. "Application of Gratings in a Dielectric Waveguide for Leaky-Wave Antennas and Band-Reject Filters (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1134-1138.

Grating structures fabricated in inverted-strip dielectric waveguides have been used for the first time as leaky-wave antennas and band-reject filters. They are potentially useful for millimeter-wave integrated circuits. Experimental results agree reasonably well with theoretical predictions.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dispersion Characteristics for Arbitrarily Configured Transmission Media (Short Papers)

A.K. Ganguly and B.E. Spielman. "Dispersion Characteristics for Arbitrarily Configured Transmission Media (Short Papers)." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1138-1141.

A method for calculating the propagation characteristics of electromagnetic waves along arbitrarily configured transmission media composed of conductors and/or inhomogeneous dielectrics is presented. The method is based on the equivalence principle. The dispersion characteristics of the fundamental as well as higher order modes can be obtained by this method. To demonstrate the validity of this method, results of the propagation constant of a shielded microstrip line calculated by this method are compared with other numerical results available in the literature. New results for the dispersion characteristics of a channelized suspended microstrip are presented.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Contributors (Dec. 1977 [T-MTT])

M. Akaike, A. Amano, A.E. Atia, G. Begemann, A.B. Bell, R.L. Bernick, D.C. Chang, C. Chao, M.H. Chen, D.A. Cowan, H.M. Cronson, R.J. Douville, G.F. Engen, A.K. Ganguly, H.R. Gnerlich, R.G. Harrison, C.A. Hoer, T. Ishii, T. Itoh, E. Kaji, R. Knochel, E.L. Komarek, H. Kondoh, E.F. Kuester, N. Kuwabara, D.H. Lee, E. Maekawa, P. Mercer, W. Meyer, S. Mitsui, Y. Mitsui, S. Mizushina, N. Nagai, T. Nagao, E.M. Nakaji, M. Nakatani, E.C. Niehenke, K. Nishitani, K. Ohnishi, J. Ondria, K. Ono, S. Rehnmark, M. Safi, H. Sawano, K. Schunemann, H.P. Shuch, R.V. Snyder, M.I. Sobhy, R.A. Speciale, B.E. Spielman, L. Susman, M.P. Weidman, K.P. Weller, A.E. Williams, R.S. Ying and L.T. Yuan. "Contributors (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): 1142-1150.

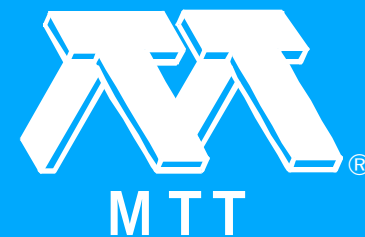
Click on title for a complete paper.



Abstracts

Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-25, 1977

*"Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-25, 1977."
1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977
Symposium Issue)): i-xv.*



IEEE

Contents

Publications

Issues

Papers

Authors

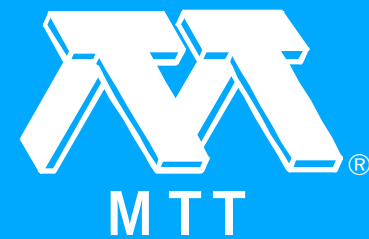
Click on title for a complete paper.



Abstracts

Back Cover (Dec. 1977 [T-MTT])

"Back Cover (Dec. 1977 [T-MTT])." 1977 Transactions on Microwave Theory and Techniques 25.12 (Dec. 1977 [T-MTT] (1977 Symposium Issue)): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Front Cover (1975 [MWSYM])

"Front Cover (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): f1-f1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

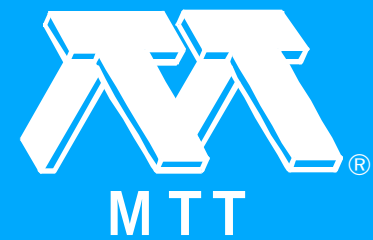
Click on title for a complete paper.



Abstracts

Copyright (1975 [MWSYM])

"Copyright (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): i-i.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Foreword (1975 [MWSYM])

E.W. Matthews. "Foreword (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): ii-ii.

As chairman of this Momentous Affair, and speaking for all the members of the loyal and dedicated Steering Committee, it gives me great pleasure to welcome you to Palo Alto and the 1975 International Microwave Symposium! We hope you will enjoy your visit here, and find it stimulating, interesting, informative, and lots of fun -- renewing old friendships, and catching up on the "state-of-the-art".



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Committees (1975 [MWSYM])

"Committees (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 1-5.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Awards (1975 [MWSYM])

"Awards (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 6-11.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Program (1975 [MWSYM])

"Program (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 12-18.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

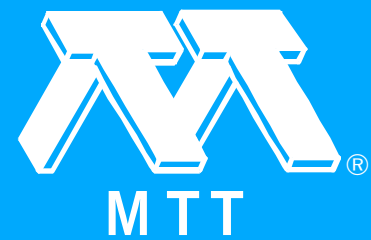
Click on title for a complete paper.



Abstracts

Session 1 -- Microwaves in Earth Sensing

"Session 1 -- Microwaves in Earth Sensing." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 19-19.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

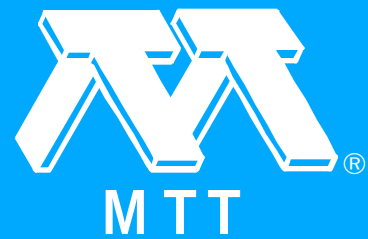


Abstracts

Passive Microwave Sensing of the Earth

D.H. Staelin. "Passive Microwave Sensing of the Earth." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 20-22.

Passive microwave radiometers have found varied geophysical applications, particularly the remote sensing from satellites of atmospheric temperature and humidity profiles, clouds, soil moisture, snow and ice type and coverage, and other parameters.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

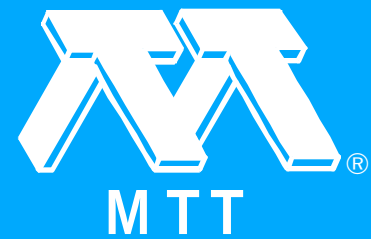


Abstracts

Satellite Altimetry Applications (1975 [MWSYM])

J.T. McGoogan. "Satellite Altimetry Applications (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 23-25.

This paper provides the brief background of precision satellite altimetry. A description of satellite altimetry concepts and instrumentation is presented. The parameters measured, supporting data and techniques, as well as physical limitations, are discussed. In addition, results are shown and a variety of applications are emphasized.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Microwave Scattering from the Ocean Surface

W.L. Jones, W.L. Grantham, L.C. Schroeder, J.W. Johnson and C.T. Swift. "Microwave Scattering from the Ocean Surface." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 26-28.

This paper is a review of current aircraft and satellite microwave remote sensing programs concerned with the measurement of ocean wave and surface wind conditions. These particular measurements have been identified by the user community as offering significant economic and technological benefits. Active microwave remote sensing techniques for these applications have been described theoretically and verified experimentally. The results of recent aircraft and satellite experimental programs are presented herein along with plans for the SeaSat - A Satellite Scatterometer.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Imaging RADAR Potentials for Earth Resources

W.E. Brown, Jr. and C. Elachi. "Imaging RADAR Potentials for Earth Resources." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 29-31.

The potentials of airborne and spacecraft borne imaging radars in earth resources applications are reviewed and discussed. The areas specifically addressed are: oceanography, coastal regions studies, glaciology, polar ice studies, geology, geomorphology and agriculture. The paper also addresses the main areas of emphasis for the next ten years.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 2 -- Microwaves in Communication

"Session 2 -- Microwaves in Communication." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 33-33.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Some Aspects of Microwave Development in a Developing Country

J.T. Senise. "Some Aspects of Microwave Development in a Developing Country." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 34-36.

The development of modern telecommunications systems is a major factor of progress in countries experiencing a fast economic growth. General information is given on the recent development of microwave systems and of microwave activities in general in Brazil.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Bi-Polar IC's for Microwave Signal Processing

C. Ryan. "Bi-Polar IC's for Microwave Signal Processing." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 37-39.

Various microwave signal processing functions can be performed with monolithic circuits designed to operate as high speed logic elements. The ease of interfacing with these circuits for various modes of operation offers a significant advantage over more conventional microwave components. The application of the one GB/S logic family is demonstrated by a 2 GHz prescaler, a QPSK Modulator, a QPSK Demodulator and an Adaptive Equalizer.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave QPSK Demodulation Techniques at the Receiver Front End

C.L. Cuccia. "Microwave QPSK Demodulation Techniques at the Receiver Front End." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 40-42.

Quadruphase modulation of microwave or mm-wave carriers involves the rapid shifting of the phase of the carrier between one of four orthogonal positions by binary data included on two parallel data streams. The received quadruphase (QPSK) carrier can be demodulated by mixing this carrier with an appropriately phased local oscillator signal in a doubly-balanced mixer. One of the problems in demodulation of quadruphase carriers is the generation of the local oscillator having carrier frequency and phase information. This can be accomplished either at RF from the incoming QPSK carrier or at baseband by comparing the crosstalk associated with the two demodulated data streams. This paper will describe the applicable microwave technologies utilizing special quadruple frequency multipliers which provide microwave carrier reconstruction which facilitates the demodulation of data information from the carrier.

[Click on title for a complete paper.](#)



Abstracts

Electronically-Tunable, Low Noise K/sub a/-Band Paramp-Downconverter Satellite Communications Receiver

H.C. Okean, J.A. DeGruyl, L.J. Steffek, A.J. Kelly and S.J. Foti. "Electronically-Tunable, Low Noise K/sub a/-Band Paramp-Downconverter Satellite Communications Receiver." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 43-45.

The K/sub a/-band-to-UHF parametric amplifier-downconverter satellite communications receiver described herein provides less than 4dB SSB noise figure over either electronically selectable sideband of the externally supplied ~37.5 GHz local oscillator, each of which is downconverted to a fixed 500-650 MHz IF output band. To achieve such widely tunable low noise performance, this receiver utilizes state-of-the-art varactors, a unique, solid-state pumped Ka-band paramp design and a low noise balanced mixer-transistor IF amplifier, incorporated with associated power supply and thermal stabilization in a self-contained 6" x 5" x 4" package.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Depolarization Measurements on the ATS-6 20 GHz Downlink: A Description of the VPI&SU Experiment and Some Initial Results (1975 [MWSYM])

C.W. Bostian, W.L. Stutzman, E.A. Manus, P.H. Wiley and R.E. Marshall. "Depolarization Measurements on the ATS-6 20 GHz Downlink: A Description of the VPI&SU Experiment and Some Initial Results (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 46-48.

This paper describes an experiment in which precipitation depolarization on the ATS-6 20 GHz downlink is measured. It presents some initial results for depolarization by snow.



- Contents
- Publications
- Issues
- Papers
- Authors

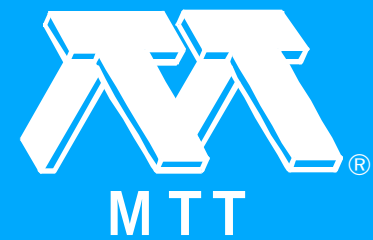
Click on title for a complete paper.



Abstracts

Session 3 -- Microwave Filters and Components I

"Session 3 -- Microwave Filters and Components I." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 49-49.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Solving the Approximation Problem for Narrowband Bandpass Filters with Equal-Ripple Passband Response and Arbitrary Phase Response

R.J. Wenzel. "Solving the Approximation Problem for Narrowband Bandpass Filters with Equal-Ripple Passband Response and Arbitrary Phase Response." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 50-50.

A practical method is presented for solving the approximation problem for narrowband bandpass filters with equal-ripple passband response and arbitrary phase response. The method determines the element values of the low-pass prototype filter and is based on the use of generalized Chebyshev rational functions with arbitrary choice of transmission zero locations. The use of both real frequency and complex frequency transmission zero locations is considered. Results of trial design problems are presented and are related to previous design results to illustrate practical realization and performance limitations.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

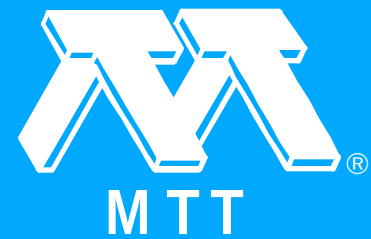


Abstracts

Template Methods for Efficient Microwave Filter Design

G.R. Hoffman. "Template Methods for Efficient Microwave Filter Design." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 51-52.

A method is presented to design a commensurate microwave filter, containing stubs, unit elements and arbitrary finite attenuation poles in such a way that it satisfies arbitrary system attenuation requirements in an optimal way.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Microwave Filters with Single Attenuation Poles at Real or Imaginary Frequencies

R. Levy. "Microwave Filters with Single Attenuation Poles at Real or Imaginary Frequencies." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 54-56.

A new unified theory is presented for the synthesis of exactly equi-ripple low pass prototypes having (a) one simple pole of attenuation at a real frequency, or (b) a single pair of real axis transmission zeros (giving linear phase performance). Practical results for microwave bandpass filters are described.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

On the Field Energy and Power of Waveguides and Cavities Synthesized with Nonseparable Solutions of Helmholtz Wave Equation

P.J. Luybaert and D.H. Schoonaert. "On the Field Energy and Power of Waveguides and Cavities Synthesized with Nonseparable Solutions of Helmholtz Wave Equation." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 57-59.

This paper shows that microwave cavities and waveguides synthesized with nonseparable solutions of Helmholtz wave equations have interesting properties concerning field energy and Power. Moreover they have better attenuation and Q factor in comparison with the conventional waveguides and cavities.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Generalized TE/sub 011/ Mode Waveguide Bandpass Filters

A.E. Williams and A.E. Atia. "Generalized TE/sub 011/ Mode Waveguide Bandpass Filters." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 60-62.

The realization of the general transfer functions of bandpass coupled cavity filters in the high Q circular waveguide TE/sub 011/ mode is presented in this paper. In addition, a novel method of suppressing the degeneracy of the TM/sub 111/ mode is described. Finally, experimental results obtained from a fourth-order, elliptic function, 20-MHz, bandpass filter centered at 12 GHz and having an unloaded Q of 16,000 are discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Microwave Bandpass Filters Containing Dielectric Resonators with Improved Temperature Stability and Spurious Response

K. Wakino, T. Nishikawa, S. Tamura and Y. Ishikawa. "Microwave Bandpass Filters Containing Dielectric Resonators with Improved Temperature Stability and Spurious Response." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 63-66.

The development of dielectric resonator superior to invar cavity on temperature stability as the result of our research made the usage of the miniature bandpass filter practical, and the method to set up temperature coefficient was established well.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

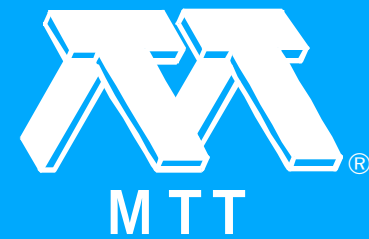
Click on title for a complete paper.



Abstracts

Session 4 -- Microwave Generation and Amplification

"Session 4 -- Microwave Generation and Amplification." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 67-67.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Active Solid State Microwave Device Performance

B.E. Berson. "Active Solid State Microwave Device Performance." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 68-69.

There is now a wide variety of solid state devices available for use as oscillators and/or amplifiers in microwave systems. Figure 1 illustrates this variety. The choice for a specific application is based on a number of performance factors, some of which are listed in Table I. In this paper we shall explore relative device performance with the objective of providing the potential user with a basis for choosing the best device for his application.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Microwave Octave-Band GaAs FET Amplifiers

W.H. Ku, M.E. Mokari-Bolhassan, W.C. Petersen, A.F. Podell and B.R. Kendall. "Microwave Octave-Band GaAs FET Amplifiers." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 69-72.

The design of microwave broadband amplifiers using the 1μ -gate GaAs field-effect transistors covering the 4-8 GHz and 7-14 GHz octave bands is presented. The broadband matching networks of these amplifiers consist of lumped and/or distributed circuit elements. Using analytical and computer-aided optimization techniques, a typical octave-band amplifier has been designed with a nominal power gain of 8 dB with a maximum deviation of ± 0.07 dB covering the 7-14 GHz band based on the measured scattering parameters of a 1μ GaAs FET chip. For a packaged 1μ GaAs FET, a 4-8 GHz band amplifier has been designed with a gain of $7.2 \text{ dB} \pm 0.2 \text{ dB}$.

Click on title for a complete paper.

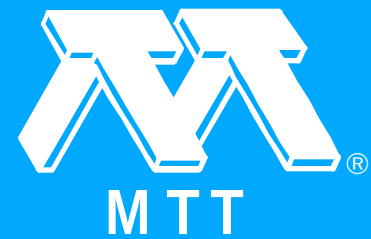


Abstracts

X-Band Silicon Power Transistor

H.-T. Yuan, J.B. Kruger and Y.-S. Wu. "X-Band Silicon Power Transistor." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 73-75.

A four cell silicon bipolar power transistor exhibiting 1.0 watts cw output power with 6 dB power gain and 30% collector efficiency at 8 GHz has been developed. The transistor has 1 μ m metal contacts and 0.5 μ m emitter width. Direct electron-beam slice writing was applied to define the fine geometries.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Wideband, High Gain, Dual Diode Gunn Amplifier Circuits

J.G. de Koning, R.E. Goldwasser and R.J. Hamilton, Jr.. "Wideband, High Gain, Dual Diode Gunn Amplifier Circuits." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 76-78.

Design and performance of wide band, low noise, single stage 10 dB gain Gunn amplifiers in X, Ku and K-band are described. Novel dual diode circuits have been utilized to achieve nearly full band gain with two series connected cathode notch Gunn diodes. Average gains of 9.3 to 11.2 dB have been obtained over 90% of X and Ku-band and 75% of K-band. Noise figures are 15.5 to 18.9 dB.

Click on title for a complete paper.



Abstracts

C-Band Solid State TWT Replacement

M.R. Harris, W.C. Tsai and S.F. Paik. "C-Band Solid State TWT Replacement." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 79-81.

An all solid state TWT replacement for FM/FDM applications from 5.9 to 6.4 GHz has been developed. Output capability is 10 Watts at 40 dB gain. Gunn effect, IMPATT, and Read diode amplifiers are employed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A High Power Waveguide IMPATT Amplifier

P. Ruella. "A High Power Waveguide IMPATT Amplifier." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 82-84.

A CW waveguide amplifier using a silicon double-drift IMPATT diode provides 10 dB gain with 2 Watts output at 11.2 GHz. A design procedure for control of frequency, gain, and bandwidth is described.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Harmonic Tuning Effects of TRAPATT Oscillators

R.J. Trew, G.I. Haddad and N.A. Masnari. "Harmonic Tuning Effects of TRAPATT Oscillators." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 85-87.

A simplified computer model of a TRAPATT oscillator has been utilized to investigate harmonic tuning effects. The results of an investigation of realistic waveforms provide insight into the tuning conditions necessary for high-efficiency operation. Circuit impedance measurements of an S-band TRAPATT oscillator support many of the theoretical predictions.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

High Power Pulsed UHF and L-Band p/sup +/-n-n/sup +/- Silicon TRAPATT Diode Oscillators

C.O.G. Obah, E. Benko, H.C. Bowers and T.A. Midford. "High Power Pulsed UHF and L-Band p/sup +/-n-n/sup +/- Silicon TRAPATT Diode Oscillators." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 88-90.

TRAPATT oscillators utilizing highly graded p/sup +/-n-n/sup +/- silicon junction devices with large p-region width to total depletion region width ratios have produced more than 500 W pulsed power output with a minimum efficiency of 25% in the UHF and L-band ranges.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

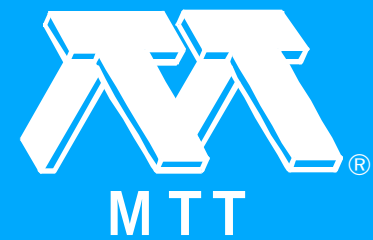
Click on title for a complete paper.



Abstracts

Session 5 -- Microwave Measurements

"Session 5 -- Microwave Measurements." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 91-91.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

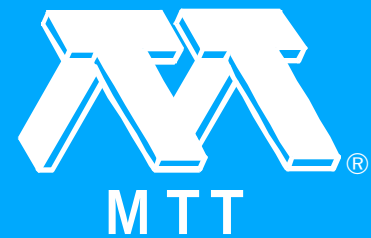


Abstracts

The Evolution of Automated Microwave Measurements

J.H. Meyer. "The Evolution of Automated Microwave Measurements." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 92-94.

Microwave measurements lend themselves to automation because many readings and much computation is often needed to achieve reasonable accuracies. The expense of automated microwave measurements has limited their widespread use for general measurements. However, an international standard for instrument interfaces, more off-the-shelf programmable instruments, and the advent of inexpensive calculator controllers will dramatically increase the utilization of automated microwave measurement techniques.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Automated Calibration of Directional-Coupler-Bolometer-Mount Assemblies (1975 [MWSYM])

G.F. Engen. "Automated Calibration of Directional-Coupler-Bolometer-Mount Assemblies (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 95-97.

Although the application of automated methods to power calibration problems in the UHF and microwave region has been described by a number of authors, the primary orientation has been towards the calibration of bolometer mounts and similar items. Little has been published on the problem of calibrating directional-coupler-bolometer-mount assemblies, which also play a major role in the calibration and measurement of UHF and microwave power. This paper describes several approaches to this measurement problem.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios (1975 [MWSYM])

C.A. Hoer and K.C. Roe. "Using an Arbitrary Six-Port Junction to Measure Complex Voltage Ratios (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 98-99.

An arbitrary six-port junction is analyzed as a microwave vector voltmeter, measuring the amplitudes and phase difference of two input signals in terms of power readings taken at the remaining four ports. The junction may be calibrated for measuring complex voltage ratios using a self-calibration procedure which requires no standards.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Non Destructive Resonant Technique for the Measurement of Complex Permittivity -- Theoretical Analysis and Experimental Results

M.C. Decreton and M.S. Ramachandraiah. "Non Destructive Resonant Technique for the Measurement of Complex Permittivity -- Theoretical Analysis and Experimental Results." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 100-102.

A simple non-destructive method to measure the complex permittivity of materials is described. It uses an iris terminated resonant section of waveguide in contact with the metal-backed sample. A numerical analysis of the structure permits one to relate the measured resonance characteristics to the sample permittivity.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Measurement of the Equivalent Circuit Parameters of Discontinuities in a Resonant Microstrip Ring

W.J.R. Hoefer and A. Chattopadhyay. "Measurement of the Equivalent Circuit Parameters of Discontinuities in a Resonant Microstrip Ring." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 103-105.

This paper presents an analysis of a resonant microstrip ring containing a small reciprocal discontinuity. The equivalent circuit parameters of microstrip discontinuities can be measured accurately with this inexpensive arrangement by observing the shift of the ring resonances. Measurements of the inductance of such cylindrical metallic obstacles are compared with theoretical values obtained with a variational method.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Resonance Measurement of Even and Odd Mode Propagation Constants in Coupled Microstrips

V. Rizzoli. "Resonance Measurement of Even and Odd Mode Propagation Constants in Coupled Microstrips." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 106-108.

The resonant properties of transmission-line resonators can be used to measure the line propagation constant. This technique is applied here to the even and odd modes of propagation of symmetrical pairs of coupled microstrips. A sample measurement is presented and possible extensions in the use of the method are outlined.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session 6 -- Microwave Filters and Components II

"Session 6 -- Microwave Filters and Components II." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 109-109.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Tapped-Line Coupled-Transmission-Lines with Applications to Comblines and Interdigital Filters (1975 [MWSYM])

E.G. Cristal. "Tapped-Line Coupled-Transmission-Lines with Applications to Comblines and Interdigital Filters (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 110-112.

Exact, general, open-wire-line equivalent circuits for tapped-line combline and interdigital arrays are derived using a combination of graph-transformations and induction. A significant feature of the equivalent circuits is that they do not require commensurate length sections. The equivalent circuit for tapped-line interdigital arrays is utilized to develop new design equations for tapped-line interdigital filters. Computed responses for five and twenty percent bandwidth designs show considerably improved VSWR's compared to designs based on previous procedures.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Multi-Section Inhomogeneous Coupled-Line Filters with Large Mode-Velocity Ratios

J.L. Allen. "Multi-Section Inhomogeneous Coupled-Line Filters with Large Mode-Velocity Ratios." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 113-115.

Design data for single-section inhomogeneous coupled-line filters based on large even/odd mode-velocity ratios has recently been published. The purpose of this paper is to extend those results to multi-section inhomogeneous coupled-line filters with large mode-velocity ratios. Both experimental and theoretical data are presented. The rather complex pole-zero structure of single-section inhomogeneous coupled-line filters permits great flexibility in designing multi-section filters. Very sharp transitions between pass- and stop-bands are possible as well as large stopband to passband width ratios.

[Click on title for a complete paper.](#)



Abstracts

A New N-Way Power Divider/Combiner Suitable for High-Power Applications

U.H. Gysel. "A New N-Way Power Divider/Combiner Suitable for High-Power Applications." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 116-118.

Theoretical and experimental results are presented on a new N-way power divider/combiner, which is an extension of the N-way combiner by Wilkinson. The main advantages of the new design are (1) external isolation loads, permitting high-power loads, (2) easily realizable geometry, and (3) monitoring capability for imbalances at the output ports. A trial 8-way combiner with 20% bandwidth at a center frequency of 1.15 GHz fully verified the new design concept.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Characteristics of Unsymmetrical Broadside-Coupled Strips in an Inhomogeneous Dielectric Medium

C.L. Chao. "Characteristics of Unsymmetrical Broadside-Coupled Strips in an Inhomogeneous Dielectric Medium." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 119-121.

A method is presented for determining the characteristics of unsymmetrical broadside-coupled strips imbedded in an inhomogeneous dielectric medium enclosed by a rectangular shield. The characteristics of the coupled lines have been obtained in terms of even- and odd-mode velocities, coupling coefficients, and even- and odd-mode admittances. Numerical results are given for a variety of configurations.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

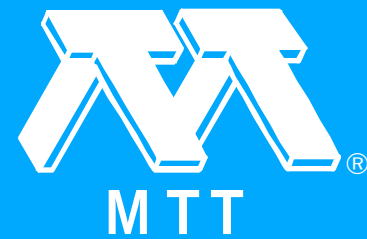


Abstracts

Wideband, Totally Coupled Directional Transformers

R.A. Speciale. "Wideband, Totally Coupled Directional Transformers." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 122-124.

Single-section and two-section nonsymmetrical directional couplers are introduced, providing large impedance transformation ratios, total matching, perfect directivity, almost unity coupling and flat delay across a 100% relative bandwidth. Design parameters are given and alternative physical implementations are discussed.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

High Directivity Microstrip Couplers Using Dielectric Overlays

C. Buntschuh. "High Directivity Microstrip Couplers Using Dielectric Overlays." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 125-128.

Coupled-line directional couplers in microstrip suffer from low directivity due to the inequality of the even and odd mode wave velocities. A dielectric overlay improves the directivity, but it also tightens the coupling and depresses the coupler impedance. Design curves are presented for making velocity-compensated 50 ohm couplers taking the changes in coupling and impedance into account.



IEEE

Contents

Publications

Issues

Papers

Authors

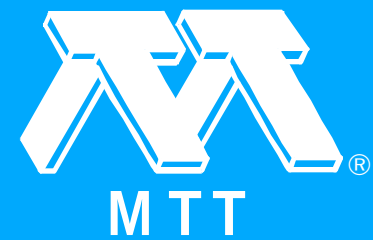
Click on title for a complete paper.



Abstracts

Session 7 -- Professional Action (Panel Session)

"Session 7 -- Professional Action (Panel Session)." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 129-129.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

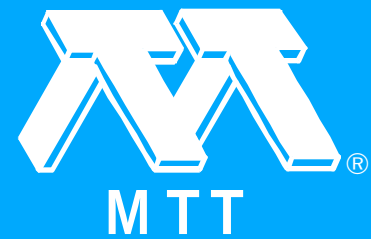


Abstracts

The New Pensions Law and How You Might Benefit from it

L. Young. "The New Pensions Law and How You Might Benefit from it." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 131-132.

The Federal Government encourages U.S. citizens to save for retirement by offering tax incentives. Substantial savings to an individual can result if he joins a qualified retirement plan. He also thereby reduces the change that he will be a burden to society in his old age. But not everyone can join a qualified (i. e., tax deferred) plan. Then who is eligible and who is not?



IEEE

Contents

Publications

Issues

Papers

Authors

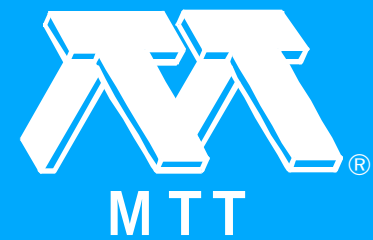
Click on title for a complete paper.



Abstracts

Session 8 -- Microwave Integrated Circuits

"Session 8 -- Microwave Integrated Circuits." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 133-133.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Tapered Asymmetric Microstrip Magic Tee

M.H. Arain and N.W. Spencer. "Tapered Asymmetric Microstrip Magic Tee." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 134-136.

The design of a very compact decade (1 to 10 GHz) bandwidth, -8.34 dB microstrip coupler and magic tee is described. The coupling factor is calculated. The construction of the device is described and its feasibility demonstrated.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

An Efficient Microstrip Upconverter for K/sub a/-Band

P.S. Henry. "An Efficient Microstrip Upconverter for K/sub a/-Band." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 137-139.

A hybrid integrated upconverter from 1.8 GHz to 30 GHz is described. The converter, consisting of a microstrip circuit on a quartz substrate and a high-cutoff varactor diode, delivers 50 mW output with 6 dB conversion loss.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Design and Performance of a Broadband MIC Low Noise K-Band Balanced Mixer, Polar Discriminator and Related Components

A.K. Gorwara, D.R. Chambers, U. Gysel and D. Parker. "Design and Performance of a Broadband MIC Low Noise K-Band Balanced Mixer, Polar Discriminator and Related Components." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 140-142.

The design and experimental performance of a broadband (18-26.5 GHz) single balanced mixer, polar discriminator and related components fabricated in microstrip on 0.010-inch thick gold plated sapphire is described. Typical conversion loss of 7.5 dB with a maximum of 8.5 dB at the top of the band was achieved in the mixer. The output polar angle of the discriminator is linear within $\pm 15^\circ$ with an input signal level of -14 dBm. Full utilization of planar techniques is made that could also be applicable for frequencies up to and above 60 GHz.

Click on title for a complete paper.



Abstracts

New Developments with Integrated Fin-Line and Related Printed Millimeter Circuits

P.J. Meier. "New Developments with Integrated Fin-Line and Related Printed Millimeter Circuits." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 143-145.

New examples of integrated fin-line and related printed millimeter circuits are presented as a further demonstration of the advantages of such construction techniques. The circuits include a wideband matched PIN attenuator, single-ridged and monopole-coupled semiconductor mounts, and an integrated receiver front end.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Low Noise Microwave and Millimeter Wave Integrated Circuit Mixers

A.J. Kelly, H.C. Okean and S.J. Foti. "Low Noise Microwave and Millimeter Wave Integrated Circuit Mixers." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 146-148.

This paper describes the use of integrated circuit technology to achieve enhanced performance in low noise X- and K/sub a/-band mixers. Particular examples of low noise MIC mixer receivers using high-quality GaAs Schottky diodes include a 9.0 - 10.0 GHz image-recovery downconverter exhibiting 4.2 - 5.5 dB SSB noise figure and a 36.5 - 38.5 GHz radiometric downconverter exhibiting 6 dB DSB noise figure.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

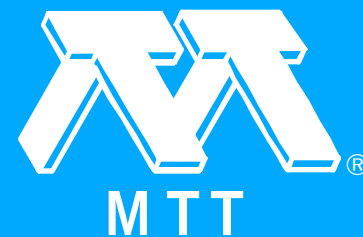


Abstracts

A New "Phased-Type" Image Enhanced Mixer

L.E. Dickens and D.W. Maki. "A New "Phased-Type" Image Enhanced Mixer." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 149-151.

GaAs Schottky Barrier diodes with a zero bias cutoff frequency of 800 GHz have been used in an integrated circuit balanced mixer operating with a signal frequency centered at 12 GHz and an IF of 70 MHz. $L_{\text{sub } c}$ at centerband was 2.2 dB. For an LO tunable bandwidth of over .65 GHz, the conversion loss was under 3.0 dB. No image filter is used in this mixer. The conversion loss across the image band was greater than 25 dB.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A 3.5 Watt High Efficiency Frequency Quadrupler for X-Band Applications

C.W. Sirles and R. Allison. "A 3.5 Watt High Efficiency Frequency Quadrupler for X-Band Applications." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 152-154.

A microwave integrated circuit x4 frequency multiplier has been developed which has a peak output power of greater than 3.5 watts at 9.5 GHz and a 6 percent 1 dB bandwidth. This performance was achieved with an input power of 12 watts peak at S-band and at 10 percent duty cycle.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Characteristics and Applications of Coupled Microstrip Lines

E. Rivier, J.P. Blot, D. Pompei and A. Ros. "Characteristics and Applications of Coupled Microstrip Lines." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 155-157.

A general formalism extending conventional Kirchhoff's line theory appears to be a convenient tool for defining the main characteries of coupled lines and for studying various applications.



IEEE

Contents

Publications

Issues

Papers

Authors

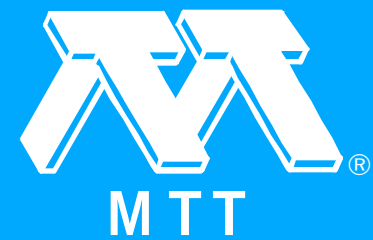
Click on title for a complete paper.



Abstracts

Session 9 -- Technology Forecasting and Assessment

"Session 9 -- Technology Forecasting and Assessment." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 159-159.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Technology Forecasting and Assessment (1975 [MWSYM])

A. Clavin, W. Cooper, S. Okwit, J.E. Grant, B.T. Murphy and K.J. Button. "Technology Forecasting and Assessment (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 161-162.

Four areas of microwave technology will be addressed by members of the panel. These areas are Low Noise, High Power, Microwave Computer Logic, and Submillimeter Waves. It is desired to have a free exchange of information and questions between the audience and the panel members. A summary of both the audience and panel member discussions and comments will be published in the MTT Newsletter.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

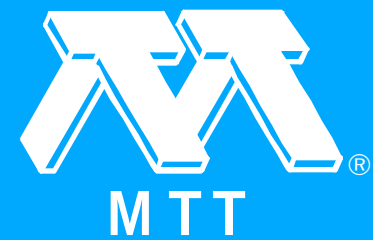
Click on title for a complete paper.



Abstracts

Session 10 -- Microwave Diode Control Devices

"Session 10 -- Microwave Diode Control Devices." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 163-163.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Integrated Diode Phase Shifters and Performance in a 502-Element X-Band Array

M.E. Davis. "Integrated Diode Phase Shifters and Performance in a 502-Element X-Band Array." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 164-166.

The results of fabricating 502 integrated 3-bit PIN diode phase shifters and dipole radiators will be discussed. These phase shifters consist of chip PIN diodes mounted on 25-mil alumina microstrip. A horizontally polarized dipole has been printed on the same structure, giving a complete phased array element. Considerations in the program were given for diode and circuit variations and their effects on phased array performance. A transmissive phased array has been fabricated with these elements and the performance will be discussed in terms of the phase shifter manufacturing tolerances.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Recent Advances in Binary-Programmed Electronically-Tunable Bandpass Filters of the "Flauto" Type

A. Karp and W.B. Weir. "Recent Advances in Binary-Programmed Electronically-Tunable Bandpass Filters of the "Flauto" Type." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 167-169.

Two half-wave resonators with binary-programmed, high-speed electronic tuning have been cascaded to form a second-order high-power bandpass filter for the range 355 to 400 MHz. Seven binary-scaled, PIN-diode-controlled, tuning irises in each resonator provide a maximum tuning increment of 550 kHz while the tracking error never exceeds 150 kHz. Extensive improvements were made in design and performance, and in automatic control and testing, over previous work with a single resonator of more primitive design.

[Click on title for a complete paper.](#)



Abstracts

4 GHz 8x8 Switch Matrix for SDMA System

M. Yamaguchi, Y. Ito, M. Kyogoku, T. Kudo and M. Akao. "4 GHz 8x8 Switch Matrix for SDMA System." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 170-172.

An engineering model of an on-board rearrangeable 8x8 switch matrix has been developed using 168 PIN diodes and MIC technique. The matrix shows 14 ± 1 dB insertion loss and 40 dB isolation over the frequency range of 3.7 to 4.2 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

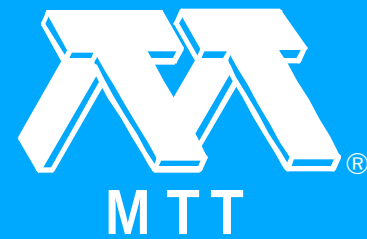


Abstracts

Diode Structures for a Millimeter Wave Phase Shifter

G.R. Vanier and R.M. Mindock. "Diode Structures for a Millimeter Wave Phase Shifter." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 173-175.

PIN diode design rationale and performance characteristics for a phase shifter compatible with dielectric waveguide is presented. This phase shifting technique exhibits good performance capability and is particularly applicable to a dielectric radiating element at millimeter wave frequencies.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Transferred-Electron Frequency Memorizer

W.R. Curtice. "A Transferred-Electron Frequency Memorizer." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 176-178.

Transferred-electron oscillators capable of single frequency operation at any of a large number of closely spaced frequencies are being developed for microwave frequency memory applications. Switching between different frequency states has been achieved with pulsed RF input signals as short as 0.1 μ s in X-band (8.2-12.4 GHz).



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Octave Bandwidth High Speed Limiter with Uniform Suppression Characteristics

B. Geller, J.E. Degenford and M. Cohn. "Octave Bandwidth High Speed Limiter with Uniform Suppression Characteristics." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 179-181.

The performance of several octave-bandwidth diode clipper/limiters having uniform suppression characteristics over the 2.0 to 4.0 GHz octave is discussed. Suppression over the band is 4.0 dB or greater for a structure using Silicon diodes and 3.5 dB or greater for a similar structure using GaAs diodes.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

RF Burnout of Mixer Diodes as Induced Under Controlled Laboratory Conditions and Correlation to Simulated System Performance

G.E. Morris, Y. Anand, V.J. Higgins, C. Cook and G. Hall. "RF Burnout of Mixer Diodes as Induced Under Controlled Laboratory Conditions and Correlation to Simulated System Performance." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 182-183.

The mixer diode failure in microwave systems using a TR tube protector depends upon (a) rise time of magnetron, (b) harmonics generated by the magnetron and TR tubes, and (c) spike leakage by the TN tubes. This paper describes the study conducted to establish correlation between mixer diode failure in microwave systems using a TR tube and simulated laboratory set up. Diode failure under microsecond RF pulses and static conditions will also be presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

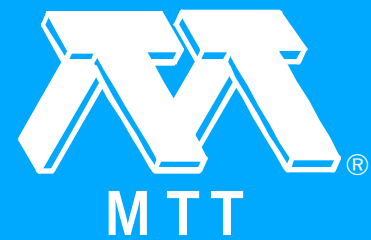


Abstracts

Picosecond Pulse Sequential Waveform Generation

H.M. Cronson. "Picosecond Pulse Sequential Waveform Generation." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 185-186.

This paper describes a novel method of generating a pulse sequence using step-recovery diodes shunting a transmission line. Individual pulses in the train may have risetimes less than 60 ps with amplitudes greater than 10 V. The many potential applications of the device include a short RF pulse generator, an FM generator, and a high-speed word generator.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

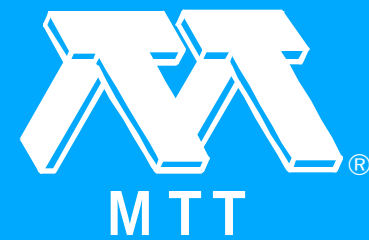
Click on title for a complete paper.



Abstracts

Session 11 -- Computer Aided Microwave Practices

"Session 11 -- Computer Aided Microwave Practices." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 187-187.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Analysis of Microwave Network Circuits by Time and Frequency-Domain Comparisons

H.E. Stinehelfer. "Analysis of Microwave Network Circuits by Time and Frequency-Domain Comparisons." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 188-190.

The analysis of microwave network circuits by time and frequency-domain comparison will be demonstrated by actually producing theoretical time domain plots from their calculated frequency reflection response. In the time domain, the shape of an impulse and step response for different networks will be discussed.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Complete Computer Program for the Synthesis of Matching Networks for Microwave Amplifiers

D.J. Mellor and J.G. Linvill. "A Complete Computer Program for the Synthesis of Matching Networks for Microwave Amplifiers." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 191-193.

A complete computer program has been developed for the design of interstage matching networks for microwave amplifiers using (generalized) passive network synthesis which has been generalized to provide sloped passband performance, inclusion of parasitic elements and transformation of impedance levels.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Modeling and Computer Simulation of a Microwave-to-DC Energy Conversion Element (1975 [MWSYM])

J.J. Nahas. "Modeling and Computer Simulation of a Microwave-to-DC Energy Conversion Element (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 194-196.

A microwave-to-DC energy conversion element consisting of a dipole antenna, a low-pass filter, a Schottky barrier diode, and a DC filter has been modeled using a distributed modeling technique that includes skin-effect losses in transmission lines. Computer simulation has shown seventy percent conversion efficiency and has indicated that the diode generates significant power at higher harmonics due to a resonance effect.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Network Modelling of Interacting Capacitive Irises and Steps in Waveguide

T.E. Rozzi. "Network Modelling of Interacting Capacitive Irises and Steps in Waveguide." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 197-199.

A unified approach is presented for modelling capacitive irises and steps in standard and oversize guides. The variational solution yields an accurate wideband equivalent network with explicit, geometry-dependent element values. Design information is provided.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Three-Dimensional Numerical Analysis of Microwave Cavities Using the TLM Method

P.B. Johns and S. Akhtarzad. "Three-Dimensional Numerical Analysis of Microwave Cavities Using the TLM Method." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 200-201.

The TLM method of numerical analysis provides a solution for six-component electromagnetic fields in three space dimensions and time. The universal program is economical and easy to formulate and all the features of a problem are read in as data. The method has been applied to inhomogeneous lossy cavities and cavities containing microstrip discontinuities.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Solution of Large, Sparse Systems in Design and Analysis

A. Wexler, J.A. Dobrowalski and A.E. Hammad. "Solution of Large, Sparse Systems in Design and Analysis." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 202-203.

Presents some basic principles of the solution of large systems of simultaneous linear equations by sparsity methods, particularly Zollenkopf's bifactorisation method, and describes diakoptics (Gabriel Kron's method of tearing). Implications of these two approaches, used together, are discussed with particular reference to system optimization and finite-element analysis of nonlinear and large problems.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Integrated Approach to Microwave Design (1975 [MWSYM])

J.W. Bandler, P.C. Liu and H. Tromp. "Integrated Approach to Microwave Design (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 204-206.

A new concept of practical design applicable to microwave circuits and involving, in general, simultaneous centering, tolerancing and tuning is presented. The worst-case tolerance problem falls out as a special case. With such an integrated approach, designs previously regarded as unrealistic might be made more attractive. Practical implementation involving, for example, nonideal components and uncertain reference planes is also treated in this paper from the tolerance point of view.



IEEE

Contents

Publications

Issues

Papers

Authors

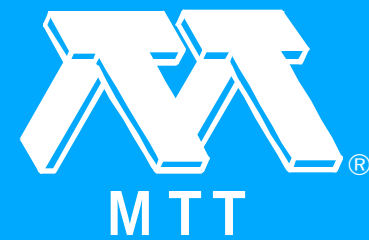
Click on title for a complete paper.



Abstracts

Session 12 -- Millimeter Wave Communications in Japan (Invited Session)

"Session 12 -- Millimeter Wave Communications in Japan (Invited Session)." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 207-207.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

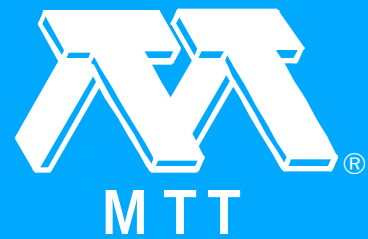


Abstracts

W-40G Guided Millimeter-Wave Transmission System

K. Miyauchi. "W-40G Guided Millimeter-Wave Transmission System." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 208-211.

System structure, repeater equipments and transmission characteristics of a guided millimeter-wave transmission system "W-40G" are reported. It can transmit 300,000 telephone channels in the frequency band from 43 to 87 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

20G-400M Digital Radio-Relay System

K. Kohiyama, H. Yamamoto and Y. Nakamura. "20G-400M Digital Radio-Relay System." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 212-215.

A 20-GHz high-speed digital radio-relay system, with 400-Mb/s transmission capacity, is under development for long-haul transmission. This paper describes the design and characteristics of this system. Results of field evaluation tests are also presented.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Receiving Part of Satellite Borne Millimeter Wave Transponder

K. Tsukamoto and R. Hayashi. "Receiving Part of Satellite Borne Millimeter Wave Transponder." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 216-218.

Engineering models for the receiving part of the satellite borne millimeter wave transponder were developed, and sufficient results were obtained in their overall characteristics for application to the Japanese Experimental Communication Satellite (ECS). This paper presents the development process and characteristics of these engineering models.

Click on title for a complete paper.



Abstracts

150 GHz Band IMPATT Oscillators, Frequency Converters and Doublers

M. Ohmori, M. Hirayama and T. Ishibashi. "150 GHz Band IMPATT Oscillators, Frequency Converters and Doublers." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 219-221.

Si p+-n-n+ IMPATT oscillators, GaAs frequency converters and doublers at 150 GHz band were developed. Oscillator output power was 85 mW at 161 GHz with 2.8 percent efficiency. DC incremental conversion loss was 5.5 dB with a Schottky-barrier mixer.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Wideband Tunable and Highly Stabilized Millimeterwave IMPATT Diode Oscillators

T. Miyakawa, N. Tokoyo, T. Nakagami and H. Hayashi. "Wideband Tunable and Highly Stabilized Millimeterwave IMPATT Diode Oscillators." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 222-223.

Millimeterwave IMPATT diode oscillators which can be tuned from 35 to 75 GGz and from 70 to 100 GHz are developed. By connecting a high Q cavity, a highly stabilized oscillator is also constructed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Waveguide Components for Millimeter-Wave Communications at 40-90GHz

S. Kitazume and H. Ishihara. "Waveguide Components for Millimeter-Wave Communications at 40-90GHz." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 224-228.

This paper describes the methods of construction and performance characteristics of millimeter-wave components applicable to the 40-90GHz band with particular reference to simple and novel methods of manufacture.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Low-Loss Bandpass Filters at 80 GHz Using Cylindrical TE/sub 111/ -Mode Cavities

T. Nakagami and S. Takenaka. "Low-Loss Bandpass Filters at 80 GHz Using Cylindrical TE/sub 111/ -Mode Cavities." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 229-231.

Multi-section bandpass filters with cylindrical TE/sub 111/ -mode cavities have been constructed at 80GHz with a new mechanical construction. The low insertion loss and the other performance are consistent with design without any adjustment.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Advanced Loss-Reduction Techniques in Millimeter Waveguide Instruments

S. Ishii and K. Ohi. "Advanced Loss-Reduction Techniques in Millimeter Waveguide Instruments." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 232-234.

Advanced techniques have been developed whereby cold hobbing and honing are applied in making and finishing millimeter waveguide instruments. This advancement significantly improves the characteristics of waveguides and cavity frequency meters.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Circular Arc Polygonal Type TE_{on} Mode Filter

K. Inada, T. Akimoto and T. Hayakawa. "Circular Arc Polygonal Type TE_{on} Mode Filter." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 235-238.

A circular TE_{on} mode filter using a deformed circular waveguide has been developed. The theoretical analysis of the filter and the experimental results of TE₀₂-TE₀₃ mode filter are presented in this paper.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 13 -- Microwave Ferrite Control Devices

"Session 13 -- Microwave Ferrite Control Devices." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 239-239.



MTT



IEEE

[Contents](#)

[Publications](#)

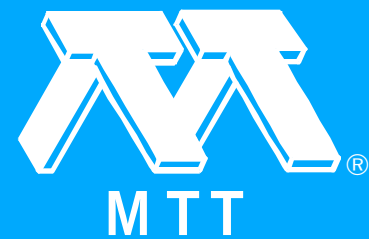
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design of Ferrite Differential Phase Shift Sections

C.R. Boyd, Jr.. "Design of Ferrite Differential Phase Shift Sections." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 240-242.

Ferrite differential phase shift sections are useful as nonreciprocal circular polarizers in dual-mode phase shifters, as half-wave plates in precision rotary-field phase shifters, and in other devices where nonreciprocal birefringence is desirable. This paper presents a simple design model that provides accurate estimates of the differential phase shift and frequency dispersion of sections using transverse quadrupole magnetic field biasing in a circular waveguide completely filled with ferrite.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Premature Decline Limiting in X-Band YIG Filters

R.A. Sparks and R. DiBiase. "Premature Decline Limiting in X-Band YIG Filters." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 243-246.

More than ten years have elapsed since the basic experiments on high power effects in ferrites were completed. During the interim period the electronically tunable YIG filter has been developed and its performance characteristics refined for utilization in many diverse system and instrumentation applications. The data presented in this paper are believed to be the first reported measurements of the premature decline limiting characteristics of X-band YIG filters up to input power levels of 2 KW peak. The minimal spike and flat leakage transmission levels are shown to offer significant system receiver front end protection in a typical contemporary electromagnetic environment.

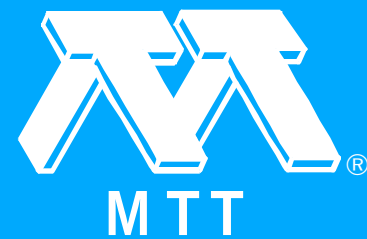
[Click on title for a complete paper.](#)



Abstracts

Microwave YIG-Tuned Elements as Transducers for Monitoring of EHV AC and HVDC Transmission Systems

S.S. Stuchly, J.A. Dobrowolski, M.Z. Tarnawecky and M. Yunik. "Microwave YIG-Tuned Elements as Transducers for Monitoring of EHV AC and HVDC Transmission Systems." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 246-246.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Y Junction Circulator Analysis

Z.C.S. Lint, A. Delfour and A. Priou. "Y Junction Circulator Analysis." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 247-249.

We bring to evidence the operation of partially magnetized below resonance Y junction circulators. We elaborate a complete computer program taking into account this state as well as the material dielectric and magnetic losses. We call for your attention upon the prevailing importance of the psi parameter in the definition of narrow and wide band circulators, whether they be of the classical or composite type.



IEEE

Contents

Publications

Issues

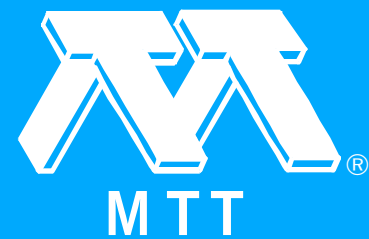
Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

New Edge Guided Mode Devices

K. Araki, T. Koyama and Y. Naito. "New Edge Guided Mode Devices." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 250-253.

New type edge guided mode devices that are isolator and quasi-circulator, are proposed. The new type isolator has some desirable characteristics; (a) a large isolation and a small insertion loss, (b) simple structure without electric lossy materials, (c) considerable wide frequency band. On the other hand, the quasi-circulators have the following scattering matrix. These isolations are very large compared to the usual circulators.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Possibility of Double Circulation Frequency Operation of Stripline Y-Junction Circulator

T. Nagao. "Possibility of Double Circulation Frequency Operation of Stripline Y-Junction Circulator." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 254-256.

The application of double circulation frequency operation (DCFO) is proposed to a wide band operation of a stripline Y-junction circulator. The ECFO mechanism, bandwidth and experiments are also reported.

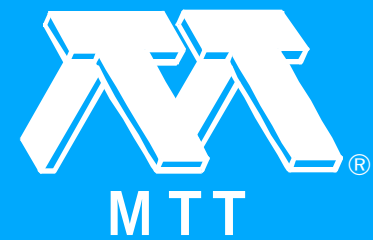
[Click on title for a complete paper.](#)



Abstracts

Session 14 -- Millimeter Wave Systems

"Session 14 -- Millimeter Wave Systems." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 257-257.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Solid-State 94 GHz Doppler Radar

F.J. Bernues, H.J. Kuno and J. McIntosh. "A Solid-State 94 GHz Doppler Radar." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 258-260.

The design, construction and performance of a small portable all solid-state Millimeter-Wave Doppler radar operating at 94 GHz are described. Design trade-offs are discussed. Laboratory and field performance data are also presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Advanced Solid-State Components for Millimeter Wave Radars

P.M. Schwartz, R.F. Lohr, Jr., K.P. Weller and R.L. Zimmerman. "Advanced Solid-State Components for Millimeter Wave Radars." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 261-263.

Low power components for use in W-band (75-100 GHz), chirp radars have been developed. The development was based on a chirp bandwidth of 1.5 GHz. The components included resistive mixers for frequency conversion and generation of the chirp waveform at the radar output frequency and for bandwidth compression in the receiver front end, varactor multipliers, phase stabilized power sources to provide basic RF power for radar processing, and IMPATT amplifiers to boost the output power from the low power levels available from the mixers.



IEEE

Contents

Publications

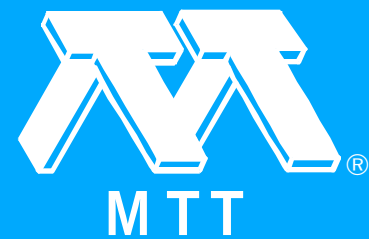
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Wideband Electronically Tuned Millimeter-Wave IMPATT Oscillators

C. Chao, Y. Chang, E. Benko and H.J. Kuno. "Wideband Electronically Tuned Millimeter-Wave IMPATT Oscillators." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 264-265.

Development and characterization of wideband, low-noise electronically tuned IMPATT diode oscillators in millimeter-wave frequencies are described.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microstrip Varactor-Tuned Millimeter Wave IMPATT Diode Oscillators (1975 [MWSYM])

E.J. Denlinger, J. Rosen, E. Mykietyn and E.C. McDermott. "Microstrip Varactor-Tuned Millimeter Wave IMPATT Diode Oscillators (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 266-268.

This paper describes varactor-tuned millimeter wave IMPATT diode oscillators in microstrip form using chip-mounted diodes. A combined tuning range of 26-39.2 GHz with 2-28 mW of rf power was achieved with two oscillators.

[Click on title for a complete paper.](#)



Abstracts

Millimeter-Wave Power Amplifier and Combiner

H.J. Kuno and D.L. English. "Millimeter-Wave Power Amplifier and Combiner." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 269-271.

The development of a millimeter-wave IMPATT power amplifier/combiner capable of 1 W CW output power with 22 dB small signal gain and 6 GHz bandwidth in the 60 GHz range is described.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Low Noise Broadband Ka-Band Waveguide Mixer

L.T. Yuan. "A Low Noise Broadband Ka-Band Waveguide Mixer." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 272-273.

A Ka-band waveguide double-balanced mixer is described which has low noise and broadband performance. A double sideband noise figure of 5.9 dB was achieved. The mixer is capable of operation over a frequency range from 26 to 40 GHz. A unique mixer configuration for achieving double-balanced mixer operation is described. The new mixer configuration simplifies the problems encountered in fabricating a double-balanced waveguide mixer at Ka-band.

[Click on title for a complete paper.](#)

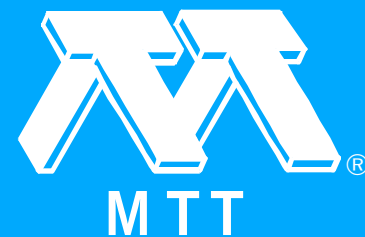


Abstracts

Varactor Frequency Doublers and Triplers for the 200 to 300 GHz Range

L.D. Cohen, S. Nussbaum, E. Kraemer, J. Calviello and J. Taub. "Varactor Frequency Doublers and Triplers for the 200 to 300 GHz Range." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 274-276.

An advance in the state-of-the-art of millimeter wave solid-state sources has been achieved with the development of a frequency tripler to 300 GHz with an output level of 2 mW. A frequency doubler to 200 GHz with an output power level of 10 mW has also been developed and tested. Efficient multiplication has been obtained by use of a new AIL high cutoff frequency varactor and specially developed circuit techniques.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

New Waveguide Structures for Millimeter-Wave Integrated Circuits (1975 [MWSYM])

T. Itoh and R. Mittra. "New Waveguide Structures for Millimeter-Wave Integrated Circuits (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 277-280.

Three new types of waveguide structures, which are useful for millimeter-wave integrated circuits, have been studied. Methods of analysis for these structures have been developed and the numerical results have been compared with experimental data.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session 15 -- Microwaves in Medicine

"Session 15 -- Microwaves in Medicine." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 281-281.



MTT



IEEE

[Contents](#)

[Publications](#)

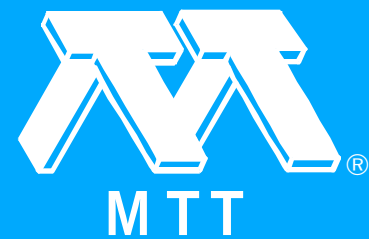
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Resonant Electromagnetic Power Deposition in Man and Animals

O.P. Gandhi. "Resonant Electromagnetic Power Deposition in Man and Animals." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 282-284.

Strongest power deposition for biological bodies is found for fields polarized along the longest dimension for frequencies such that the major length is about one-half wavelength of radiation. Peak absorption, in the presence of ground effects, is observed at frequencies one half as much as for bodies isolated in free space. Power distribution under conditions of resonance is determined. At resonance, an effective absorption area of 2.5 to 3.5 times the shadow cross section is measured.

[Click on title for a complete paper.](#)



Abstracts

Microwave Measurement of Respiration

J.C. Lin and J. Salinger. "Microwave Measurement of Respiration." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 285-287.

A non-contact microwave technique is described which measures respiratory movements of men and animals. The technique is based on the scattering of continuous wave radiation. Results are compared with a thermistor flow transducer for both men and animals, indicating the usefulness of the procedure.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Complex Permittivity and Penetration Depth of Certain Biological Tissue Between 40 and 90 GHz

J. Edrich and P.C. Hardee. "Complex Permittivity and Penetration Depth of Certain Biological Tissue Between 40 and 90 GHz." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 288-290.

First measurements of the complex permittivity and penetration depth of millimeter waves in fat and muscle tissue are reported. A new phaseless reduction technique is used. Significant variations of tissue properties after death were found.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

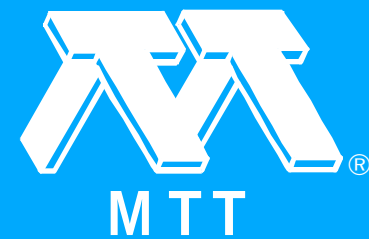


Abstracts

Dielectric Measurements for the Design of a Phantom Eye

M.R. Foster and W.B. Westphal. "Dielectric Measurements for the Design of a Phantom Eye." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 291-291.

Measurements at microwave frequencies of the complex permittivity of four partitions of the rabbit eye are reported. The small quantity of some of these tissues required the design of a special sample holder and appropriate techniques for its use.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Effect of Microwave Fields on Rabbit Vagus Nerves and Superior Cervical Ganglia

C.-K. Chou and A.W. Guy. "Effect of Microwave Fields on Rabbit Vagus Nerves and Superior Cervical Ganglia." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 292-294.

Rabbit vagus nerves and superior cervical ganglia were exposed in vitro to CW and pulsed 2450 MHz fields in a waveguide circulated with temperature-controlled Ringer's solution. No significant change in characteristics was observed at absorbed power densities of 0.3-1500 W/kg for CW, and 0.3-220 kW/kg peak for pulsed fields as long as temperature was maintained at a constant non-noxious level.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Microwave Irradiation Design Using Dielectric Lenses

H.S. Ho, G.J. Hagan and M.R. Foster. "Microwave Irradiation Design Using Dielectric Lenses." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 295-296.

Theoretical calculations and electric field measurements were made to demonstrate the focusing effect of dielectric spheres (lenses). The results indicate the feasibility of using dielectric lenses for selective partial body irradiation in biological experiments.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Nonperturbing Liquid Crystal Fiberoptic Microwave Power Probe

O.P. Gandhi and T.C. Rozzell. "A Nonperturbing Liquid Crystal Fiberoptic Microwave Power Probe." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 297-299.

A miniaturized microwave probe has been developed using the microwave-caused heating of a thin coating of a resistive material and the resulting change in the color of a miniscule amount of liquid crystal in intimate contact. The probe can be inserted in animals for microwave biological effects research and is isotropic in its sensitivity to different polarizations of the fields.



MTT



IEEE

[Contents](#)

[Publications](#)

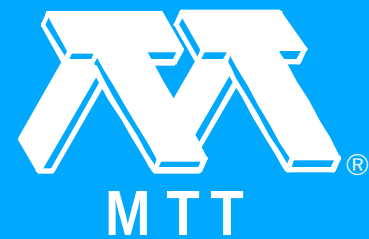
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Fiberoptic Microprobes for Measurement of Electromagnetic Fields

A. Deficis. "Fiberoptic Microprobes for Measurement of Electromagnetic Fields." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 300-302.

This paper describes the technology and performances of microprobe constructed of optical fibers and cholesterical liquid crystals loaded with graphite. These probes can be used to directly measure the E.M. fields. Their characteristics allow to use them in fundamental research as well as in the optimization of microwave systems and in medical and industrial calibration.

[Click on title for a complete paper.](#)



Abstracts

Session 16 -- Noise in Microwave Transmission and Applications of Gunn and IMPATT Diodes (Panel Session)

"Session 16 -- Noise in Microwave Transmission and Applications of Gunn and IMPATT Diodes (Panel Session)." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 303-303.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Noise in Microwave Transmission Applications of Gunn and IMPATT Diodes (Panel Session)

J. Elliott. "Noise in Microwave Transmission Applications of Gunn and IMPATT Diodes (Panel Session)." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 304-304.

The Gunn and the IMPATT diode are finding an increasing range of applications in radio communication systems for terrestrial line-of-sight transmission. The receiver local oscillator (with or without automatic frequency control), which came first, was followed by three transmitter applications, namely, the upconverter pump, the power amplifier (stable or injection locked), and the high-linearity, frequency modulated oscillator.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The System/Circuit Interface in IMPATT Diode Applications

J.W. Gewartowski. "The System/Circuit Interface in IMPATT Diode Applications." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 305-305.

Output power amplifiers using IMPATT diodes are now being used in FM radio relay transmitters in order to obtain high overall efficiency, the diodes are operated close to maximum rf output power. Since the noise figure increases monotonically with output power, an optimum tradeoff between power and noise must be sought.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

The System/Circuit Interface in Gunn Diode Applications

F. Ivanek. "The System/Circuit Interface in Gunn Diode Applications." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 306-306.

Farinon's FH-Series systems, intended for either heterodyne or baseband operation with analog transmission capacities of up to 1800 voice channels or the equivalent at frequencies above 5.9 GHz, use Gunn diodes in all three active radio-frequency functions, i.e. in the receiver local oscillator (LO), in the frequency modulated transmitter oscillator (OSC-MOD), and in the transmitter power amplifier operating in the injection-locked mode (ILA). The LO is also being used, since 1970, in Farinon's SS-Series baseband systems.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

On the Circuit-Device Interface in IMPATT-Diode Applications

M.T. Vlaardingerbroek. "On the Circuit-Device Interface in IMPATT-Diode Applications." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 307-307.

The avalanche process in an IMPATT-diode is inherently noisy. On the other hand the IMPATT-diode has the highest C.W. power capabilities, compared with the other active solid-state microwave devices. Therefore, several applications can only be realized using IMPATT-devices and must be designed in such a way that the noise is acceptable.

Click on title for a complete paper.



Abstracts

The Circuit/Device Interface in Gunn and IMPATT Diode Applications

A.A. Sweet. "The Circuit/Device Interface in Gunn and IMPATT Diode Applications." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 308-309.

Gunn and impatt diodes are now beginning to find wide acceptance in component use for message carrying systems. The purpose of this talk is to briefly acquaint the reader with the various component applications for these devices and their limitations. The limitations that are considered here are a) FM noise properties b) Large FM deviation distortion properties.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

IMPATT and Gunn Diode Noise Diagnostics

J.R. Ashley. "IMPATT and Gunn Diode Noise Diagnostics." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 310-310.

In a communications system, the noise performance answer of most significance is the signal to noise ratio at the baseband output from a receiver. This is reflected in the form of the noise specification for components used in communications service. This is a ratio of noise in a 3 kHz bandwidth to the power in a test tone which causes 200 kHz deviation in the transmitter. This 3 kHz bandwidth is swept through the baseband region--typically 50 kHz to 5 mHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

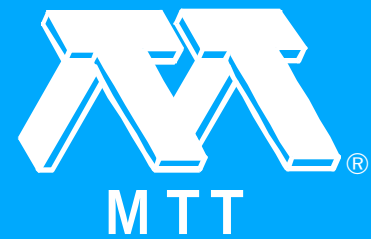


Abstracts

Theoretical Aspects of Gunn and IMPATT Diode Noise

H.A. Haus. "Theoretical Aspects of Gunn and IMPATT Diode Noise." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 311-312.

A brief review of small-signal noise theories of Gunn and IMPATT diodes, and large-signal noise theories of IMPATT diodes is the purpose of this presentation. Some issues requiring further investigation will be pointed out.



IEEE

Contents

Publications

Issues

Papers

Authors

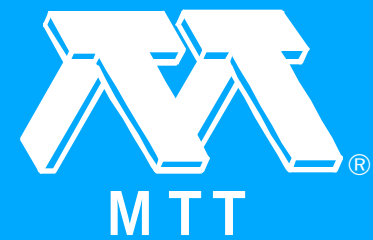
Click on title for a complete paper.



Abstracts

Session 17 -- Reduction and Measurement of Noise

"Session 17 -- Reduction and Measurement of Noise." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 313-314.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Frontiers of Microwave Noise Measurements at NBS

C.K.S. Miller. "Frontiers of Microwave Noise Measurements at NBS." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 314-314.

The National Bureau of Standards (NBS) is a national technical resource to U. S. industries and government agencies and provides the nation with a foundation for its measurements. NBS performs research to establish basic and reference standards and to develop measurement techniques both to disseminate these standards and in response to technological needs. Microwave and millimeter wave noise standards and measurement techniques that represent the frontiers of noise measurements will be discussed. These include capabilities in the measurement of noise temperature and excess noise ratio, noise figure (or noise factor), and the use of radio stars to measure system gain to system noise temperature for satellite ground stations. Some comments will be included about efforts to develop the stability of various noise sources and the measures for oscillator noise.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Measure for the Stability of Solid State Noise Sources

M. Kanda. "A Measure for the Stability of Solid State Noise Sources." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 315-317.

A measure for the stability of solid state noise sources is discussed. Its applicability is demonstrated. A technique similar to cross correlation is employed to separate the instabilities of the noise source from those of the measurement system.



MTT



IEEE

[Contents](#)

[Publications](#)

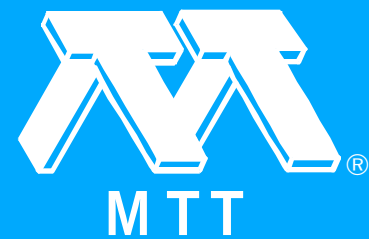
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Anomalous Noise in Schottky Diode Mixers at Millimeter Wavelengths

A.R. Kerr. "Anomalous Noise in Schottky Diode Mixers at Millimeter Wavelengths." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 318-320.

Measurements on state-of-the-art 85 GHz mixers using GaAs Schottky-barrier diodes give high values of noise temperature ratio (~ 1.3) and loss temperature ($\sim 500^\circ\text{K}$) despite low conversion loss ($\sim 5\text{dB SSB}$) and input noise temperature ($\sim 600^\circ\text{K SSB}$). The source of this noise has not yet been identified.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

MIC Modulator with Electronically Variable Carrier Cancellation Circuit

D. Neuf. "MIC Modulator with Electronically Variable Carrier Cancellation Circuit." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 321-323.

Experiments with various cancellation techniques for improving the LO to RF isolation of a double balanced mixer have resulted in the development of (1) a microstrip single sideband up converter with 45 dB carrier isolation over a wide tuning range and (2) an electronically controlled continuously variable MIC phase and amplitude modulator.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Feedback Effects on the Noise Performance of GaAs MESFETs

G.D. Vendelin. "Feedback Effects on the Noise Performance of GaAs MESFETs." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 324-326.

A technique is presented for evaluating the effect of lossless feedback on the four noise parameters of a transistor. The feedback effects on noise parameters are presented for a FMT940 GaAs MESFET at 4 and 8 GHz.

[Click on title for a complete paper.](#)



Stability Considerations of Low-Noise Transistor Amplifiers with Simultaneous Noise and Power Match

L. Besser. "Stability Considerations of Low-Noise Transistor Amplifiers with Simultaneous Noise and Power Match." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 327-329.

Microwave transistor amplifiers may be simultaneously matched for optimum noise and input/output VSWR. This paper demonstrates a combination of mapping techniques, computer optimization and stability considerations through two amplifier designs (70 MHz and 4000 MHz) to achieve these goals.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature (1975 [MWSYM])

C.A. Tearle and K.R. Heath. "IMPATT Pump Sideband Noise and its Effect on Parametric Amplifier Noise Temperature (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 330-332.

This paper describes an investigation of the amplitude modulation noise sidebands of 38 GHz silicon IMPATT oscillators and the effect these noise sidebands have on the excess noise temperature of parametric amplifiers. It is shown that the noise temperature may be affected under both large- and small-signal conditions to an extent which depends on the level of pump sideband noise. Simple relationships between easily measurable amplifier properties and pump noise power are given which enable the performance of any combination of pump and amplifier under the two signal conditions to be predicted. A method which simultaneously eliminates the small-signal effect and reduces the large-signal effect to an acceptable level is proposed and demonstrated to be a practical solution.

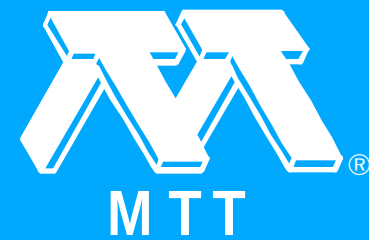
[Click on title for a complete paper.](#)



Abstracts

Session 18 -- Microwaves in Transportation and Navigation

"Session 18 -- Microwaves in Transportation and Navigation." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 333-333.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

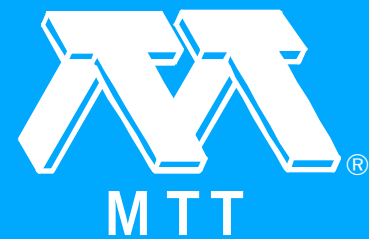
NAVSTAR Global Positioning System: A Satellite Based Microwave Navigation System

E.M. Lassiter. "NAVSTAR Global Positioning System: A Satellite Based Microwave Navigation System." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 334-334.

The NAVSTAR Global Positioning System is a satellite-based navigation system that will provide extremely accurate three-dimensional position fixes and timing information to properly equipped users anywhere on or near the earth. User positioning requires the determination of the times of transit for satellite generated signals to reach the user. Satellite positions and other necessary system information are transmitted to the satellites for modulation onto the navigation signal.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dual-Mode Automobile Collision Avoidance Radar

G.S. Kaplan and F. Sterzer. "Dual-Mode Automobile Collision Avoidance Radar." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 335-337.

A dual-mode (cooperative and non-cooperative) collision avoidance radar is proposed. The cooperative mode of the radar is based on tagging cooperating vehicles and other potential highway hazards with modulated fundamental frequency reflectors.

[Click on title for a complete paper.](#)



Abstracts

Application of Intermediate Frequency Interferometry to Transport Vehicle Control Systems

H.I. Ewen and G.G. Haroules. "Application of Intermediate Frequency Interferometry to Transport Vehicle Control Systems." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 338-340.

The extension of intermediate frequency interferometric (IFI) principles to range as well as bearing angle measurements suggests a number of applications in which IFI methods may provide inexpensive means for determining the positions of mobile vehicles, and in particular the relative distance between two vehicles in motion. Since the method requires radio transmission from one vehicle to the other, this radio link could be used for multifunction purposes, including the transmission of identification codes and similar auxiliary data.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Accurate Measurement of Range by the Use of Microwave Delay Line Techniques

G.F. Ross. "The Accurate Measurement of Range by the Use of Microwave Delay Line Techniques." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 341-342.

A novel scheme combining microwave-distributed network techniques and low frequency digital technology to make time duration measurements (i.e., range to a target) with an accuracy previously only obtainable using GHz counters is presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Microwave Technology in the Microwave Landing System

R.M. Kalafus. "Microwave Technology in the Microwave Landing System." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 343-345.

The purpose, format, principles of operation, and equipment used in the microwave landing system (MLS) are described. Special emphasis is given to microwave components in the system. Opportunities for innovation in technology development are discussed.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.

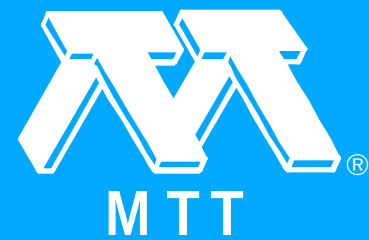


Abstracts

Instrument Landing System Performance Prediction

G. Chin, L. Jordan, D. Kahn and S. Morin. "Instrument Landing System Performance Prediction." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 346-348.

An electromagnetic scattering model has been developed for predicting Instrument Landing System (ILS) localizer and glide slope performance. The model is used to predict course structure degradation resulting from a change in the airport environment. Such changes include the addition of new hangars, terminal buildings and control towers as well as terrain modifications. In addition, the model is used to predict comparative ILS antenna array performance in order to help determine which ILS system is required for new runway instrumentation and for the upgrading of existing instrumented runways to a higher FAA category.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

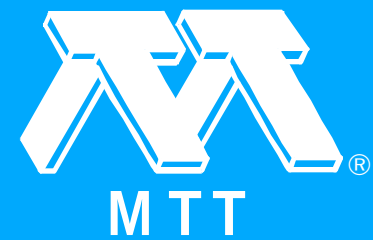
Click on title for a complete paper.



Abstracts

Session 19 -- Microwave Acoustics and Delay Lines

"Session 19 -- Microwave Acoustics and Delay Lines." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 349-349.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Currently Practical Acoustic Surface Wave Devices

L.T. Claiborne. "Currently Practical Acoustic Surface Wave Devices." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 350-352.

This paper presents a survey of the presently available surface wave devices and the range of frequency, bandwidths, etc., which can be considered practical at this time. The discussion is limited to devices intended for various analog signal processing functions. A short term projection of the next generation of devices is also included.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Design, Fabrication and Testing of SAW Butterworth Filters

A.J. Slobodnik, Jr., W.J. Kearns and J.P. Noonan. "Design, Fabrication and Testing of SAW Butterworth Filters." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 353-355.

Techniques for the design and fabrication by direct optical projection of linear-phase, Butterworth-frequency-response SAW filters are presented. Experimental results for a 190 MHz (1.2 μm linewidth) device fabricated on the 40.04 minimal diffraction cut of Bi/sub 12/GeO/sub 20/ are given.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Problems in the Realization of Flat Delay, Narrow-Band Surface Wave Filters at UHF and Microwave Frequencies

H. Skeie. "Problems in the Realization of Flat Delay, Narrow-Band Surface Wave Filters at UHF and Microwave Frequencies." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 356-358.

Narrow band filters with maximally flat passband and sharp transitions at the band edges require long transducer arrays. Specific problems encountered in the construction of such filters are minimization of the number of taps to avoid excessive attenuation and phase distortion, suppression of multiple echos, implementation of tap weighting to avoid non-uniform coupling, and numerous problems involved in the fabrication of sufficiently accurate transducer patterns. Tentative solutions to these problems are presented and some experimental results on a 500 MHz, 1% bandwidth filter are given.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Electrical Matching of Unidirectional Surface Wave Devices

R.B. Brown. "Electrical Matching of Unidirectional Surface Wave Devices." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 359-361.

Recent advances in surface wave device (SWD) technology have made it possible to obtain bandpass filters with insertion losses as low as 0.65 dB by implementing 3-phase unidirectional transducers. This paper discusses the techniques used for electrically matching unidirectional SWD's and shows recent experimental results obtained by using these techniques. Also included are discussions on electrical measurements of 3-phase transducer terminals, different methods of phase splitting and transducer interface, component value calculations for phase splitting and matching, and a review of sources of filter insertion loss.

[Click on title for a complete paper.](#)



Abstracts

Influence a of Solid Elastic Properties on the Scattering of Rayleigh Wave by Normal Discontinuities

E. Cambiaggio, F. Cuzzo, J.-P. Damiano and E. Rivier. "Influence a of Solid Elastic Properties on the Scattering of Rayleigh Wave by Normal Discontinuities." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 362-364.

A numerical study of the scattering of a surface acoustic wave on edges is presented. New results, concerning the influence of the elastic properties of substrate are given, and they are in good agreement with experiments.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Real Time Discrete Fourier Transforms Using a Programmable Diode-Convolver Module

T.M. Reeder, J.M. Speiser and H.J. Whitehouse. "Real Time Discrete Fourier Transforms Using a Programmable Diode-Convolver Module." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 365-367.

A new surface acoustic wave delay line module is described which provides, for the first time, the ability to compute the real time Discrete Fourier Transform (DFT) with electronically variable bandwidth. Initial experiments with 12 and 32 tap PDC modules are described which demonstrated a 40 dB tap dynamic range and Fourier bandwidth variable from zero to beyond 10 MHz.



[Contents](#)

[Publications](#)

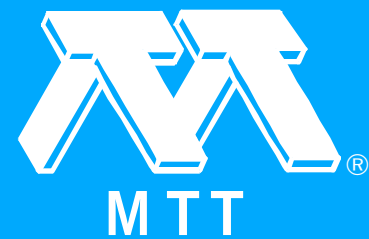
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Radiation Resistance of Microstrip Excited Magnetostatic Surface Waves

A.K. Ganguly and D.C. Webb. "Radiation Resistance of Microstrip Excited Magnetostatic Surface Waves." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 368-370.

The radiation resistance of magnetostatic surface waves excited by a shorted microstrip transmission line is calculated. Supporting experiments show that the assumed model accurately predicts the dependence of the frequency response upon geometrical parameters.

[Click on title for a complete paper.](#)

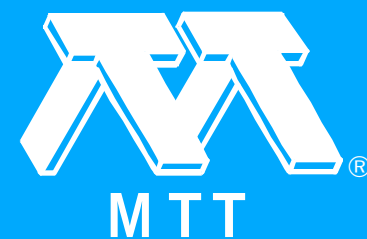


Abstracts

A Magnetostatic Delay Line Oscillator

J. Haworth. "A Magnetostatic Delay Line Oscillator." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 371-372.

A single mode X-band oscillator has been built using a magnetostatic delay line as the frequency stabilization element. Experimental data are presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

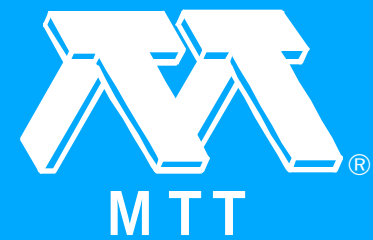
Click on title for a complete paper.



Abstracts

Index of Authors (1975 [MWSYM])

"Index of Authors (1975 [MWSYM])." 1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975 [MWSYM]): 373-377.



IEEE

Contents

Publications

Issues

Papers

Authors

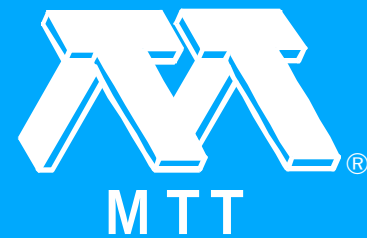
Click on title for a complete paper.



Abstracts

1975 IEEE MTT-S International Microwave Symposium, Condensed Schedule of Events

*"1975 IEEE MTT-S International Microwave Symposium, Condensed Schedule of Events."
1975 MTT-S International Microwave Symposium Digest of Technical Papers 75.1 (1975
[MWSYM]): b1-b1.*



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Front Cover (1976 [MWSYM])

"Front Cover (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): f1-f1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Copyright (1976 [MWSYM])

"Copyright (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): i-i.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Foreword (1976 [MWSYM])

B. DeMarinis. "Foreword (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): ii-ii.

On behalf of the 1976 MTT Steering Committee it gives me great pleasure welcoming you to Cherry Hill, New Jersey and the 1976 International Microwave Symposium. It is our hope that your stay will be technically stimulating and socially enjoyable, and in this regards, we solicit your comments on how we can make your stay an unequaled success.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Committees (1976 [MWSYM])

"Committees (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 1-4.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

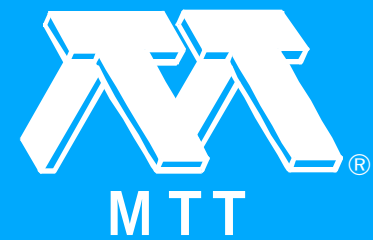
Click on title for a complete paper.



Abstracts

Awards (1976 [MWSYM])

"Awards (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 5-7.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Program (1976 [MWSYM])

"Program (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 8-14.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

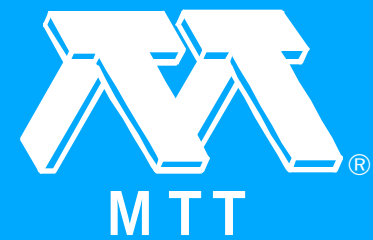
Click on title for a complete paper.



Abstracts

Session 1 -- Optics

"Session 1 -- Optics." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 15-15.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Review of the Status of Optical Fiber Transmission and Integrated Optics

S.E. Miller. "Review of the Status of Optical Fiber Transmission and Integrated Optics." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 16-16.

Since the first low-loss fibers were reported in 1970, optical transmission research has focused almost entirely on the use of fibers. Earlier work on transmission via periodically focused beams had spawned the need for integrated optics -- using single-mode optical circuitry in miniature dielectric waveguides -- in order to make feasible multiple carrier transmission medium. In both of these two fields -- lightwave transmission on fibers and integrated optics -- there has been exceptional technological progress.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 2 -- Integrated Optics and Fiber Optics

"Session 2 -- Integrated Optics and Fiber Optics." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 17-17.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Broad Band GaAs Microstrip Modulator at 16 GHz for CO/sub 2/ Laser Radiation

M. Gilden and P.K. Cheo. "A Broad Band GaAs Microstrip Modulator at 16 GHz for CO/sub 2/ Laser Radiation." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 18-20.

A 16 GHz microstrip modulator, fabricated on a thin slab of GaAs 25 microns thick, has been developed for CO/sub 2/ laser radiation. An instantaneous bandwidth of 1 GHz and a single optical sideband efficiency of 0.7 percent has been obtained with 20 watts of microwave driving power.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Signal Processing Using Guided-Wave Acoustooptic Bragg-Diffraction in LiNbO/sub 3/ Waveguides

I.W. Yao and C.S. Tsai. "Signal Processing Using Guided-Wave Acoustooptic Bragg-Diffraction in LiNbO/sub 3/ Waveguides." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 21-23.

Real-time processing of rf signals using guided-wave acoustooptic Bragg-diffraction in LiNbO/sub 3/ waveguides has been studied both theoretically and experimentally. Good performance figures for convolution have been achieved by employing multiple tilted surface acoustic waves: time-bandwidth product of 305, dynamic range of approximately 50 db, total rf power of 310 mW for maximum convolution output and the frequency resolution of 1 MHz (defined at zero convolution output).

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theory for Electrooptical Grating Modulators

R.S. Chu, J.A. Kong and DL. Lee. "Theory for Electrooptical Grating Modulators." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 24-26.

A popular configuration for electrooptical modulators used in integrated optics consists of periodic electrodes placed on the surface of a thin film waveguide made of electrooptical material. When voltages are applied to the electrodes, the thin film guide becomes spatially modulated with periodicity equal to that of the electrodes. Guided light is diffracted after passing through the modulated region. Experiments have been performed with light normally incident upon the periodic medium as well as incident at the Bragg angle. The measured results were interpreted with well-known theories applicable either in the Raman-Nath regime or in the Phariseau limit. In cases when both limits can not be applied, Klein and Cook devised a numerical solution in which they approximated differential equations by difference equations. The check of the experimental results with these theories has not been satisfactory, especially when the modulation voltage is large.

[Click on title for a complete paper.](#)



Abstracts

Network Methods for Dielectric-Grating Applications

T. Tamir and S.T. Peng. "Network Methods for Dielectric-Grating Applications." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 27-29.

The application of network methods to the analysis and design of integrated-optics components is illustrated for the case of dielectric gratings, which are relevant to optical beam couplers, filters and distributed-feed-back lasers. The advantage of the network representation in those cases is that the role of each grating parameter can be interpreted in terms of the network elements. In addition to yielding physical insight into the electromagnetic field behavior, the network approach greatly facilitates the design and construction of dielectric gratings having efficient operation or other desired characteristics.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

An Ideal Refractive-Index-Distribution and Mode Filter for Band Broadening of Multimode Optical Fiber

K. Furuya, Y. Suematsu, T. Tanaka and S. Ishikawa. "An Ideal Refractive-Index-Distribution and Mode Filter for Band Broadening of Multimode Optical Fiber." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 30-32.

The focusing fiber whose refractive index distribution has the valley at the periphery of the core, as the ideal index distribution with respect to the bandwidth, is analyzed exactly, by which the group delay spread caused by the core-cladding boundary can be eliminated, and, therefore, the bandwidth can be broadened.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Propagation in Inhomogeneous Slab Waveguides

S. Choudhary and L.B. Felsen. "Propagation in Inhomogeneous Slab Waveguides." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 33-34.

A new asymptotic method, based on evanescent wave tracking, is presented for the determination of guided modes on slab waveguides with inhomogeneous permittivity profile.

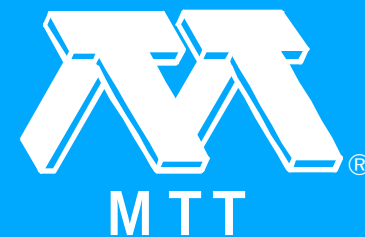
[Click on title for a complete paper.](#)



Abstracts

Session 3 -- Solid-State Microwave Sources

"Session 3 -- Solid-State Microwave Sources." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 35-35.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A High Power 50GHz DDR IMPATT Oscillator with Low Side Band Noise

Y. Hirachi, Y. Toyama, Y. Fukukawa and Y. Tokumitsu. "A High Power 50GHz DDR IMPATT Oscillator with Low Side Band Noise." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 36-39.

Low-frequency instabilities in millimeter-wave Double-Drift-Region (DDR) IMPATT diodes are investigated and the oscillator circuit which suppresses low-frequency instabilities is developed. DDR IMPATT mounted in this circuit exhibited output powers 1.6W at 55.5 GHz with 11.5 percent efficiencies.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Time Varying IMPATT Impedance Measurements

R.L. Eisenhart. "Time Varying IMPATT Impedance Measurements." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 40-42.

A technique has been developed that measures the dynamic impedance characteristics of an IMPATT diode while it is being operated in the pulsed mode. Time plots are discussed for a variety of diodes.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

BARITT Devices for Self-Mixed Doppler Radar Applications

J.R. East, H. Nguyen-Ba and G.I. Haddad. "BARITT Devices for Self-Mixed Doppler Radar Applications." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 43-44.

The properties of X-band BARITT devices with operating voltages between 10 and 50 V have been measured. The BARITT devices are found to be superior to both IMPATT and Gunn devices for use as self-oscillating doppler detectors.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Series Interconnection of Six TRAPATT Devices on a Diamond Substrate

N.W. Cox, G.N. Hill, J.W. Amoss and C.T. Rucker. "Series Interconnection of Six TRAPATT Devices on a Diamond Substrate." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 45-47.

The effects of package parasitic on series interconnections of TRAPATT diode chips on diamond substrates have been studied via time domain computer simulations and experiments at frequencies from 2 to 9 GHz. Guidelines for the selection of package parasitic have been identified, and multichip series configurations, employing six chips mounted thermally in parallel on diamond, have been successfully demonstrated at 7.5 GHz with 35.5 watts output power.

[Click on title for a complete paper.](#)



Abstracts

YIG-Tuned GaAs FET Oscillators

T.L. Heyboer and F.E. Emery. "YIG-Tuned GaAs FET Oscillators." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 48-50.

The design and construction of a C-X straddle band YIG-tuned oscillator with 4 GHz frequency coverage is presented. A 1 μ -gate GaAs FET is used for the active element, and is tuned by a YIG sphere. A one-stage single ended GaAs FET buffer amplifier is included to enhance overall performance. Power output is a minimum of 5 mW at 10 GHz, and overall performance is equal or superior to that offered by alternative swept frequency sources.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

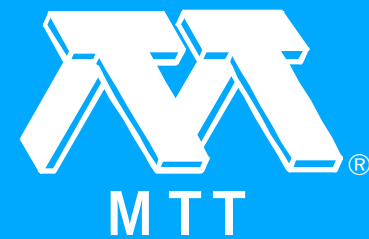
Click on title for a complete paper.



Abstracts

Session 4 -- Passive Microwave Components

"Session 4 -- Passive Microwave Components." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 51-51.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

A 4, 6, 20 and 30 GHz Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (1976 [MWSYM])

I. Ohtomo, S. Shindo and M. Koyama. "A 4, 6, 20 and 30 GHz Band Branching Network Using a Multilayer Dielectric Filter for a Satellite Communication Earth Station (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 52-54.

A four frequency broadband branching network has been designed for transferring microwave (4 and 6 GHz) and millimeter-wave (20 and 30 GHz) band signals between an antenna and transmitter-receivers in a satellite communication earth station. Measurements show that its insertion loss, VSWR and axial ratio are less than 1.2 dB, 1.2 and 2.1 dB, respectively.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

New High Performance 3.5 mm, Low Cost, Utility Coaxial Connector with Mode Free Operation Through 34 GHz

S.F. Adam, G.R. Kirkpatrick, N.J. Sladek and S.T. Bruno. "New High Performance 3.5 mm, Low Cost, Utility Coaxial Connector with Mode Free Operation Through 34 GHz." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 55-56.

A utility 3.5 millimeter connector was designed to cover frequencies above 18 GHz in coaxial transmission lines. The superior cost/performance characteristics of this new connector are presented in this paper.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

On Some Integral Relationships for Commensurate Transmission-Line Networks

E.G. Cristal. "On Some Integral Relationships for Commensurate Transmission-Line Networks." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 57-59.

Several integral relationships are presented for commensurate transmission-line networks. The integrals focus on the fact that $Z(1)$ for such networks, where $Z(S)$ is the input immittance of the network, is associated with a real or redundant unit element prefacing the network. Three bandwidth restrictions are derived. Some applications of the integral relationships are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

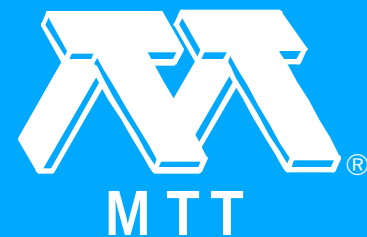


Abstracts

A 2-Gap Waveguide Mount (Comments)

R.L. Eisenhart. "A 2-Gap Waveguide Mount (Comments)." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 60-62.

A recently developed analysis of a commonly used waveguide diode mount is discussed, with emphasis on usefulness and flexibility of application. Experimental confirmation is included for a variety of circuit configurations.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Symmetrical 2N-Port Directional Couplers

M.E. Hines. "Symmetrical 2N-Port Directional Couplers." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 63-66.

This is a theoretical study of 2N-port symmetrical directional couplers, with particular emphasis on six-port devices. Four classes are treated, with design principles given. One application is a power divider for use in a steerable 3-element phased array antenna.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

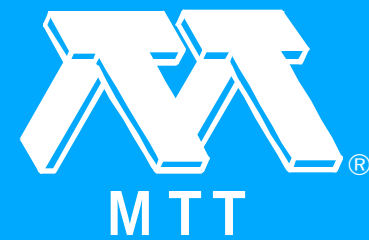
[Click on title for a complete paper.](#)



Abstracts

Session 5 -- Microwaves in Communication Systems

"Session 5 -- Microwaves in Communication Systems." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 67-67.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

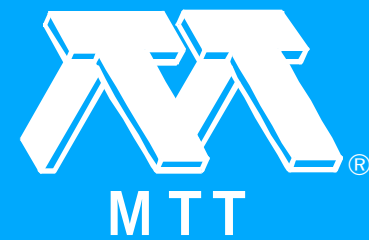
Click on title for a complete paper.



Abstracts

Dual Polarization Antenna System Design and Performance

L. Keyes. "Dual Polarization Antenna System Design and Performance." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 68-68.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Problems and Challenges in Satellite Communications Frequency Reuse - Antennas and Components

D.O. Reudink. "Problems and Challenges in Satellite Communications Frequency Reuse - Antennas and Components." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 69-70.

There are at present three frequency bands allocated for communication satellites in the USA. At the 4/6 GHz frequencies, 500 MHz bandwidth is available and several systems now or soon will operate in this band. These satellites are basically frequency translators with saturating amplifiers using 40 MHz wide channels. The capacity of these satellites range from 6000 to 14,000 analog voice circuits.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Digital Telecommunications Radio Systems

P.R. Hartmann and J.A. Crossett. "Digital Telecommunications Radio Systems." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 71-72.

The increasing need for digital transmission facilities has generated requirements for microwave digital transmission systems that are reliable, have high performance and are spectrally efficient. Application considerations, including interference, frequency planning and growth, of such a system are discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Implementation of a Military Digital Microwave System

G. Lippencott, H. van Gelder and P. Villasenor. "Implementation of a Military Digital Microwave System." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 74-76.

A discussion on the Army FKV 192 channel digital microwave system now operational. First such system designed for military operation. Includes: 1) System description; 2) engineering criteria; 3) maintenance philosophy; 4) technical problems encountered; and 5) long-term performance assessment.

[Click on title for a complete paper.](#)



Abstracts

NASA Microwave Propagation and Interference Studies (Abstract)

E.A. Wolff. "NASA Microwave Propagation and Interference Studies (Abstract)." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 77-77.

The space microwave communications propagation and interference work at NASA stems from the limited availability of spectrum and the need to support spacecraft operations. Crowding in the lower parts of the spectrum have led to increasing consideration of frequencies above 10 GHz where tropospheric effects and hydrometeors are important. Propagation and interference work has been done using the ATS-5 and ATS-6 satellites, and more is planned for CTS and the Space Shuttle.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Communications Technology Satellite Systems, Space and Ground Segments

D.L. Wright and J.N. Sivo. "Communications Technology Satellite Systems, Space and Ground Segments." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 78-80.

The CTS project is a joint effort between the Communications Research Centre in Canada and the National Aeronautics and Space Administration in the United States with both nations equally sharing available spacecraft communication time. The CTS spacecraft is in synchronous orbit at 116° west longitude. General spacecraft operational characteristics are discussed with particular emphasis on communication system parameters. The associated Canadian and United States user ground terminals are reviewed with particular emphasis on wideband communications.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

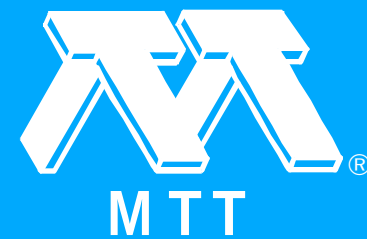
Click on title for a complete paper.



Abstracts

Session 6A -- Low-Noise Receivers

"Session 6A -- Low-Noise Receivers." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 81-81.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Ultra Low Noise, Ku-Band Parametric Amplifier Assembly

H.C. Okean, J.A. DeGruyl and E. Ng. "Ultra Low Noise, Ku-Band Parametric Amplifier Assembly." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 82-84.

This paper describes the development of an ultra-low noise two-stage Ku-band parametric amplifier assembly for space communication ground station receiver application. This paramp is designed for 75°K noise temperature capability over the 14.7 - 15.2 GHz frequency range without the use of cryogenic cooling. This extremely low noise performance is made possible by the use therein of ultra high quality, low parasitic content chip varactors, of exceptionally high idler (~80 GHz) and pump (~95 GHz) frequencies and of minimum loss, high isolation signal coupling circulators operated in the "single pass" configuration.

[Click on title for a complete paper.](#)



Abstracts

An Experimental Study of Image Termination Methods for Low Noise Mixers

B.R. Hallford. "An Experimental Study of Image Termination Methods for Low Noise Mixers." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 85-89.

Relations are given to determine image response rejection and the relative phase changes of major mixer frequency products. Image recovery mixer tests will be described which led to the conclusion that it does not have a reactively terminated image response.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



FET Mixers for Communication Satellite Transponders

P. Bura and R. Dikshit. "FET Mixers for Communication Satellite Transponders." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 90-92.

Two different types of FET mixer circuits have been developed for 6/4 GHz frequency translation for communications satellite transponder. Gate mixer uses non-linear $I_{\text{sub } d} - V_{\text{sub } g}$ characteristic, with LO being injected into the gate circuit, while in the drain mixer the LO is injected into the drain circuit and non-linear $I_{\text{sub } d} - V_{\text{sub } d}$ characteristic is utilized. Both circuits yielded conversion gains up to 3 dB over 500 MHz bandwidth. However, the noise figure of the drain mixer as low as 4 dB was measured compared with 5.7 dB for the gate mixer.



Abstracts

Cryogenically Cooled GaAs FET Amplifier with a 1.1-dB Noise Figure at 5.0 GHz

J. Pierro. "Cryogenically Cooled GaAs FET Amplifier with a 1.1-dB Noise Figure at 5.0 GHz." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 93-96.

A 4.5 to 5.0 GHz gallium arsenide field-effect transistor (GaAs FET) amplifier cryogenically cooled to 20 K is described. A noise figure of 1.1 dB maximum is achieved over the band. Gain per stage is approximately 10 dB. A noise analysis is performed to predict noise figure dependence on the physical temperature of the amplifier.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

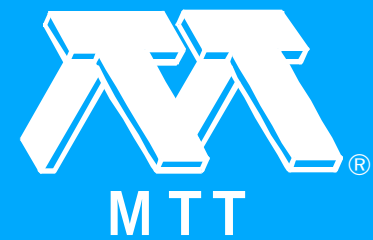
Click on title for a complete paper.



Abstracts

Session 6B -- Solid-State Power Amplifiers

"Session 6B -- Solid-State Power Amplifiers." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 97-97.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

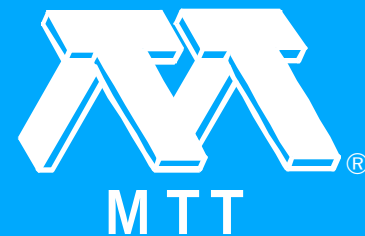


Abstracts

A Quasi-Linear Approach to the Design of Microwave Transistor Power Amplifiers

K.L. Kotzebue. "A Quasi-Linear Approach to the Design of Microwave Transistor Power Amplifiers." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 98-100.

A simple graphical technique similar to the conventional Linvill technique has been developed which specifies the added-power circuit efficiency of a microwave transistor power amplifier with arbitrary load termination. Experimental verification of this approach has been obtained with a 1 W BJT amplifier operating at 1.3 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

X-Band MIC GaAs FET Power Amplifier

H.Q. Tserng, V. Sokolov, H.M. Macksey and W.R. Wisseman. "X-Band MIC GaAs FET Power Amplifier." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 101-103.

The microstrip circuit development of an X-band, one watt, 22 dB gain GaAs FET amplifier will be discussed. Microwave performance characteristics such as intermodulation, AM to PM conversion and noise figure will be presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Process Technology and Modeling of a Low-Noise Silicon Bipolar Transistor with Sub-Micron Emitter Widths

C.P. Snapp, T.-H. Hsu and R.W. Wong. "Process Technology and Modeling of a Low-Noise Silicon Bipolar Transistor with Sub-Micron Emitter Widths." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 104-106.

A low-noise silicon bipolar transistor with a 0.7 μm emitter width has been developed using a self-aligning process combined with ion implantation and local oxidation. Experimental noise figures of 1.45 dB at 1.5 GHz and 2.7 dB at 4 GHz are typical of transistor wafers made with this process. The best result obtained at 4 GHz was a noise figure of 2.3 dB with an associated gain of 9.5 dB. A T-equivalent circuit based on a regional analysis and empirical time constants is shown to accurately predict transistor S-parameters in the 1 to 8 GHz frequency range. Good agreement between predicted and experimental amplifier noise figure is obtained between 0.4 and 6 GHz.

[Click on title for a complete paper.](#)



Abstracts

A 12-15 GHz High Gain Amplifier Design Using Submicron Gate GaAs Field Effect Transistors

M.G. Walker and E.J. Crescenzi, Jr.. "A 12-15 GHz High Gain Amplifier Design Using Submicron Gate GaAs Field Effect Transistors." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 107-110.

An amplifier covering 12-15 GHz with 22 dB gain and less than 5.0 dB noise figure using GaAs FETs with submicron gate length was constructed. Techniques used for device characterization and amplifier circuit synthesis along with measured data are presented.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session 7 -- Filters

"Session 7 -- Filters." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 111-111.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Design Formulas for Bandpass Channel Diplexers

J.D. Rhodes. "Design Formulas for Bandpass Channel Diplexers." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 112-115.

Design Formulas in symmetry bandpass known realization of are given for the element values channel diplexers in terms of the the doubly terminated single channel filter prototype. Experimental results on a 5 cavity per channel, waveguide diplexer are given and show close agreement with theory.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Narrowband Contiguous Multiplexing Filters with Arbitrary Amplitude and Delay Response

R.J. Wenzel and W.G. Erlinger. "Narrowband Contiguous Multiplexing Filters with Arbitrary Amplitude and Delay Response." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 116-118.

The solution to the design problem for narrowband contiguous multiplexing filters with channels having arbitrary amplitude and delay response is presented. The resulting networks use singly terminated component filters that may be substantially different in type of response and in relative complexity. The design procedure is described and illustrated with a contiguous triplexer example.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Practical Realization of Broadband Microwave Diplexers

A.J. Anselmo and A.F. Hinte. "Practical Realization of Broadband Microwave Diplexers." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 119-121.

The computer-aided design and practical realization of 20- to 50-percent bandwidth complementary-filter diplexers is described. Each diplexer consists of an interdigital band-pass filter and a hybrid (direct-coupled resonator/parallel-coupled resonator) band-stop filter. Measured and computed performance data of a typical diplexer is presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

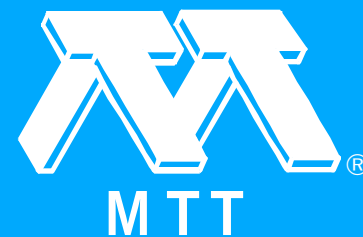


Abstracts

An Improved Low-Pass Harmonic Absorber

R.V. Snyder. "An Improved Low-Pass Harmonic Absorber." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 122-124.

A new technique is proposed for the design of non-reflective high power microwave lowpass filters. This technique is shown to be much less expensive to produce in the frequency range up to S-band.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Exact Design of Wideband Equal-Ripple Bandpass Filters with Non-Adjacent Resonator Couplings

R.J. Wenzel. "Exact Design of Wideband Equal-Ripple Bandpass Filters with Non-Adjacent Resonator Couplings." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 125-127.

An exact synthesis procedure for equal-ripple bandpass filters with arbitrary amplitude and delay response valid for all bandwidths is presented. The filters are realizable in the form of a multiresonator filter with couplings between non-adjacent resonators. Design constraints imposed by the use of "simple" coupling elements are described and illustrated.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Synthesis of an Optimum Impedance Transformer

H.J. Riblet. "Synthesis of an Optimum Impedance Transformer." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 128-130.

This paper considers the problem of optimizing the match between a generator and a resistive load by means of a transformer consisting of equal length line sections alternating with the same length, shunted, shorted stubs. It is argued that, in the optimum transformer, only that stub appears which is in shunt with the low impedance termination. General design formulas are given for a two section transformer with equi-ripple performance over the design band. For an octave band and a two to one transformation, it is shown that this stepped, shunted transformer has substantially superior performance to that of a conventional stepped transformer of the same length. Detailed computations are made in this case which indicate the extent to which this equi-ripple design is optimum.

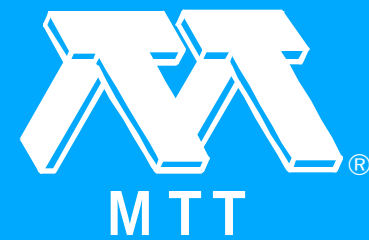
[Click on title for a complete paper.](#)



Abstracts

Session 8 -- Panel Discussion: Millimeter Integrated Circuit Technology

"Session 8 -- Panel Discussion: Millimeter Integrated Circuit Technology." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 131-131.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

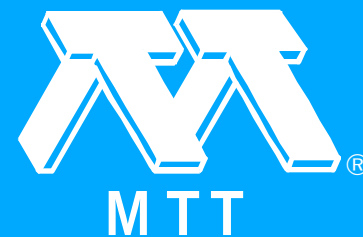
Click on title for a complete paper.



Abstracts

Millimeterwave Integrated Circuit Technologies (Panel Discussion)

R.H. Knerr and L.F. Moose. "Millimeterwave Integrated Circuit Technologies (Panel Discussion)." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 132-132.



IEEE

Contents

Publications

Issues

Papers

Authors

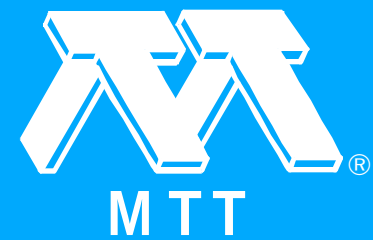
Click on title for a complete paper.



Abstracts

Session 9 -- Solid-State Microwave Devices

"Session 9 -- Solid-State Microwave Devices." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 133-133.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Solid State Microwave Devices (Rump Session)

L. Eastman. "Solid State Microwave Devices (Rump Session)." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 134-134.

This session will cover very recent achievements and new technological information leading to the achievements. Speakers from the sessions on Solid State Microwave Sources, Low-Noise Receivers and Solid State Power Amplifiers will be encouraged to expand informally on their results. In addition, other experts at the meeting will be encouraged to add any remarks. Lively discussion on the best methods of approach and the meanings of the results will all be in keeping with the informality of this session.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

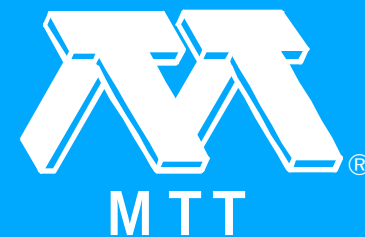
Click on title for a complete paper.



Abstracts

Session 10 -- Microwave High-Power Techniques

"Session 10 -- Microwave High-Power Techniques." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 135-135.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A 400 kW Long Pulse X-Band Planetary Radar

R. Hartop and D.A. Bathker. "A 400 kW Long Pulse X-Band Planetary Radar." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 136-138.

Selected critical microwave components for a very long pulse (several hours) X-band Radar system are discussed from a theoretical and practical viewpoint. Included are the special-sized waveguide and flanges, hybrid power combiner, couplers, switches, polarizer, rotary joints, feedhorn and radome. The system is installed on the NASA/JPL 64-m diameter reflector antenna at Goldstone, California.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Performance of a High-Power, 2.388-GHz Receiving Array in Wireless Power Transmission Over 1.54 km

R.M. Dickinson. "Performance of a High-Power, 2.388-GHz Receiving Array in Wireless Power Transmission Over 1.54 km." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 139-141.

The results of a series of experiments conducted to determine the performance of a microwave power receiving array are detailed. Over 30 kW of dc output power has been achieved. The ratio of dc output power to available incident RF input power has exceeded 0.8. The array performance readily scales from the extrapolated single element performance.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Optimization of the Efficiency and Other Properties of the Rectenna Element

W.C. Brown. "Optimization of the Efficiency and Other Properties of the Rectenna Element." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 142-144.

The rectenna which captures and rectifies the microwave power at the receiving end of a free space microwave power transmission system is comprised of many elements consisting of halfwave dipoles with microwave filter and rectification circuits attached. This element has been independently optimized for efficiency and analyzed for losses. The paper describes the device, the special test equipment used, the results of the mathematical modelling and computer simulation, special low loss Schottky barrier diodes that have been constructed to improve the efficiency, and life tests that have been made on these devices. An efficiency, defined as the ratio of DC power output to incident microwave power, of over 90% has been achieved.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

High Power Monopulse Tracking Feed

A.F. Sciambi, Jr. and K.R. Goudey. "High Power Monopulse Tracking Feed." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 145-147.

This paper covers the design, development and test of a 10 GHz 10% bandwidth high efficiency feed system for the Lincoln Laboratory High Resolution Radar. The feed is a multimode monopulse tracking feed employing a multiflare horn and is capable of transmitting a power level of 800 KW at 50% duty.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A 2-Kilowatt Average Power X-Band Receiver Protector for the Lincoln Laboratory SOSI Radar

H. Goldie. "A 2-Kilowatt Average Power X-Band Receiver Protector for the Lincoln Laboratory SOSI Radar." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 148-150.

A 2-kilowatt average power receiver protector with a 5,000-hour operating life has been developed. The design is of the gas plasma diode hybrid type which heretofore could provide only one-tenth the power handling for equivalent operating life. Predicted life is based on experimentally obtained molecular sorption coefficients performed at 2-kW average power in X-band. The device has been developed for use as a receiver protector in the high-resolution SOSI Radar at Lincoln Laboratory. This Radar will transmit 200 kW average power at X-band and consequently requires a high average power receiver protector.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

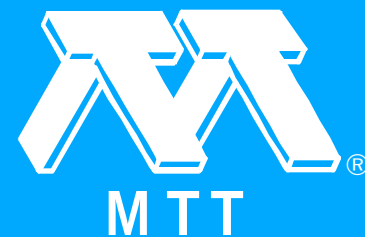


Abstracts

Characteristics and Effects of CW High Power Breakdown in Waveguide

R.E. May. "Characteristics and Effects of CW High Power Breakdown in Waveguide." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 151-153.

Characteristics of arcs resulting from high power breakdown at microwave frequencies have been determined as a function of CW power level. The power absorbed in, reflected from, and transmitted through arcs as well as the travel velocity of arcs were determined. The effect of arcs on waveguide devices was evaluated empirically and visually, and the capabilities of these devices to impede arc propagation was ascertained.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

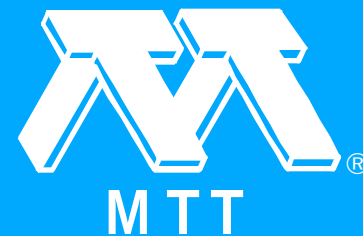


Abstracts

Fast, High Power, Octave Bandwidth, X-Band Waveguide Microwave Switch

P.E. Bakeman, Jr. and A.L. Armstrong. "Fast, High Power, Octave Bandwidth, X-Band Waveguide Microwave Switch." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 154-156.

A new SPST microwave switch capable of switching 250 Watts CW power in 50 ns has been developed. Switch element and microwave circuit designs, driver requirements, SPST test results and projected multithrow results will be presented.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

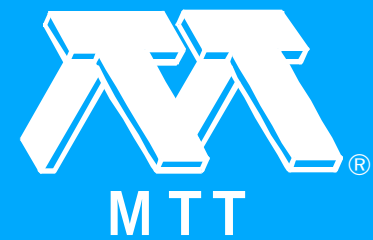
Click on title for a complete paper.



Abstracts

Session 11 -- Gigabit Logic

"Session 11 -- Gigabit Logic." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 157-157.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

GBIT/s Pulse Regeneration and Amplification with GaAs-MESFETs

H. Beneking and W. Filensky. "GBIT/s Pulse Regeneration and Amplification with GaAs-MESFETs." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 158-160.

Using GaAs-MESFETs under switching conditions, the regeneration and amplification of fast pulses in the 50ps range is performed. Sharpening factors $t_{y\text{ in}} / t_{y\text{ out}}$ of 3 and voltage amplification factors of 2 at 50 ohm are reached for output pulses up to 100 mA.

[Click on title for a complete paper.](#)



Abstracts

Recent Development or Transferred Electron Logic Devices in Japan

H. Yanai and T. Ikoma. "Recent Development or Transferred Electron Logic Devices in Japan." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 161-163.

Recent progresses of TEDs in pulse processing applications in Japan are surveyed. Application to PCM transmission systems and ultra-high-speed logic systems are described as well as the ion-implanted TED, interfacial problems and the new material for lower dissipation power devices.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Transferred Electron Logic Devices (TELDs) for Gigabit Rate Signal Processing (1976 [MWSYM])

L.C. Upadhyayula, R.E. Smith, J.F. Wilhelm, S.T. Jolly and J.P. Paczkowski. "Transferred Electron Logic Devices (TELDs) for Gigabit Rate Signal Processing (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 164-165.

Planar GaAs transferred-electron logic devices (TELDs) have been fabricated and their performance studied. The devices are evaluated as threshold logic elements. The parameters studied are (1) switching characteristics, (2) shortest pulses that can be processed, and (3) device delay and dissipation. Pulses as small as 80 ps wide can be processed through transferred electron logic gates (TELGs) with device delays of the order of 50 ps and delay dissipation product of 5-10 pJ which makes it suitable for gigabit rate signal processing.

[Click on title for a complete paper.](#)



Abstracts

Multiplexing- and Demultiplexing-Techniques with Gunn Devices in the Gbit/s Range

K. Mause. "Multiplexing- and Demultiplexing-Techniques with Gunn Devices in the Gbit/s Range." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 166-168.

In this paper a circuit is described which can process signals in the Gbit/s range for a fast PCM technique. A shift register with Gunn devices monolithically integrated on GaAs is used. A 4-stage arrangement is described. Experimental results for a bitrate of 1.8 Gbit/s are reported.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Silicon Monolithic Technology for 1-2 GHz Analog Signal Processing

D. Breuer, D. Claxton and A. Cosand. "A Silicon Monolithic Technology for 1-2 GHz Analog Signal Processing." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 169-171.

A silicon bipolar monolithic technology has been developed and used for processing analog signals in the 0.5 to 2.0 GHz range. The measured performance of an IQ multiplier phase detector is described as one component of an integrated costas demodulator.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Clocked Diode Pulse Amplifiers for Microwave Bit Rates

B.G. Bosch, U. Barabas, U. Wellens and U. Langmann. "Clocked Diode Pulse Amplifiers for Microwave Bit Rates." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 172-174.

Diode amplifiers which essentially rely on the storage and switching behavior of step-recovery diodes are investigated for regenerating high bit-rate PCM-type signals. Two preliminary hybrid-integrated versions have been developed and tested at 300 Mbit/s and 1 Gbit/s.

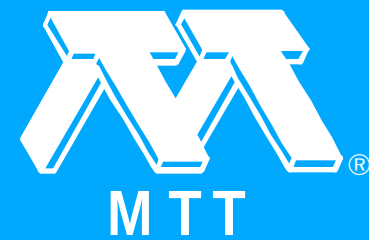
[Click on title for a complete paper.](#)



Abstracts

Session 12 -- Multimeter and Microwave Integrated Circuits

"Session 12 -- Multimeter and Microwave Integrated Circuits." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 175-175.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Elliptical Dielectric Waveguide a Very Useful Model for Some Microwave and Millimeter Wave Integrated Circuits and Components

J.T. Citerne, S. Toutain, P. Choteau and L. Raczy. "The Elliptical Dielectric Waveguide a Very Useful Model for Some Microwave and Millimeter Wave Integrated Circuits and Components." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 176-178.

Guided modes spectrum of the elliptical dielectric waveguide has been completed and correspondence between modes in circular, elliptical, rectangular and slab dielectric waveguides have been investigated with details. Based on the results, an elliptical model description technique for planar waveguides has been suggested. This technique has, by example, been shown to be applicable for lower order modes in microslot lines and open suspended strip-line. Elliptical dielectric waveguide is also shown as a very practical structure to approximate dielectric resonator of high permittivity with various shapes.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Ferrite Planar Circuit in Microwave IC

T. Miyoshi and S. Goto. "Ferrite Planar Circuit in Microwave IC." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 179-181.

The main subject of this paper is the analysis of an arbitrarily-shaped, triplate ferrite planar circuit. The term "analysis" denotes here the determination of the circuit parameters of the equivalent multiport. It is shown that a computer analysis based upon a contour-integral solution of the wave equation offers an efficient tool in the design of the ferrite planar circuit. Examples of this analysis are also described.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides

T. Itoh and R. Rudokas. "Passive Millimeter-Wave IC Components Made of Inverted Strip Dielectric Waveguides." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 182-184.

Unique directional couplers and ring resonators for millimeter-wave IC's were created from the inverted strip dielectric waveguide. They were tested in the 75-80 GHz range, and the agreement between the theoretical and experimental results was found to be quite satisfactory.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Millimeter-Wave Downconverter with Subharmonic Pump

T.F. McMaster, M.V. Schneider and W.W. Snell, Jr.. "Millimeter-Wave Downconverter with Subharmonic Pump." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 185-187.

Hybrid integrated downconverters which are pumped at half the frequency needed in a conventional downconverter have shown a conversion loss of 3 dB and a SSB receiver noise figure of 6.7 dB at 50 GHz. Each downconverter circuit consists of a stripline conductor pattern, a novel transition from waveguide to stripline and a Schottky barrier diode pair. The circuits can be tuned over an RF bandwidth of 20 GHz, and they can be readily scaled to frequencies up to 100 GHz.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.

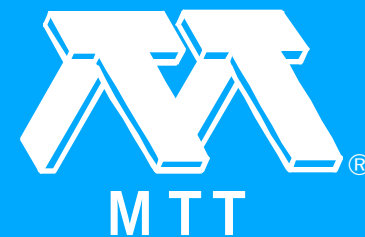


Abstracts

Microwave Integrated Circuit Receivers at Millimetric Wavelengths

T.H. Oxley, K.J. Ming and B.J. Climer. "Microwave Integrated Circuit Receivers at Millimetric Wavelengths." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 188-190.

This paper discusses the application of hybrid microwave integrated circuit technology using open microstrip transmission lines to the realisation of practical receivers operating on the superheterodyne principle at millimetric wavelengths.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Transceiver Module for an L-Band Adaptive Array Antenna

M.E. Davis. "Transceiver Module for an L-Band Adaptive Array Antenna." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 191-193.

An integrated transceiver module is described that was designed for adaptive array use. The element combines high peak power (100 watts), low noise receiver (3.5 dB noise figure, 28 dB gain) with a digital gain controller and phase shifter. Significant advances in microwave integrated circuits fabrication and performance arise from using a cost effective standard circuit fabrication approach to the module design.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Design Techniques for Bandpass Filters Using Edge-Coupled Microstrip Lines on Fused Silica

W.H. Childs. "Design Techniques for Bandpass Filters Using Edge-Coupled Microstrip Lines on Fused Silica." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 194-196.

This paper presents a simple computer model for edge-coupled microstrip line. The model includes the effects of unequal odd/even phase velocities, end-effect capacitance, and loss. The bandpass filter design procedure described herein uses the model to select final element values. Agreement for filters constructed on fused silica in comparison with their computer model is very good. Data are provided for a filter operating over 11.5 to 12.4 GHz. These results are obtained on the first mask and with no bench adjustment.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

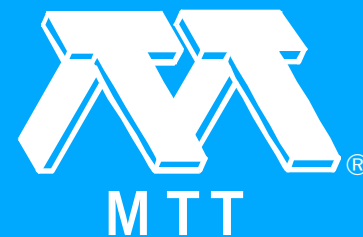


Abstracts

An Accurate Design of Resonance Frequencies of Dielectric Resonators

P. Guillon and Y. Garault. "An Accurate Design of Resonance Frequencies of Dielectric Resonators." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 197-199.

The resonance frequencies of both cylindrical and rectangular dielectric resonators are obtained by a new method, where we assume that all the surfaces are imperfect magnetic walls. The theoretical values of the resonance frequencies have a good agreement with our experimental results with an error less than 1 percent.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Coupling Between: A Microstrip Transmission Line and a Dielectric Resonator and Between Two Adjacent Dielectric Resonators for Application to Bandpass Filter

P. Guillon and Y. Garault. "Coupling Between: A Microstrip Transmission Line and a Dielectric Resonator and Between Two Adjacent Dielectric Resonators for Application to Bandpass Filter." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 200-202.

News formulas are derived for the coupling coefficient between a microstrip line and a dielectric resonator, and between adjacent dielectric resonators. A comparison between theoretical and experimental coupling coefficient values show very good agreement. A M.I.C. filter using dielectric resonators is presented.



IEEE

Contents

Publications

Issues

Papers

Authors

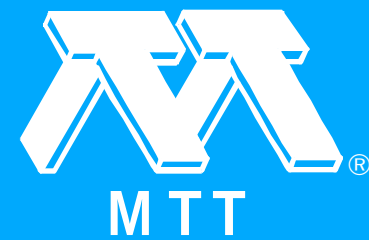
Click on title for a complete paper.



Abstracts

Session 13A -- Computer-Aided Design and Measurement

"Session 13A -- Computer-Aided Design and Measurement." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 203-203.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

An Introduction to Simulation and Optimization

J.W. Bandler. "An Introduction to Simulation and Optimization." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 204-206.

A review of recent work in simulation and optimization is made with the aim of introducing the designer to the benefits of automating optimal design procedures and to indicate limitations imposed by the current state of the art.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

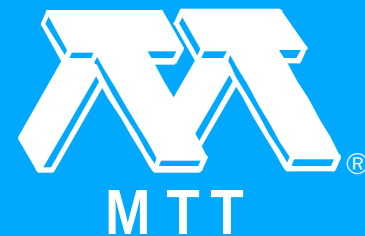


Abstracts

Automated Third-Order Distortion Measurements

S.M. Perlow. "Automated Third-Order Distortion Measurements." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 207-209.

A technique is described for the determination of third-order distortion produced in "linear" amplifiers by analyzing their complex transfer characteristic. A minicomputer is used for both control of the test equipment and analysis of the data.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Large Signal Device Characterization for Broadband Ka-Band IMPATT Amplifier Design

J.E. Raue, F.J. Bayuk and A.J. Grote. "Large Signal Device Characterization for Broadband Ka-Band IMPATT Amplifier Design." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 210-212.

A three-stage 0.5 watt avalanche diode amplifier has been developed with 23 dB of gain and 0.5 dB bandwidth of 2 GHz from 34 to 36 GHz. The voltage gain bandwidth product of the first stage exceeds 12 GHz - a state-of-the-art value for Ka-band IMPATT amplifiers. The amplifier uses GaAs modified Read profile devices which produce 0.5 watt at 8-9 percent efficiency. The flat broadband response of this waveguide amplifier is the result of applying lower frequency circuit design techniques such as network analysis and circuit synthesis to millimeter wave frequencies. Diode matching is controlled and predictable, no tuning screws are utilized. This paper describes the design approach, the circuit, and the results; including amplifier system performance tests such as input-output, noise figure and intermodulation products.

Click on title for a complete paper.

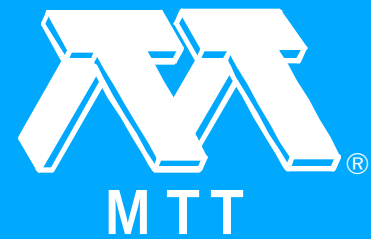


Abstracts

Third Generation Automatic Microwave Measurements

W.R. Boley. "Third Generation Automatic Microwave Measurements." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 213-216.

A microwave measurement system is described that is used with our third generation test equipment to achieve automatic microwave measurements of signals in the frequency range of 10 MHz to 18 GHz. This system down-converts input signals in the range of 2 GHz to 18 GHz so that through the utilization of sampling techniques and computer software automatic microwave measurements of frequency, power, spectrum analyses, and modulation are achieved. Signals from 10 MHz to 2 GHz are first up-converted and applied to the microwave circuits for down conversion.



IEEE

Contents

Publications

Issues

Papers

Authors

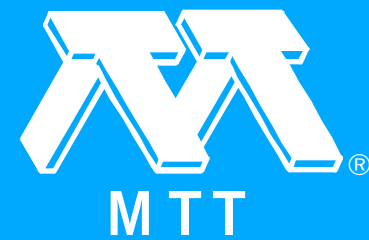
Click on title for a complete paper.



Abstracts

Session 13B -- Microwave Measurement and Techniques

"Session 13B -- Microwave Measurement and Techniques." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 217-217.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A New Load-Pull Characterization Method for Microwave Power Transistors

Y. Takayama. "A New Load-Pull Characterization Method for Microwave Power Transistors." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 218-220.

A novel method for microwave power transistor load-pull characterization is presented. The method provides an equivalent load-pull measurement technique without using an output impedance tuner. In this method, both input and output ports of a test transistor are simultaneously driven by external signals at the same specified frequency. Results of its application to a medium-power GaAs FET are given.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A V-Band Network Analyzer/Reflection Test Unit

L.T. Yuan, G.M. Yamaguchi and J.E. Raue. "A V-Band Network Analyzer/Reflection Test Unit." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 221-223.

This paper describes the design, fabrication and performance of a novel V-band network analyzer/reflection test unit which is capable of operation over a wide frequency range in the 50 to 75 GHz band. The broadband performance of the reflection test unit design results in a continuous measurement over a 10 GHz band with a single sweep. The reflection test unit, utilizing a matched pair of wideband crossbar mixers, features high tracking ability, low source reflection coefficient (i.e., <0.08) and high system directivity (i.e., >31 dB).



IEEE

Contents

Publications

Issues

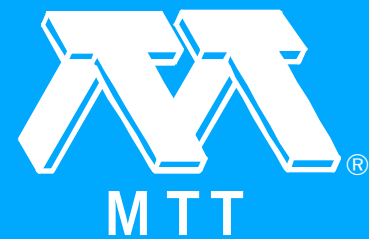
Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

An Improved Solid State Noise Source

M. Kanda. "An Improved Solid State Noise Source." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 224-226.

An improved solid state noise source is discussed. By implementing such modifications as 1) heat sinking of a silicon avalanche noise diode, 2) proper DC RF decoupling, and 3) impedance matching, the stability of the NBS solid state noise source is improved significantly over that of typical commercial solid state noise sources. The paper describes these modifications, how they are implemented, and the resulting improvement in stability.

Click on title for a complete paper.



Abstracts

Automated Spectral Analysis of Microwave Oscillator Noise

J.R. Ashley, T.A. Barley and G.J. Rast, Jr.. "Automated Spectral Analysis of Microwave Oscillator Noise." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 227-229.

An operational engineering model of an automated near carrier spectrum analyzer has been implemented. BASIC language programs used to control system operation have been demonstrated during actual measurement of near carrier phase noise in a C-band reflex klystron oscillator.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Tetsing of a Multichannel Satellite Transponder Using Automatic Testing Equipment (ATE)

N. Epstein, R. Dikshit and P.Y. Chan. "Tetsing of a Multichannel Satellite Transponder Using Automatic Testing Equipment (ATE)." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 230-232.

This paper deals with the complex problem of testing the performance of a multichannel satellite transponder using automatic test equipment. The paper includes a summary of the factors which determine the use of an automatic test facility and the important considerations in fixing hardware and software requirements. Some of the peculiarities and possible sources of error using automatic test equipment for R. F. Microwave measurements are discussed and typical measurement results are presented.

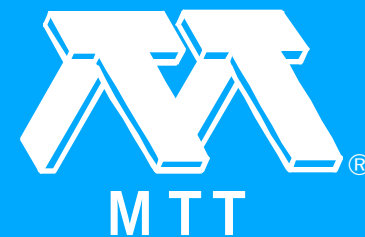
Click on title for a complete paper.



Abstracts

Session 14 -- Millimeter and Submillimeter Wave Techniques

"Session 14 -- Millimeter and Submillimeter Wave Techniques." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 233-233.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Present and Future Capability of Millimeter-Wave Receivers (Abstract)

J. Whelehan. "Present and Future Capability of Millimeter-Wave Receivers (Abstract)." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 234-234.

Over the past several years, there have been significant improvements in solid-state devices (that is, avalanche diodes, Gunn diodes, varactors, mixer diodes, and so on) that have enhanced the overall capability of millimeter-wave receivers. With these improved devices, it is now possible to configure completely solid-state low-noise millimeter-wave receivers. Just as in the microwave range, low -noise parametric amplifiers, broadband low-conversion-loss mixers, and solid-state local oscillators are now available. Furthermore, cryogenically cooled parametric amplifiers and mixers are now possible, resulting in the ultimate in system sensitivity. With the flexibility offered by these all solid-state millimeter-wave components, it is now possible to design the optimum system configuration for the intended application whether it be an advanced communication system, a sophisticated EW application, or satisfying any of the numerous receiver requirements that are being evolved. This paper will briefly describe the performance of present millimeter-wave receiver components and will provide a projection of their performance anticipated in the near future.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Control of Manufacturing Distortions in WT4 Millimeter Waveguide Medium

V.J. Tarassov. "Control of Manufacturing Distortions in WT4 Millimeter Waveguide Medium." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 235-237.

A novel computer controlled mechanical measurement system for evaluation and control of transmission impairments due to geometric factors in circular multimode waveguide is described. Theoretical bases of this work are reviewed and some characteristic results from the system used for manufacturing control are described.

[Click on title for a complete paper.](#)



Abstracts

Surface Characteristics of Metals and Waveguide Attenuation at Millimeter-Wave Frequencies Between 25 and 160 GHz

F.J. Tischer. "Surface Characteristics of Metals and Waveguide Attenuation at Millimeter-Wave Frequencies Between 25 and 160 GHz." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 238-240.

The discrepancies between theoretical and experimental values of the surface resistance of metals are analyzed. Experiments with carefully prepared plane and rough copper surfaces and precision measurements of waveguide losses are described and the results discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Low Noise Traveling-Wave Maser Receiver for Three Millimeter Wavelength

A.G. Cardiasmenos, J.F. Shanley and K.S. Yngvesson. "Low Noise Traveling-Wave Maser Receiver for Three Millimeter Wavelength." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 241-243.

A traveling-wave maser amplifier, using iron-doped rutile as the active material, has been developed in the frequency range 85 - 95 GHz. The device has demonstrated stable traveling-wave maser gain over an instantaneous bandwidth of 140 MHz and is capable of operation as a low noise receiving system for radio astronomy and communication applications in the millimeter wavelength region of the spectrum. The maser device uses a newly developed hybrid transmission mode allowing for easy coupling of the maser material to the microwave circuit. The mode, termed the slot-fed image guide mode provides high slowing and filling factor and is relatively easy to match over a wide bandwidth. Increased system sensitivity of an order-of-magnitude can be expected using this device as an alternative to state-of-the-art cooled Schottky-barrier mixer receivers.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Influence of Longitudinal Magnetic Field on the CW Submillimeter Waves Output from HCN Gas Laser

M. Kawamura, M. Makiuchi, J. Yamada and H. Hagiwara. "Influence of Longitudinal Magnetic Field on the CW Submillimeter Waves Output from HCN Gas Laser." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 244-246.

HCN gas laser can produce continuous and high power of submillimeter waves of 337 μm in wavelength. This paper presents the experimental results concerning the effect of longitudinal magnetic field upon the submillimeter output power. There is the optimum magnetic flux density to produce maximum power and the effect of magnetic field become more noticeable with the diameter of laser tube.

Click on title for a complete paper.



Abstracts

Session 15 -- Ferrite Components

"Session 15 -- Ferrite Components." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 247-247.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Edge Guided Waves Five Years Later

P. de Santis. "Edge Guided Waves Five Years Later." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 248-250.

This paper reviews the work made on edge guided waves (EGW) in the past five years. It is not comprehensive of all the results existing in the published literature, rather it concentrates on such selected topics as the radiue of curvature of the guiding edge, magnetic, dielectric and ohmic losses, fringing field effects, inhomogeneous magmetic bias, and dielectric loading of the guiding edge. Performance data of some EGW isolators and circulators are also discussed.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

New Edge-Guided Mode Isolator Using Ferromagnetic Resonance Absorption (1976 [MWSYM])

T. Noguchi and H. Katoh. "New Edge-Guided Mode Isolator Using Ferromagnetic Resonance Absorption (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 251-253.

A new edge-guided (E.G.) mode isolator has been proposed, in which nonreciprocal attenuation is obtained with the ferromagnetic resonance absorption caused by a strong d.c. magnetic field applied locally at one side edge of the ferrite microstrip line. Dominant forward and backward E.G. modes, which show nonreciprocal resonance attenuation, have been proved theoretically. Besides, a practical E.G. mode resonance isolator, which has an octave bandwidth, has been successfully developed.



IEEE

Contents

Publications

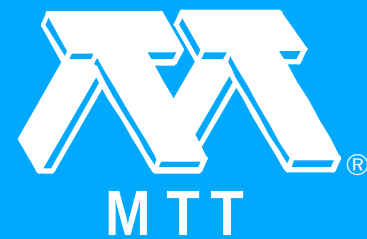
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Field Distribution of a New Type of E.G. Mode Isolator

K. Araki and Y. Naito. "Field Distribution of a New Type of E.G. Mode Isolator." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 254-256.

Experimental investigations into a field distribution around the "short-boundary" E.G. mode isolator proposed by us, are given. From these results, the mechanism of this type of isolator can be made more clear.

[Click on title for a complete paper.](#)

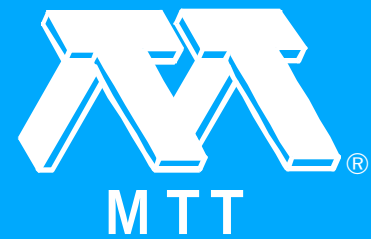


Abstracts

The Edge Guided Mode on Ferrite Loaded Stripline

D.M. Bolle. "The Edge Guided Mode on Ferrite Loaded Stripline." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 257-259.

The dispersion characteristics and modal structure of the edge guided or peripheral mode on ferrite loaded striplines are described as a function of the various electrical and geometric parameters.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A New Temperature Stabilized Waveguide Circulator

Y. Tokumitsu, T. Kasahara and H. Komizo. "A New Temperature Stabilized Waveguide Circulator." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 260-262.

A new temperature stabilization method applied to a 20 GHz-band waveguide circulator is described. A change in the reflection coefficient stays within 0.015 over a temperature range from -10°C to +60°C in a wide frequency range from 17.7 GHz to 21.2 GHz.

Click on title for a complete paper.



Abstracts

Low Loss Broadband EHF Circulator

W.S. Piotrowski and J.E. Raue. "Low Loss Broadband EHF Circulator." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 263-265.

A new approach to waveguide circulator design is reported that has resulted in a totally rugged, temperature stable circulator with exceptional RF performance. With this design, insertion loss of less than 0.1 dB, isolation more than 20 dB and VSWR less than 1.2:1 has been achieved, each over 7 GHz of bandwidth from 27 to 34 GHz and 31 to 38 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

UHF-Band Lumped-Element Circulator for Medium-Power Applications

S. Okamura and T. Okata. "UHF-Band Lumped-Element Circulator for Medium-Power Applications." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 266-268.

A new circuit configuration for medium-power lumped-element circulators is proposed. Analysis shows that the ferrite disc size is larger than that of conventional lumped-element circulators. The assembled UHF circulators have demonstrated their higher power-handling capability in the experiments.

Click on title for a complete paper.



Abstracts

Microwave Permeability Tensor of Partially Magnetized Ferrites

M. Igarashi and Y. Naito. "Microwave Permeability Tensor of Partially Magnetized Ferrites." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 269-271.

The microwave permeability tensor of partially magnetized ferrites is formularized. The theory clarifies that the remarkable low-field losses disappear if $\omega/M / \omega \leq \sqrt{5}/3$. The theory also is in good agreement with experimental results.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Frequency Selective High Power YIG Limiters

S.N. Stitzer, H. Goldie and P.R. Emtage. "Frequency Selective High Power YIG Limiters." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 272-274.

This paper describes a bulk-type YIG limiter that provides narrow-band limiting for above-threshold microwave signals and simultaneously provides low loss transmission of below-threshold signals over a broad instantaneous bandwidth. Such a device has broad application as a frequency-selective receiver protector in FM/CW radars, for overload limiting in communication receivers, or as a replacement for the fixed filter in missile firing radars, thereby increasing frequency agility. A theoretically derived expression for selectivity bandwidth is found to agree well with experimental results.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design and Performance of an Integrated Three Channel Tracking YIG Preselector

R.A. Sparks, R. DiBiase and R.A. Craig. "Design and Performance of an Integrated Three Channel Tracking YIG Preselector." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 275-278.

A description is presented of a six section electronically tunable YIG filter that is partitioned into three isolated channels of two sections each, all contained within the same r-f structure and a common magnetic yoke. The design specifications are summarized for this three channel preselector and the performance results given for a 10% tuning range at X-band. The key features of ± 0.5 dB amplitude tracking and ± 10 degrees phase tracking between channels are maintained over the frequency band and a temperature range of -37°C to $+71^{\circ}\text{C}$.

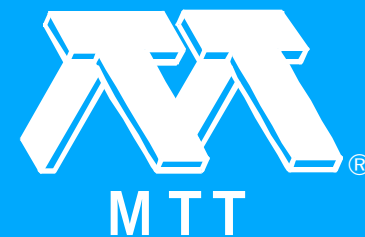
[Click on title for a complete paper.](#)



Abstracts

Session 16 -- Surface-Acoustic-Wave Resonators

"Session 16 -- Surface-Acoustic-Wave Resonators." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 279-279.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Physics and Equivalent Circuit of the Basic SAW Resonator

R.C.M. Li, J.A. Alusow and R.C. Williamson. "The Physics and Equivalent Circuit of the Basic SAW Resonator." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 280-282.

The physics of the basic surface-acoustic wave (SAW) resonator, together with factors which limit its achievable Q , are reviewed. Analogies to conventional microwave resonators are noted, and microwave-network techniques employed in their analysis and design are discussed.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

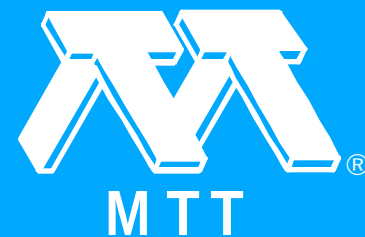


Abstracts

Acoustic-Surface-Wave Resonators for Band-Pass Filter Applications

G.L. Matthaei, F. Barman and E.B. Savage. "Acoustic-Surface-Wave Resonators for Band-Pass Filter Applications." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 283-285.

Acoustic-surface wave resonators provide a possibility for obtaining very small, high-Q resonators for frequencies up into the low microwave range. A surface-wave resonator consists of two arrays of reflectors with one or two interdigital transducers in between, fabricated on the surface of a piezoelectric substrate. The two transducer form of these resonators is particularly attractive for band-pass filter applications.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Surface Acoustic Wave Resonator Filters

L.H. Ragan. "Surface Acoustic Wave Resonator Filters." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 286-288.

Very narrow filters in the VHF and UHF frequency ranges can be designed and built with SAW resonators. A detailed design example of electrically coupled filters demonstrates the technique. Measured and predicted performance closely agree.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Surface-Acoustic-Wave Device for Doppler Filtering of Radar Burst Waveforms

J. Melngailis and R.C. Williamson. "Surface-Acoustic-Wave Device for Doppler Filtering of Radar Burst Waveforms." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 289-291.

A new type of reflective-grating matched filter has been developed for processing a Doppler-sensitive burst waveform consisting of 16 equally spaced phase-coherent linear-FM subpulses. The subpulses have 60-MHz bandwidth, are 3- μ s long, and have a period of 5 μ s. After addition of internal phase compensation, the phase response of the device over all 16 subpulses is within $\pm 20^\circ$ of ideal. When a burst waveform is compressed in this burst matched filter, the range (time) sidelobes are approximately -40 dB down except for some near-in at -33 dB, and the Doppler (velocity) sidelobes are -32 dB down.

[Click on title for a complete paper.](#)

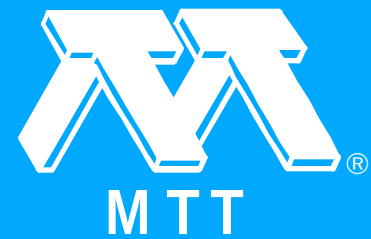


Abstracts

SAW Transform Signal Processing

R.M. Hays. "SAW Transform Signal Processing." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 292-294.

Many new signal processing functions can be achieved through the availability of real-time transforms. One implementation of such transforms uses surface acoustic wave (SAW) linear FM filters. Not only may these SAW devices be employed to produce a real-time signal that is proportional to the Fourier transform of the input, but several of these "chirp transforms" can also be configured to provide continuously tunable bandpass/bandstop filtering and versatile programmable matched filtering. Moreover, transform processing permits prewhitening to suppress narrowband interference in some systems. These topics, their limitations, and prototype results are described in the presentation although this text focuses primarily on the continuously variable bandpass/bandstop filtering.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Surface Acoustic Wave Reflective Dot Array (RDA)

L.P. Solie. "The Surface Acoustic Wave Reflective Dot Array (RDA)." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 295-296.

A new type of reflective array device is described in which the array of reflecting grooves is replaced by an array of reflecting metallic dots. This Reflective Dot Array or RDA has the principal advantage of being part of-the same mask and metalization as the transducers allowing single step fabrication. A bandpass filter operating at 213 MHz with a bandwidth of 6 MHz, which was fabricated using this technique, has a passband to sidelobe ratio of over 50 dB.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Weighted Unidirectional Transducer SAW Filter at 328 MHz

B.R. Potter and C.S. Hartmann. "Weighted Unidirectional Transducer SAW Filter at 328 MHz." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 297-299.

The first UHF, finger withdrawal weighted, unidirectional transducer surface acoustic wave (SAW) filter is reported in this paper. It has only 4.5 dB insertion loss at 328 MHz and a 1 percent bandwidth. The filter has -48 dB sidelobes and greater than -50 dB triple transit suppression.

Click on title for a complete paper.



Abstracts

Periodic Frequency Response SAW Filters for a Tree Approach to Many-Tone Frequency Synthesis

A.J. Slobodnik, Jr. and K.R. Laker. "Periodic Frequency Response SAW Filters for a Tree Approach to Many-Tone Frequency Synthesis." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 300-302.

A tree configuration using periodic-in-frequency SAW filters plus diode switches to achieve many-tone frequency synthesis is proposed. Design procedures are outlined for independent specification of center frequency and periodicity and limited-resonance periodic filters.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session 17 -- General Joint Invited Session

"Session 17 -- General Joint Invited Session." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 303-303.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Future Microwave Markets in Telecommunications and Aviation

A.H. Solomon. "Future Microwave Markets in Telecommunications and Aviation." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 304-312.

Although the military is still the largest market for the U.S. microwave industry, growth in that sector has slowed. In response, the industry is seeking to develop commercial and industrial microwave markets where good prospects for growth exist. The most prominent of these non-military microwave markets are for telecommunications and air traffic control equipment.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

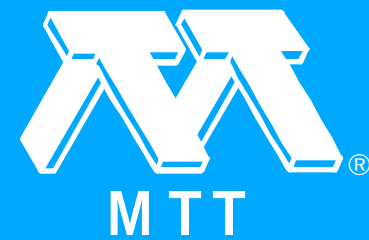
Click on title for a complete paper.



Abstracts

Session 18 -- Acoustic Wave Devices and Techniques

"Session 18 -- Acoustic Wave Devices and Techniques." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 313-313.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

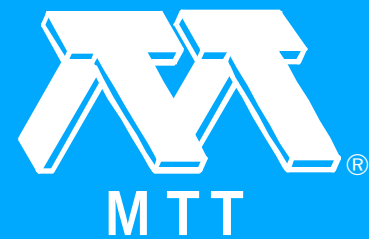


Abstracts

Scanning Acoustic Microscope (Abstract)

C.F. Quate. "Scanning Acoustic Microscope (Abstract)." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 314-314.

The acoustic microscope - an instrument based on acoustic radiation at microwave frequencies - is designed for viewing the microscopic detail exhibited in the elastic properties of a given object. The most significant and the most recent improvement has been the introduction of mechanical scanning. With this innovation there has been substantial improvement in the resolving power since the new instrument has made it possible to work in liquid water with sound frequencies above 1000 MHz. The resolution in a carefully constructed instrument at these frequencies approaches that of the optical instrument and it permits one to observe both the internal details of biological cells and the fine structure of integrated circuits. Even though the resolving power is not yet equal to the value that is achieved with optical waves it does bring into view an interesting part of the microscopic world.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Acoustic Surface Waveguides, with Similarities in Optics

A.A. Oliner. "Acoustic Surface Waveguides, with Similarities in Optics." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 315-317.

An overview is presented first of the various types of waveguides for acoustic surface waves which have been studied theoretically and experimentally. Many of these waveguides resemble certain waveguiding structures proposed for use in integrated and fiber optics. The similarities and differences between corresponding waveguiding structures in the two different fields are then discussed from the standpoints of their properties and their mechanisms of operation.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Commercial Application of a Surface Wave Television IF Filter

R.L. Miller and A.J. DeVries. "Commercial Application of a Surface Wave Television IF Filter." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 318-320.

An acoustic surface wave filter is ideally suited to form the selectivity block in a color T.V. IF. The paper discusses, in some detail, the requirements for the frequency response of a T.V. IF and compares those to the results obtained by means of a surface wave filter. The configuration of the surface wave filter is shown and the fabrication method, very similar to that of integrated circuits, is described. The electrical properties are compared to properties of standard IF's. The initial reaction of television engineers is favorable; the filter described is a first generation commercial device and further improvements can be expected.

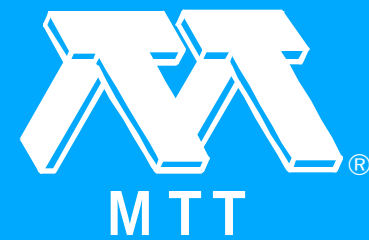
[Click on title for a complete paper.](#)



Abstracts

Session 19 -- Commercial Applications of Microwaves

"Session 19 -- Commercial Applications of Microwaves." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 321-321.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

MLS--A Practical Application of Microwave Technology (1976 [MWSYM])

R.M. Cox and J.R. Sebring. "MLS--A Practical Application of Microwave Technology (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 322-324.

A brief system overview of the U.S. Candidate for the Microwave Landing System is presented. Practical implementations of two types of ground antenna designs are discussed, including measured data.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A High-Power Solid-State C-Band Transmitter for MIS Applications

W.C. Tsai, R.E. Gray and M.I. Grace. "A High-Power Solid-State C-Band Transmitter for MIS Applications." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 325-327.

A solid-state C-band transmitter was developed for the Microwave Landing System. The key component of the transmitter is a solid-state power amplifier using GaAs Read-profile IMPATT diodes to obtain operating output levels approaching 20 Watts. The transmitter also contains a phase-locked oscillator, a phase modulator integrated into the power amplifier, and a pulse shaping network to achieve minimum spectrum spreading. The entire transmitter, including power supplies, logic circuits and heat sinks, is contained in a 12" x 12" x 6-1/2" package.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Passive L-Band Radiometer for Remote Sensing of Earth Resources

T. Flattau, S. Becker and A. Leber. "Passive L-Band Radiometer for Remote Sensing of Earth Resources." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 328-330.

The features of an orbiting L-band microwave radiometer experiment carried onboard the NASA Skylab satellite are described. Some typical data and their usefulness are also presented so that both the instrument and its utility may be appreciated.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

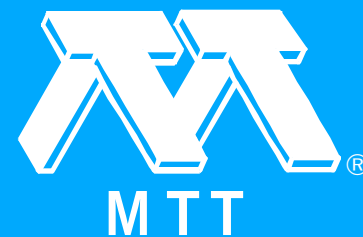


Abstracts

Cooperative Signal Processing Beacon Transponder for Airport Traffic Control

A.K. Gorwara. "Cooperative Signal Processing Beacon Transponder for Airport Traffic Control." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 331-333.

In recent years there has been an interest in physically small, low-cost, low-energy consuming electronic markers for air traffic control on the ground. In this paper a solid state 14.5 GHz low-cost beacon transponder is investigated that provides a target-like signal for a maximum range of 5 miles in various weather conditions when illuminated by an existing 14.5 GHz surface detection radar developed by Texas Instruments (TI), Dallas, Texas.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

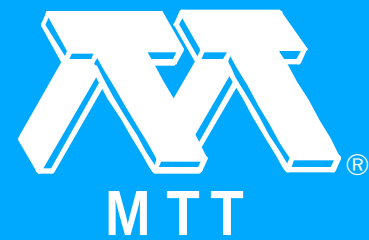


Abstracts

Microwave Engineering Problems in the Microwave Oven

J.M. Osepchuk. "Microwave Engineering Problems in the Microwave Oven." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 334-336.

A general review of microwave engineering problems of the microwave oven is presented. Of central importance is the continuing improvement of the microwave magnetron in efficiency and stability. The goal of uniform heating is discussed with reference to measurement techniques and efforts at standardization. Advances in door-seal techniques are presented with reference to leakage and RFI requirements. Lastly the relevance of the basic microwave problems in the microwave oven to other ISM applications is discussed.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

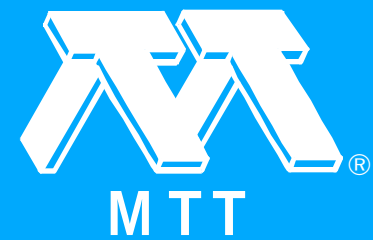
Click on title for a complete paper.



Abstracts

Session 20 -- Phased-Array Components

"Session 20 -- Phased-Array Components." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 337-337.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Variable Power Dividers in Satellite Systems

E.W. Matthews. "Variable Power Dividers in Satellite Systems." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 338-340.

Variable power dividers (VPD'S) are used for electronically despinning an antenna on a rotating satellite, and for beam steering or shaping in a multiple-beam satellite antenna system. Designs of each type for the SMS and DSCS III satellites are described, comprising both diode and ferrite varieties.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Antenna Array for Limited Scan Applications

R.A. Stern and J. Borowick. "Antenna Array for Limited Scan Applications." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 341-343.

An S-band line source antenna which could become the basis for a lightweight, compact, low-cost, phased array is described. The line source is a series fed array of radiating slots periodically situated in the side wall of an S-band waveguide section. The unit, which uses nonreciprocal latching ferrite phase shifters between adjacent slots, is capable of switching beam position in less than 10 μ sec and is designed to operate at peak power levels > 3 Kw.

[Click on title for a complete paper.](#)



Abstracts

Lithium Ferrite C-Band Latching Phase Shifters

S. Gaglione and G. Hanley. "Lithium Ferrite C-Band Latching Phase Shifters." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 344-346.

Lithium ferrites were evaluated with respect to toroid construction techniques, loss, temperature and high power capability. Lower production costs can be realized with lithium toroids without significantly reducing performance achievable from an optimum garnet design.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Digital Phase Shifter Elements for a K -Band Phased Array RADAR

A.R. Wolfe and M.E. Davis. "Digital Phase Shifter Elements for a K -Band Phased Array RADAR." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 347-350.

A three-bit phased array element has been designed using PIN diode phase shifters and a printed circuit dipole for coupling the energy from the waveguide feed and radiating into free space. The element, including the coupling loss of the dipoles, has 3.2 dB insertion loss (average) with an rms loss variation of 0.5 dB, over the 16.0 to 16.5 dB frequency band. Data from 250 units is analyzed for the performance in the array.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session 21 -- Technology Forecasting

"Session 21 -- Technology Forecasting." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 351-351.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Technology Forecasting and Assessment (1976 [MWSYM])

A. Clavin. "Technology Forecasting and Assessment (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 352-352.

Four experts in microwave technology will address the audience. These experts assess the impact of their technology on future components and systems. Subjects to state power generation, energy transmission via microwave, microwave packaging, and will attempt to forecast and be covered include solid millimeter waves. It is desired to have a free exchange of information and questions between the audience and panel members. A summary of both the audience and panel member discussions and comments will be published in the S-MTT Newsletter.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

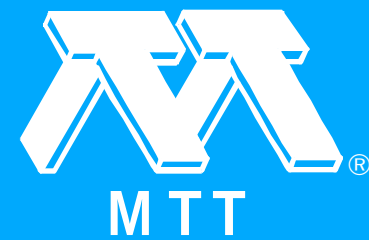
Click on title for a complete paper.



Abstracts

Session 22 -- Microwave Activities in Government Laboratories

"Session 22 -- Microwave Activities in Government Laboratories." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 353-353.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

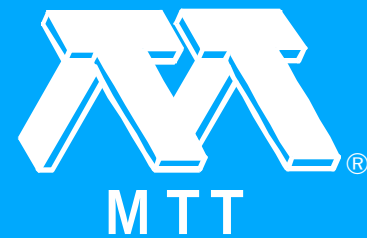
Click on title for a complete paper.



Abstracts

Microwave Technology in the Department of Defense (Panel Discussion)

L. Young, F. Sterzer and L.R. Weisberg. "Microwave Technology in the Department of Defense (Panel Discussion)." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 354-354.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

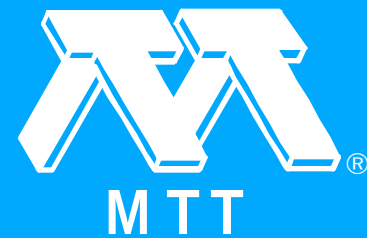
Click on title for a complete paper.



Abstracts

Session 23 -- Review and State-of-the-Art, Biological Effects and Hazards of Microwave Radiation

"Session 23 -- Review and State-of-the-Art, Biological Effects and Hazards of Microwave Radiation." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 355-355.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

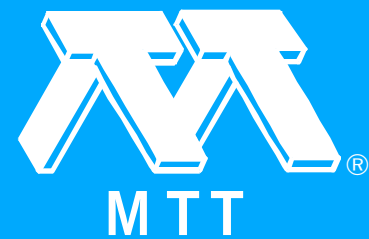


Abstracts

Review and State of the Art Biological Effects and Hazards of Microwave Radiation

S.W. Rosenthal. "Review and State of the Art Biological Effects and Hazards of Microwave Radiation." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 356-356.

Microwaves does interact with a variety of materials and systems including Biological. The question arises as to the mode of interaction and whether it constitutes a hazard. The IEEE and the Department of the Navy are co-sponsors of an American National Standards Institute Committee-C-95 on RF Radiation Hazards. The American National Standards Institute (ANSI) is the national clearinghouse and coordinating body for voluntary standards in the United States. C-95 is an ANSI committee composed of representatives of scientific and technical organizations, industry and trade groups, government agencies and public interest groups, and their task is to develop standards relating to the committees field of interest. The actual work of the committee is accomplished by sub-committees, membership in which is a function of expertise and the ability to contribute to the work of the committee. In addition to its co-sponsorship of C-95 the IEEE has five (5) representatives, voting as a group, one of which represents MTT-S. This session is essentially a report to MTT-S on the technical activities of C-95 as well as a review and state of the art in the area of Biological Effects and Hazards of Microwave Radiation. It will also provide an opportunity for interaction between members of C-95 and the microwave community.



IEEE

Contents

Publications

Issues

Papers

Authors

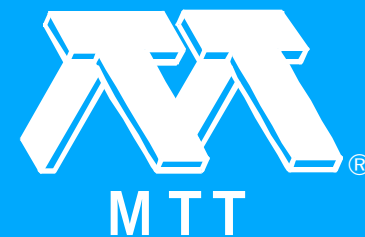
Click on title for a complete paper.



Abstracts

Session 24 -- Electromagnetic Theory

"Session 24 -- Electromagnetic Theory." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 357-357.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

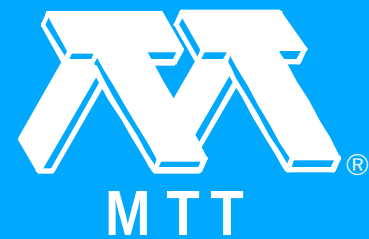
[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Evanescent Waves

L.B. Felsen. "Evanescent Waves." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 358-358.

Some recent developments in the treatment of evanescent waves are reviewed. Such new methods as evanescent wave tracking, complex ray, and complex-source-point techniques are discussed and illustrated by examples, which include Gaussian beams, shadow formation due to evanescent fields, propagation on curved dielectric layers, and modal fields in graded-index films and fibers.

[Click on title for a complete paper.](#)

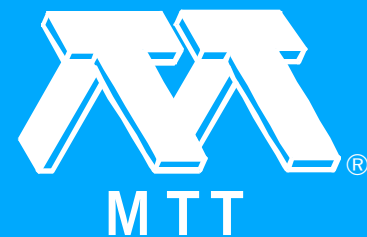


Abstracts

Propagation in a Rectangular Waveguide Periodically Loaded with Resonant Irises (1976 [MWSYM])

T.E. Rozzi and M.S. Navarro. "Propagation in a Rectangular Waveguide Periodically Loaded with Resonant Irises (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 359-361.

A wide-band network model is derived for interacting resonant irises in rectangular waveguides by means of field and network theoretical considerations. The model is applied to the analysis of the propagation characteristic in a waveguide periodically loaded with such irises.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

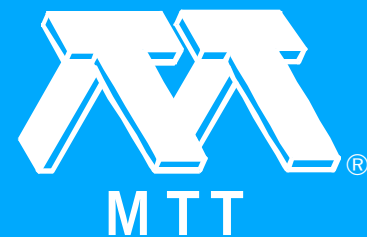


Abstracts

Scattering by Periodic Metal Surfaces with Sinusoidal Height Profile - A New Theoretical Approach

G. Whitman and F. Schwering. "Scattering by Periodic Metal Surfaces with Sinusoidal Height Profile - A New Theoretical Approach." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 362-364.

A new theory of scattering by periodic metal surfaces is presented. The approach reduces the scatter problem to solving a linear system whose coefficients are obtained in closed form. The theory is thus amenable to efficient computer evaluation. Numerical results have shown that for depth of grooves less than a wavelength and for unrestricted groove widths reliable and comparable, if not more accurate, data is obtained at minimal computational cost.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Theoretical Analysis of Open Ring Line

C. Fray and A. Papiernik. "Theoretical Analysis of Open Ring Line." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 365-367.

The open ring line that presents low losses is studied theoretically by mean of Hankel transform. Electromagnetic field, stored energy, power flow and dispersion relation are calculated. Measurements have perfectly corroborated theoretical results.

Click on title for a complete paper.

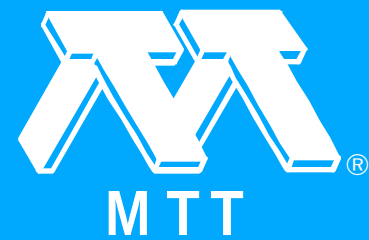


Abstracts

Pulse Broadening in Multimode Optical Fibers with Large Delta n/n. Numerical Results

J.A. Arnaud. "Pulse Broadening in Multimode Optical Fibers with Large Delta n/n. Numerical Results." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 368-370.

The rms impulse response width of germania doped fibers having power-law profiles at the carrier wavelength is evaluated with the help of a numerical method. For $\Delta n/n \times 0.02$, the numerical result exceeds by more than one order of magnitude that obtained from an analytical formula based on the assumption that $dn^2 / d\lambda$ varies linearly with n^2 . Our numerical technique is based on scalar ray optics. It is applicable to any fiber having a large V-number and a smooth profile.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Prototype Networks in Broadband Parametric Amplifier Synthesis

J.L. Tauritz. "Prototype Networks in Broadband Parametric Amplifier Synthesis." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 371-373.

Results of a study of prototype networks suitable for use in a generalized DeJager single tuned idler nondegenerate parametric amplifier synthesis are summarized. N'th order lumped Butterworth and Chebyshev networks including Darlington D-sections, redundant and nonredundant commensurate line structures and mixed lumped distributed configurations are considered.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Index of Authors (1976 [MWSYM])

"Index of Authors (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 374-376.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (1976 [MWSYM])

"Back Cover (1976 [MWSYM])." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): b1-b1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (1977 [MWSYM])

"Front Cover (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): f1-f1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Copyright (1977 [MWSYM])

"Copyright (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): i-i.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Foreword (1977 [MWSYM])

D. Rubin. "Foreword (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): ii-ii.

Speaking for the San Diego MTT Steering Committee, I hope you will find the 1977 International Microwave Symposium to be personally rewarding, one that you will remember for a long time.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Committees (1977 [MWSYM])

"Committees (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 1-5.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Awards (1977 [MWSYM])

"Awards (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 6-10.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Program (1977 [MWSYM])

"Program (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 12-18.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

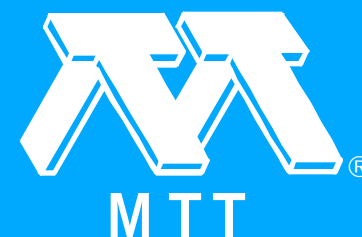
Click on title for a complete paper.



Abstracts

Session A1 -- Solid State Sources

"Session A1 -- Solid State Sources." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 19-19.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

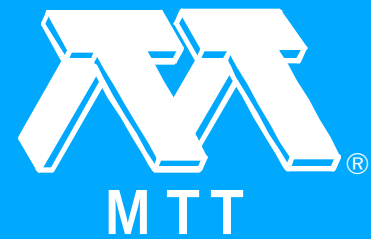


Abstracts

High Power W-Band Pulsed IMPATT Oscillators

T.T. Fong, W.R. Lane, H.J. Kuno and N.B. Kramer. "High Power W-Band Pulsed IMPATT Oscillators." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 20-21.

High peak power oscillators using double-drift IMPATT diodes have been developed in W-band. Peak powers in excess of five watts were consistently achieved, with a highest power of 5.4 watts measured at 94 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Mechanically Tuneable, Cavity-Stabilized, Millimeter-Wave IMPATT Oscillators

B. Owen. "Mechanically Tuneable, Cavity-Stabilized, Millimeter-Wave IMPATT Oscillators." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 22-25.

The paper describes prototype results on mechanically-tuneable, cavity-stabilized, V-band and W-band impatt oscillators. The oscillators are easily tuned over a wide range of frequencies. The V-band oscillator has a 20% tuneable bandwidth (54 GHz to 66 GHz) with 200 mW minimum output power. The W-band oscillator has a 14% tuneable bandwidth (95 GHz to 110 GHz) with 50mW minimum output power.

[Click on title for a complete paper.](#)



Abstracts

Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (1977 [MWSYM])

C. Chao, R.L. Bernick, E.M. Nakaji, R.S. Ying, K.P. Weller and D.H. Lee. "Y-Band (170-260 GHz) Tunable CW IMPATT Diode Oscillators (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 26-28.

This paper describes circuit, packaging, and device techniques used in the development of tunable CW IMPATT diode oscillators in the 170-260 GHz range.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Ka-Band Solid State Power Amplifier

F.J. Bayuk and J.E. Raue. "Ka-Band Solid State Power Amplifier." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 29-31.

A technology development is described which has clearly advanced the state-of-the-art in high power, high performance solid state amplifiers. Five watts of output power at 37 GHz were achieved with a five-stage amplifier. Three stages operate in the negative resistance mode with 2 GHz of bandwidth, the final two stages are injection locked. The total amplifier gain is 33 dB. High efficiency power combining is used in the two power stages. Extensive use has been made of computer aided design, both in the negative resistance amplifier development and in the modeling and optimization of the multiple diode power combining structures. Novel broadband circulators couple the individual stages and provide interstage isolation with insertion loss levels of 0.1 dB per path. The entire amplifier, including diode current regulators, is enclosed in a housing 6 x 8 x 3 inches in size, and weighs 9 pounds.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computer-Aided Time and Frequency Domain Measurements of TRAPATT Diode Oscillators

M.L. Ryken, Jr. and K.L. Kotzebue. "Computer-Aided Time and Frequency Domain Measurements of TRAPATT Diode Oscillators." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 32-35.

Because of the multiple frequency nature of TRAPATT diode oscillator operation, circuit optimization is accomplished experimentally, and critical adjustments are usually required for high efficiency operation. In the study reported here, both experimentally-optimized high efficiency and deliberately mistuned TRAPATT circuits were measured in the time domain by a computer-aided time domain automatic network analyzer (TDANA) specifically designed for this application. Time domain reflectometer (TDR) data was used to obtain both the circuit impulse response and circuit admittance as referred to the diode chip. By comparing the results for both optimized and mistuned circuits, it is possible to obtain information on necessary circuit requirements for high efficiency operation.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Amplifier Applications of Millimeter Wave InP GUNN Devices

R.J. Hamilton, Jr. and S.I. Long. "Amplifier Applications of Millimeter Wave InP GUNN Devices." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 36-38.

Amplifier evaluations in the 30 to 45 GHz frequency range have yielded device noise figures below 9 dB with up to 5 dB associated gain. Other results and a device model in close agreement with measured impedances are presented.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A New Look at Noise in Transferred Electron Oscillators (1977 [MWSYM])

H.R. Gnerlich and J. Ondria. "A New Look at Noise in Transferred Electron Oscillators (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 39-41.

Low frequency current and voltage fluctuations have been measured, and it has been confirmed that noise in packaged Transferred Electron Devices (TEDs) is due to three distinct noise mechanisms: Flicker, generation-recombination, and thermal noise. For Transferred Electron Oscillators (TEOs), this low frequency noise is unconverted into the microwave frequency range and adds to the intrinsic RF noise. We have found that, between 1 kHz and 1 MHz off the carrier, temperature dependent generation-recombination noise is the main contributor to the total noise. An improved model of a noisy TEO is presented. This model permits the calculation of AM and FM noise spectra from device and circuit parameters for measured low frequency noise or the derivation of device characteristics from noise and circuit parameter measurements.

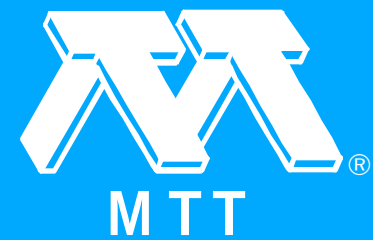
[Click on title for a complete paper.](#)



Abstracts

Session B1 -- Six Port Network Analysis

"Session B1 -- Six Port Network Analysis." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 43-43.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Six-Port Reflectometer: An Alternative Network Analyzer (1977 [MWSYM])

G.F. Engen. "The Six-Port Reflectometer: An Alternative Network Analyzer (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 44-46.

Although the six-port measurement technique is rapidly gaining the attention of the microwave community, theoretical development, to date, yields but limited intuitive insight into how the technique actually works. This paper presents an alternative introduction to the general subject which provides this insight.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Microwave Network Analyzer Using Two 6-Port Reflectometers

C.A. Hoer. "A Microwave Network Analyzer Using Two 6-Port Reflectometers." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 47-49.

Theory is presented for designing a microwave network analyzer which measures the circuit parameters device by connecting small portable 6-port reflectometers on each side of the 2-port. Several techniques are described, including self-calibration.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Six-Port Automatic Network Analyzer (1977 [MWSYM])

H.M. Cronson and L. Susman. "A Six-Port Automatic Network Analyzer (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 50-52.

This paper describes a programmable calculator-controlled six-port system designed to measure S_{21} , and S_{11} , over a wide microwave frequency range without disturbing the device under test. Measurements taken from 7 to 12 GHz show that results within 1% can be obtained.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

An Improved Circuit for Implementing the Six-Port Technique of Microwave Measurements (1977 [MWSYM])

G.F. Engen. "An Improved Circuit for Implementing the Six-Port Technique of Microwave Measurements (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 53-55.

In a companion paper, circuit design criteria have been developed which will lead to optimal results in applying the six-port technique to the measurement of microwave parameters. This paper will describe what promises, in many situations, to become the "preferred" six-port circuit.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

An Application of the Six-Port Reflectometer to Precision Measurement of Microwave One-Port Parameters

E.L. Komarek. "An Application of the Six-Port Reflectometer to Precision Measurement of Microwave One-Port Parameters." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 56-57.

The arbitrary six-port junction concept has been applied to an automated broadband system in the 1-18 GHz frequency range for the measurement of microwave power and reflection coefficient. Performance evaluation results show an improvement in precision over other automated and manually operated measurement systems used at the National Bureau of Standards.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A Semi-Automated Sixport for Measuring Millimeter Wave Power and Complex Reflection Coefficient (1977 [MWSYM])

M.P. Weidman. "A Semi-Automated Sixport for Measuring Millimeter Wave Power and Complex Reflection Coefficient (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 58-60.

A six-port system has been developed and applied to the precision measurement of power and complex reflection coefficient in WR-15 (50-75 GHz) waveguide. The system is automated except for frequency and switching control for the signal source. This system provides a time saving factor of at least five as compared to a tuned reflectometer with little if any degradation in accuracy.



IEEE

Contents

Publications

Issues

Papers

Authors

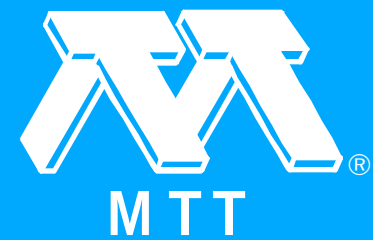
Click on title for a complete paper.



Abstracts

Session C1 -- Multifunction Microwave Modules

"Session C1 -- Multifunction Microwave Modules." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 61-64.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

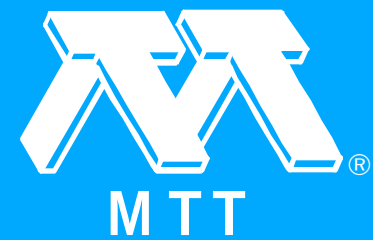
Click on title for a complete paper.



Abstracts

Session D1 -- Optics and Submillimeter Waves

"Session D1 -- Optics and Submillimeter Waves." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 65-65.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Light Wave Communications (Invited Paper)

M. DiDomenico. "Light Wave Communications (Invited Paper)." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 66-66.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

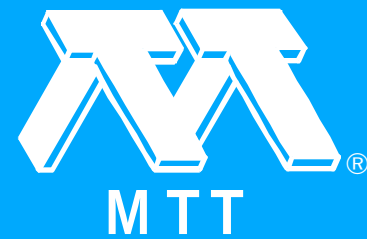
Click on title for a complete paper.



Abstracts

Single Strand Optical Fibre Systems (Invited Paper)

M. Barnoski. "Single Strand Optical Fibre Systems (Invited Paper)." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 67-67.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Review of Integrated Optics

W.S.C. Chang. "Review of Integrated Optics." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 68-68.

The primary long-range objective of integrated optics is to carry out system logic functions of high-data-rate, single-mode optical fiber communication systems. Much progress was made in the past years in the fabrication of optical waveguides and in the demonstration of individual components, such as couplers, laser sources, modulators, and detectors. But there is an urgent need to know how to interconnect various components together and how to carry out signal processing in integrated optical waveguides. This talk will give a brief review of the development of individual components, but will emphasize recent progress made in the interconnection of thin film waveguide components, in the fabrication of monolithic integrated optical circuits, and in switching and signal processing in optical waveguides.



[Click on title for a complete paper.](#)



Abstracts

Relativistic Electron Beam Interactions for Generation of High Power at Microwave Frequencies

T.F. Godlove and V.L. Granatstein. "Relativistic Electron Beam Interactions for Generation of High Power at Microwave Frequencies." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 69-72.

Several coherent emission processes operative within high-power, relativistic electron beams have been studied during the past few years. The spectral range of interest extends from centimeter to submillimeter wave-lengths. Effort within this field is presently concentrated in three areas: exploratory development of the electron cyclotron maser (gyrotron) for millimeter-wave sources; a basic study of scattering mechanisms whereby incident microwave radiation is Doppler-shifted to higher frequency; and the extension of conventional microwave sources to the gigawatt level using pulsed power techniques. The field is reviewed with emphasis on the several mechanisms employed and results of recent theoretical and experimental investigations.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

CW Performance of Optically-Pumped Lasers in the Millimeter-Wave Spectral Region

F.B. Foote and D.T. Hodges. "CW Performance of Optically-Pumped Lasers in the Millimeter-Wave Spectral Region." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 73-75.

Optically pumped lasers are maturing as powerful coherent sources for the near millimeter spectral region, and especially for wavelengths shorter than 500 μm . Presented here is a summary of performance data and a discussion of the performance expectations for this new type of laser in the .9-2 mm region. The unique characteristics of optically pumped lasers will be described and compared to existing millimeter wave sources.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Development and Applications of Millimeter Wavelength, High Power Optically Pumped Lasers

N.C. Luhmann, Jr. and A. Semet. "Development and Applications of Millimeter Wavelength, High Power Optically Pumped Lasers." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 76-78.

The performance and applications of high power pulsed lasers in the 0.75 - 2 mm wavelength region is discussed. A narrow-linewidth, oscillator-amplifier configuration, pumped by a grating tuned CO/sub 2/ laser, has produced pulsed power levels (~100 nsec duration) of approximately 50 kW at 0.862 mm, 1.006 mm and 1.222 mm.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session A2 -- Diode Frequency Converters

"Session A2 -- Diode Frequency Converters." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 79-79.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Broadband Frequency Dividers Using Microwave Varactors

R.G. Harrison. "Broadband Frequency Dividers Using Microwave Varactors." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 80-82.

A novel configuration using GaAs varactors in a balanced circuit incorporating both coplanar waveguide and microstrip elements has permitted the construction of frequency dividers which have near-octave divide-by-two bandwidth and excellent response to pulsed r.f. inputs. The design and performance of such a frequency divider for inputs in the 4 to 8 GHz range is discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

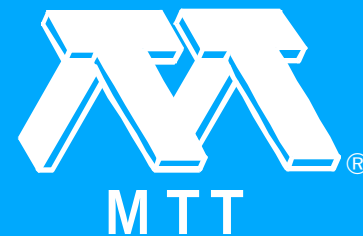


Abstracts

Parametric Frequency Multiplication and Level Control in Broadband Microwave Signal Source

Y.D. Kim and R.E. Kmetovicz. "Parametric Frequency Multiplication and Level Control in Broadband Microwave Signal Source." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 83-86.

A frequency multiplier, formed from a step recovery diode and coupled to a YIG filter, is utilized to multiply a synthesized 2-6.2 GHz in-coming signal by factors of 1, 2, and 3 while simultaneously filtering the selected harmonic to generate a 2-18.6 GHz output.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

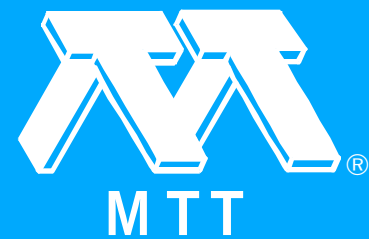


Low Cost X-Band MIC BARITT Doppler Sensor (Abstract)

S.P. Kwok and K.P. Weller. "Low Cost X-Band MIC BARITT Doppler Sensor (Abstract)." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 87-87.

A hybrid MIC X-band Doppler sensor module using a BARRITT device in the self-mixing mode has been developed. The module is compact, low cost, and sensitive. A return loss sensitivity of -137dB/Hz was achieved with the module.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

K-Band BARITT Doppler Detectors

J.R. East, P.J. McCleer and G.I. Haddad. "K-Band BARITT Doppler Detectors." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 88-91.

The properties of K-band BARITT devices for use as self-mixing doppler detectors have been studied experimentally and with a simplified computer model. The computer results predict sensitive BARITT doppler operation even at low power levels. The experimental results show that the BARITT is superior to both IMPATT and Gunn devices for use as self-oscillating doppler detectors in this frequency range.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

FM Distortion in Single and Cascaded Injection Locked Diode Oscillators

T. Berceli. "FM Distortion in Single and Cascaded Injection Locked Diode Oscillators." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 92-95.

FM distortion in injection locked diode oscillators is investigated both theoretically and experimentally. At the lower frequency end of the locking band, the distortion is rather high. Hence the distortion is decreased with increasing frequency and a minimum is achieved at a frequency higher than the band center.

Click on title for a complete paper.



Abstracts

A Simple Quasi-Optical Mixer for 100-120 GHz

A.R. Kerr, P.H. Siegel and R.J. Mattauch. "A Simple Quasi-Optical Mixer for 100-120 GHz." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 96-98.

An open-structure quasi-optical mixer for 100-120 GHz is described. The mixer uses a GaAs diode coupled to a cavity-backed two-slot radiator. The design should be usable to sub-millimeter wavelengths with appropriate frequency scaling, and should be suitable for cryogenic operation.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Quasi-Optical Receiver Design

J.J. Gustincic. "A Quasi-Optical Receiver Design." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 99-102.

The design of a completely quasi-optical 1.5 mm aircraft radiometer receiver is discussed in detail. The radiometer beam switching is described as well as a reflection isolator utilizing a reciprocating mirror. A quasi-optical local oscillator injection system using a Folded Fabry-Perot resonator is described and receiver performance levels given.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session B2 -- Microwave Measurements

"Session B2 -- Microwave Measurements." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 103-103.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave Deviation Linearity Test Method

J.C. Caci. "Microwave Deviation Linearity Test Method." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 104-106.

Microwave voltage controlled oscillators are prominent components in state of the art communications systems. They feature among other things increased bandwidth and frequency response. It is the intent of this paper to present a quick and reliable method to test device deviation linearity. This method uses the Bessel function measurement technique. The Bessel functions are computer generated graphs normalized to a reference unmodulated carrier vs modulation index. The presentation of this graph is the key factor in reducing the amount of data reduction necessary to present the test results in usable form. This paper also discusses the singularity problem in determining modulation index from multivariate sideband levels.

[Click on title for a complete paper.](#)

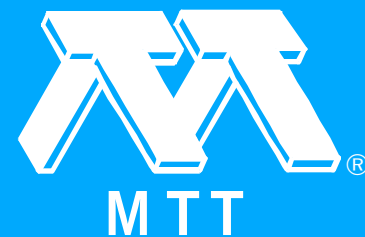


Abstracts

A Microwave Linearity Test Set

G.L. Heiter. "A Microwave Linearity Test Set." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 107-109.

A multitone intermodulation (IM) test set has been constructed which generates up to three VHF test tones with conventional accuracy (10^3) and stability ($<10^4$). Using a phase locked microwave generator as local oscillator source, these tones are up-converted, filtered and amplified individually to maintain spectral purity of the microwave test tones. High mutual isolation is provided in the combining circuitry. The detector circuit for signal and IM product tones uses selective tone attenuation to improve its linearity to $M/\alpha + \beta - \gamma$ < -113 dB. Tone levels are measured to -110 dBm with >80 dB discrimination outside a 20 kHz bandwidth, using a narrow band (1.7 kHz) tunable VHF receiver.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Phase Noise Measurements in the Frequency Domain

A.L. Lance, W.D. Seal, F.G. Mendoza and N. Hudson. "Phase Noise Measurements in the Frequency Domain." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 110-113.

This paper describes two measurement systems used to measure phase noise of sources in the frequency domain at Fourier frequencies from 10 hertz to 13 megahertz from the carrier. One system measures the combined phase noise characteristics of two sources. The two source signals are applied in quadrature to a phase sensitive detector (double balanced mixer) and the voltage fluctuations analog to the phase fluctuations are measured at the detector output. One measurement system is designed to measure the phase noise characteristics of a single oscillator. The single-oscillator measurement system is designed using delay lines to form an FM discriminator. Voltage fluctuations analog to the frequency fluctuations are measured at the detector output.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Super - TSD: A Generalization of the TSD Network Analyzer Calibration Procedure, Covering n-Port Measurements with Leakage

R.A. Speciale and N.R. Franzen. "Super - TSD: A Generalization of the TSD Network Analyzer Calibration Procedure, Covering n-Port Measurements with Leakage." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 114-117.

The basic philosophy of the THROUGH-SHORT-DELAY calibration procedure for two-port Automated Network Analyzers, has been extended to n-port S-parameter measurements, while also accounting for the possible signal leakage between all port pairs. The system errors are represented by a $2n$ -port virtual error network, having n ports connected to the device under test (DUT) and n ports connected to an ideal, error-free multiport network analyzer. The $(2n)^2$ T-parameters of the error network are explicitly expressed, in blocks of n^2 at a time, as matricial functions of the $3n^2$ measured S-parameters of three n -port standards, sequentially replacing the DUT during system calibration. Also the possibility has been proved of correcting the errors arising from repeatable port-impedance value-changes, as those found in switching test sets. This capability has been introduced and tested also in the classical two-port TSD algorithm, by means of minor modification and subsequent post-processing.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Probe Measurements of Guide Wavelength in Rectangular Silicon Dielectric Waveguide

H. Jacobs, G. Novick, R. Walter and C.M. LoCascio. "Probe Measurements of Guide Wavelength in Rectangular Silicon Dielectric Waveguide." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 118-120.

A probe method for determining the guide wavelength within a dielectric (silicon) waveguide is presented. The experimental results are compared to previously measured experimental values obtained with resonant silicon dielectric cavities and to the theoretical values as determined by Marcatali's theory. There is good agreement between the two experimental methods. The theoretical predicted slope of guide wavelength versus frequency is nearly equal to the slope of the experimental curve. The theoretical and experimental values however, differ, particularly at lower frequencies.

[Click on title for a complete paper.](#)



Abstracts

Determination of Complex Dielectric and Magnetic Properties of Materials

S. Weisbrod, L.A. Morgan and L.R. Hughes. "Determination of Complex Dielectric and Magnetic Properties of Materials." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 121-123.

The paper describes a modified Von Hippel technique for determination of complex dielectric and magnetic properties of materials. The technique uses least square fit to derive the scatter matrix parameters for calibrating out internal reflection between the sample and the reflection measuring equipment. Least square fit is also used to determine best values of μ and epsilon.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Measurement of Dielectric Properties with Superconducting Resonators: Theory and Practice

W. Meyer. "Measurement of Dielectric Properties with Superconducting Resonators: Theory and Practice." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 124-128.

The paper deals with theoretical and practical investigation of a test method using superconducting cavity- and helical resonators in an oscillator loop, which allows precision measurements to be performed on solid dielectrics in the range of 0.1 to 10 GHz and below 9K. The underlying formulas are an extension of the well-known perturbation formalism and are not restricted to low temperatures. Our experiments resulted in unloaded quality factors of Q of 9×10^8 between 0.2 and 10 GHz with a maximum Q (2.2K, 0.19 GHz) of 9×10^8 , which enabled us to observe the smallest loss tangent so far: $\tan \delta$ (2.2K, 6.5 GHz) = $3.7 \times 10^{-7} \pm 5\%$ in polyethylene.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

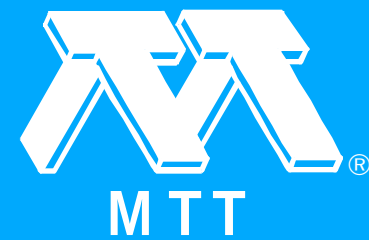
[Click on title for a complete paper.](#)



Abstracts

Session C2 -- Computer Oriented Microwave Design and Practices

"Session C2 -- Computer Oriented Microwave Design and Practices." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 129-129.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Calculator-Based Synthesis Routine Speeds Microwave Amplifier Design

D.J. Mellor and L.G. Pierson. "Calculator-Based Synthesis Routine Speeds Microwave Amplifier Design." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 130-133.

A calculator-based synthesis routine provides rapid and accurate design of interstage networks of prescribed gain, bandwidth, ripple and slope for use in microwave amplifiers. The complete design and measurement of a prototype 6-12 GHz amplifier illustrates the computer-aided synthesis approach to microwave amplifier design.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Computer-Aided Design of Commensurate and Non-Commensurate Networks Using State-Space Techniques

M.I. Sobhy and M.H. Keriakos. "Computer-Aided Design of Commensurate and Non-Commensurate Networks Using State-Space Techniques." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 134-136.

The state and output equations for networks containing commensurate and non-commensurate delay lines have been derived using topological methods. Computer programs for the analysis and design of these networks have been developed and some of the results are reported. The method is completely general and can be applied to any network topology without any restrictions. Non-commensurate networks offer the possibility of doubling the number of restrictions that can be imposed on the network response. Networks with coupling between the transmission lines can also be solved.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Microwave Circuit Design by Means of a Simple Simulator With an On-Line Minicomputer

M. Parisot and J. Magarshack. "Microwave Circuit Design by Means of a Simple Simulator With an On-Line Minicomputer." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 137-139.

A simple analogue simulator is used to define circuit topology with lumped and distributed elements, to vary circuit parameters and to continuously display the frequency response. Parameter sensitivity can also be tested. Applications are given.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

An Automated Receiver Test Concept

D.S. Cooley and R.M. Hume. "An Automated Receiver Test Concept." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 140-142.

An advanced microwave measurement concept has provided a significant breakthrough in the automated characterization of microwave receivers. The system integrates the accurate RF 0.1-GHz to 18-GHz signal source and digital computer of an automatic network analyzer (ANA) with-sophisticated decoding/encoding circuitry and RF signal conditioning hardware of a receiver adapter to provide fast, accurate, and economical automatic testing of microwave receivers.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Computer-Controlled Infrared Microscope for Thermal Analysis of Microwave Transistors

F.N. Sechi, B.S. Perlman and J.M. Cusack. "Computer-Controlled Infrared Microscope for Thermal Analysis of Microwave Transistors." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 143-146.

A new technique for acquiring the temperature profile of microwave power transistors by infrared scanning has been developed. It provides for emissivity calibration using an infrared microscope interfaced with a computer.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computer-Aided Tuning of Microwave Circuits

J. Marquardt and G. Muller. "Computer-Aided Tuning of Microwave Circuits." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 147-150.

A computer-aided tuning procedure for microwave circuits - especially multituned narrow-band branching filters - has been developed. The mistuning of all elements after pretuning in a straight forward manner is small enough, thus a specially chosen network function depends nearly linear on the deviations of the tuning screws from their proper positions. These linearized relations and the regular values of the network function can be calculated from the equivalent circuit of the filter with the help of a large computer. They can then be inserted into the small computer of the measurement set-up. The appropriate changes of the tuning elements for sufficient performance of the filter together with clear tuning criteria for the operator are computed from the test values of the pretuned filter. The procedure will be repeated several times, because of the only quasi-linear relations between the deviations of the tuning elements from their proper position and the special network function.

[Click on title for a complete paper.](#)



Abstracts

A Time-Domain Technique for Characterizing Leaky Coaxial Cables

M.F. Iskander and M.A.K. Hamid. "A Time-Domain Technique for Characterizing Leaky Coaxial Cables." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 151-154.

A time-domain technique for the measurement of return loss, attenuation and coupling loss of leaky coaxial cables is described. The technique is based on a simple signal flow graph procedure where the leaky cable is represented by a three-port network, with the third port being introduced to represent the leakage from the cable. The measurement procedure is described, while experimental results for three different leaky coaxial cables are presented and compared with frequency-domain data.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session D2 -- High Power

"Session D2 -- High Power." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 155-155.



MTT



IEEE

[Contents](#)

[Publications](#)

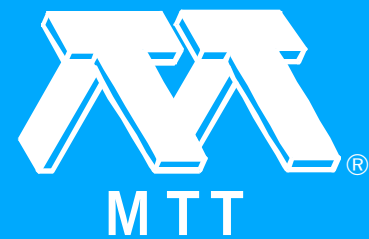
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dielectric Waveguides for Underwater Transmission of High Microwave Power

D. Pavlidis and H.L. Hartnagel. "Dielectric Waveguides for Underwater Transmission of High Microwave Power." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 156-159.

For certain applications it is advantageous to transmit high power levels by microwaves underwater via a dielectric layered tube structure with outer metal braiding which is, for example, simultaneously used for the passage of breathing gas for divers. Details of launching waves into this structure, the transmission properties, and suitable absorbers for such applications as heating are described. The system under study operates with a power level of 3-4kW at 8GHz when the dielectric line can be conveniently slim.

[Click on title for a complete paper.](#)



Abstracts

The Selection of High-Power Integrated Microwave Components for Military Satellite Communication Terminals

C.J. Stillings, R.E. Cushing, F.O. Johnson and H.J. Mohr. "The Selection of High-Power Integrated Microwave Components for Military Satellite Communication Terminals." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 160-162.

This paper describes a program to optimize the performance of a high-power broadband satellite communications klystron by selection and interfacing a chain of microwave components between the tube and antenna. Tests results are given for the 7.9 to 8.4 GHz military satellite communications band.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Further Advances in High-Power Electronically Tuned Resonators

A. Karp. "Further Advances in High-Power Electronically Tuned Resonators." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 163-165.

A new technique for electronically tuning a high-Q resonator was investigated, based on the use of heavy-duty PIN diodes to short out inductive elements that are in series with the transmission line in a half-wavelength cavity. Design relationships were developed and validated for a high-power UHF resonator operated as a bandpass filter. The internal volt-ampere rating of the resonator is 640 kVA, which allows the filter to accommodate 4 kW of RF input power at 0.8% instantaneous loaded bandwidth. The unloaded Q was maintained in the vicinity of 2000 for the 11% tuning range, 350 to 391 MHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A 1.2 Kw L-Band Solid State Power Amplifier for Space-Borne Synthetic Aperture Radars

K.J. Lee. "A 1.2 Kw L-Band Solid State Power Amplifier for Space-Borne Synthetic Aperture Radars." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 166-169.

The design results of a 500 watt amplifier which is used in a 1.2 KW solid-state, L-Band space qualified transmitter are described. A discussion of key design techniques which ensure the high reliability of this amplifier is presented along with test data. The power combining and special techniques for utilization of three of these amplifiers in a 1.2 KW synthetic aperture space-borne Radar are also described.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

High Power Microwave P-I-N Diode Inductive Driving

C.J. Georgopoulos. "High Power Microwave P-I-N Diode Inductive Driving." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 170-173.

Microwave p-i-n diode in phase shifting applications can be effectively switched to forward-bias by current spiking techniques and to reverse-bias via an energy storing inductor. This paper presents a design and analysis approach based on an inductive discharging circuit and first order p-i-n diode models. Experimental results, which support the theory, are also included, and a comparison is made to those available from conventional circuit investigations. High reverse current provided by external circuitry results in high speed switching, while reverse current provided by an energy storing inductor results in circuit simplifications, economy and higher reliability.



IEEE

Contents

Publications

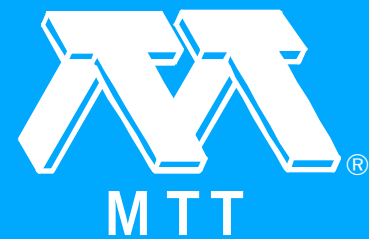
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Graceful Degradation Properties of Matched N-Port Power Amplifier Combiners

R.L. Ernst, R.L. Camisa and A. Presser. "Graceful Degradation Properties of Matched N-Port Power Amplifier Combiners." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 174-177.

The graceful degradation properties of matched isolated power combiners as a function of amplifier failures of the same type has been determined using general techniques applicable to all such circuits. The effects of complete amplifier failures, amplitude and phase imbalances and poor VSWRs on overall combiner system output power, combining efficiency and input-output impedances can be determined by the resulting equations and plots.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Passive Method for Monitoring Non-Ionizing Radiation

G.E. Fanslow and D.T. Stephenson. "A Passive Method for Monitoring Non-Ionizing Radiation." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 178-180.

The temperature-dependent light scattering properties of cholesteric liquid crystals are used as both the sensing and indicating mechanism in a calorimetric radiation monitor. The liquid crystals are arranged on two dielectric disks; one is a plain dielectric and the other is metal coated. While both disks will respond to general changes in ambient conditions, the metallized disk will also have a temperature change due to absorbed radiation. Thus, the difference between the temperatures of the two disks, as indicated by the liquid crystals, is a measure of radiation. Experimental models are described and the results of tests at 2.45 GHz for power densities of from 1 to 15 mW/cm² are presented.

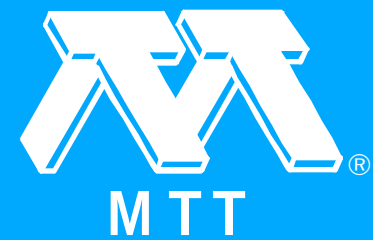
[Click on title for a complete paper.](#)



Abstracts

Session A3 -- Microwave Integrated Circuits

"Session A3 -- Microwave Integrated Circuits." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 181-181.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A S-Band High Power Feedback Amplifier

C.-C. Hsieh and E. Strid. "A S-Band High Power Feedback Amplifier." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 182-184.

A 2.0 GHz high power feedback amplifier has been designed and fabricated, which has an RF gain of 34 dB and delivers an output power of 2W with third order IM distortion products down 40 dB from the carrier level. A 10 dB reduction in third order IM distortion products is achieved by applying negative feedback to the power amplifier.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

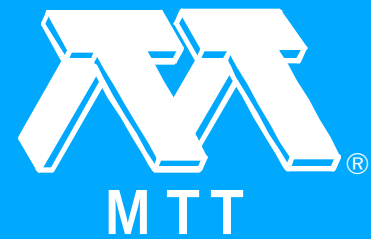


Abstracts

A Low Noise FET Amplifier in Coplanar Waveguide

J.C. Vokes, W.P. Barr, J.R. Dawsey, B.T. Hughes and S.J.W. Shrubbs. "A Low Noise FET Amplifier in Coplanar Waveguide." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 185-186.

This paper describes on the advantages of figures of 2.2 dB at the factors affecting the performance of low noise FET amplifiers, with particular emphasis coplanar waveguide as the microwave circuit. RF results include overall amplifier noise 7.5 GHz from devices made from two quite different GaAs structures.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

An MIC Push-Pull FET Amplifier

B.D. Geller and M. Cohn. "An MIC Push-Pull FET Amplifier." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 187-190.

A push-pull power amplifier, in which the required anti-phase RF voltages result from the use of inherently symmetric and frequency-independent slot line tees, is described. Measurements of the fundamental and harmonic response of this amplifier, which uses an unpackaged, two-cell FET chip and exhibits the well known fourfold impedance advantage over parallel operation, are reported.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A High Power MIC Passive Diode Receiver Protector with Integral STC Using Variable Basewidth Techniques

M.J. Gawronski and H. Goldie. "A High Power MIC Passive Diode Receiver Protector with Integral STC Using Variable Basewidth Techniques." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 191-194.

A passive MIC receiver protector using graded diode basewidths has been developed that handles 200 watt RF pulses at 10 percent duty rates on a 1.5 x 1.75 x 0.025 inch alumina substrate. Leakage power and recovery period are under 20 mW peak spike, 10 mW peak flat, and 0.8 μ s. Data on harmonic generation is included. Integral STC during the receive period is included with the associated MIC digital driver.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Low Noise MIC GaAsFET Amplifier for 4 GHz Radio

R.H. Knerr and C.B. Swan. "A Low Noise MIC GaAsFET Amplifier for 4 GHz Radio." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 195-197.

A low noise amplifier for 4 GHz radio has been designed and is in manufacture. The noise figure is < 2 dB and the gain is typically 10 dB. Input and output return losses are > 25 dB. The insertion loss with failure of either the power supply of the low noise transistor is typically 5 to 8 dB. The amplifier uses a single GaAs Field Effect Transistor in conjunction with a passive failsafe by-pass network utilizing circulators. This approach permits the noise figure and the gain flatness to be optimized for each amplifier without compromising the input and output matches. It is concluded that this single-transistor amplifier design has significant advantages both in performance and in simplicity over the balanced amplifier design.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Ku-Band Receiver Front-End Using MIC Technology

C.M. Krowne, F.A. Marki and E.J. Crescenzi, Jr.. "Ku-Band Receiver Front-End Using MIC Technology." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 198-202.

The development of a Ku-band receiver front-end using microwave integrated circuit technology is described. The front end elements, including a GaAs FET RF balanced amplifier stage, an image reject mixer, and a varactor controlled GaAs FET oscillator are integrated in a very small simple hermetic package. Electrical design details are presented for the varactor controlled FET oscillator development.

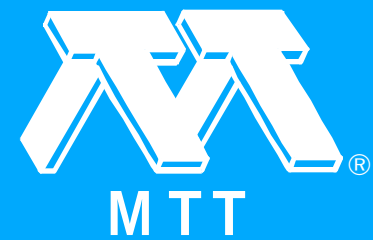
Click on title for a complete paper.



Abstracts

Session B3 -- Digital Microwave Systems

"Session B3 -- Digital Microwave Systems." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 203-203.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

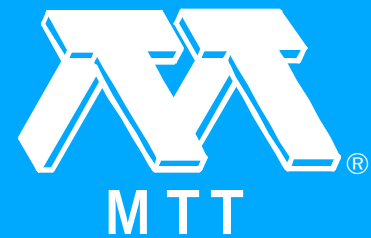


Abstracts

Digital Radio: Systems, Markets and Trends

H. Sobol. "Digital Radio: Systems, Markets and Trends." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 204-207.

Microwave digital radios are now entering operational service. 8 PSK RF modulated radios are very attractive for high channel density applications. This paper reviews some of the basic design considerations for digital radios, discusses current state-of-the-art and also markets, present and future.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

PSK and QPSK Modulators for Gigabit Data Rates

C.L. Cuccia and E.W. Matthews. "PSK and QPSK Modulators for Gigabit Data Rates." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 208-211.

The basic QPSK modulator of the 1970-75 era in worldwide telecommunications has yielded new modulation techniques of BPSK, SQPSK, 8-QPSK, and FFSK which use the basic PSK device technologies. The PSK modulators must today, meet many new requirements which were not of importance only a few years ago; i.e., the ability to switch phase at subnanosecond rates, the ability to produce PSK and QPSK carriers at data rates from 50 Mbps to in excess of one gigabit, the ability to produce modulated carriers at power levels in excess of one watt, and the ability to produce QPSK carriers at millimeter wave frequencies up to 100 GHz. This paper will review the original technologies employed during the 1960's and 1970's for low data rate carriers at lower microwave frequencies and will address new advances in switching speeds using dual gate FET's, higher power modulators using special driver circuits, and the use of multipliers to develop PSK carriers well into the millimeter frequencies above 50 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Switching Performance of mm-Wave PIN Diodes for Ultra High Data Rates

F. Bosch and O.G. Petersen. "Switching Performance of mm-Wave PIN Diodes for Ultra High Data Rates." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 212-215a.

The 300 Mb/s switching performance of 40 to 110 GHz PIN diodes is presented as a function of their storage and fall time, which varied from 2 to 18 and 0.2 to 1.2 ns, respectively.

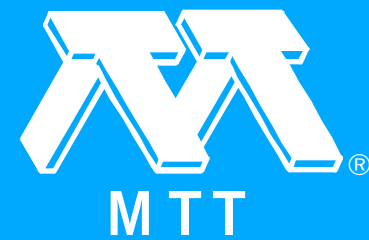
[Click on title for a complete paper.](#)



Abstracts

Applications of Advanced Technologies to Digital Microwave Systems

D. Claxton. "Applications of Advanced Technologies to Digital Microwave Systems." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 215b-215b.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Millimeter-Wave IMPATT Sources for Communication Applications

Y. Chang, J.M. Hellum, J.A. Paul and K.P. Weller. "Millimeter-Wave IMPATT Sources for Communication Applications." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 216-219.

FM transmitter oscillator of 400 mW output power at 60 GHz and 275 mW at 94 GHz using silicon double-drift IMPATT diodes and varactor-tuned local oscillators were developed for data transmission at 100 megabits/sec data rate.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Design of Direct Phase Modulators for High Speed Digital Radio Systems Using MIC Techniques

J.M. Robinson and A. Husain. "Design of Direct Phase Modulators for High Speed Digital Radio Systems Using MIC Techniques." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 220-223.

The design and performance of serial four-phase modulators constructed in microstrip operating in the 19 GHz band at a symbol rate of 140 Mbauds is described. In a complete radio system, good performance within 4 dB of the ideal system, has been achieved consistently.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Precision Subnanosecond Delay Measurements of High Speed Digital Integrated Circuits

C. Ryan and M. Leskela. "Precision Subnanosecond Delay Measurements of High Speed Digital Integrated Circuits." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 224-226.

Precise measurements of high speed digital integrated circuit time delays have been performed by a frequency domain technique instead of direct time domain methods. Resolutions to 1 picosecond are possible with absolute accuracies approaching 10 picosecond. This method uses a PN data comparison with a spring loaded hold down test fixture. It can be used to test a variety of circuit types and can be applied in production environments.



IEEE

Contents

Publications

Issues

Papers

Authors

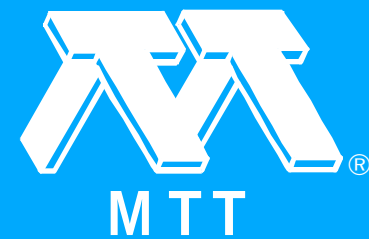
Click on title for a complete paper.



Abstracts

Session C3 -- Microwave & mm Solid State Circuit Development in Japan

*"Session C3 -- Microwave & mm Solid State Circuit Development in Japan." 1977 MTT-S
International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 227-227.*



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

4-W IMPATT Amplifiers for 6 - 8 GHz 1800CH FM Radio Systems

M. Noguchi, T. Hayasaka and K. Sakamoto. "4-W IMPATT Amplifiers for 6 - 8 GHz 1800CH FM Radio Systems." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 228-230.

A 4-W, 10 dB gain, IMPATT amplifier has been developed by utilizing two Si DDR 2.5W IMPATT diodes in two cascaded stages. This paper describes the analysis of power combining in cascade connection, the construction, the measured results, and the thermal noise evaluation method of this amplifier.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High Power GaAs IMPATT Amplifiers (1977 [MWSYM])

K. Nishitani, H. Sawano, T. Ishii, S. Mitsui, E. Kaji and A. Amano. "High Power GaAs IMPATT Amplifiers (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 231-233.

10 Watts P-N junction GaAs IMPATT diodes with MTTF more than 10^6 hours have been developed. Using these diodes, amplifiers of 5 Watts output power, 10-dB gain, 17 per cent efficiency, 150 MHz bandwidth and 80-dB thermal noise (S/N) have been constructed.

[Click on title for a complete paper.](#)



Abstracts

Injection Locking of an IMPATT Diode Oscillator by Using a Low-Frequency Signal Parametric Injection Locking

H. Okamoto and M. Ikeda. "Injection Locking of an IMPATT Diode Oscillator by Using a Low-Frequency Signal Parametric Injection Locking." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 234-236.

A new injection locking process is proposed and demonstrated experimentally, where a low-frequency injection signal can be used to lock an ultra-high frequency solid-state oscillator. This process has much wider locking bandwidth than the conventional subharmonic injection locking.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Schottky-Barrier Diode Converters in the Short Millimeter Wavelengths Region

M. Akaïke. "Schottky-Barrier Diode Converters in the Short Millimeter Wavelengths Region." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 237-239.

A theoretical analysis of upconverters, and an experimental waveguide-type upconverter and downconverter at 120GHz are described. An upconverter with an output power of 2.5 dBm and a downconverter with a conversion loss of 9.2/spl plusmn/0.7 dB and an RF bandwidth of 35 GHz were obtained.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A New Microwave Amplitude Limiter Using GaAs Field Effect Transistor

S. Fukuda, M. Kitamura, Y. Ara and I. Haga. "A New Microwave Amplitude Limiter Using GaAs Field Effect Transistor." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 240-242.

This paper describes a new microwave amplitude limiter with low AM-to-PM conversion using a class A GaAs FET amplifier. It has been experimentally established that this limiter is applicable for use with 200 Mbts/sec 4-phase PSK signals or 2700-channel FDM-FM signals.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A 7 GHz FM Transmitter Utilizing GaAs Power MESFETs

H. Komizo, Y. Arai and T. Saito. "A 7 GHz FM Transmitter Utilizing GaAs Power MESFETs." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 243-245.

An FM transmitter with a power efficiency of 11.5 % was developed utilizing GaAs power MESFETs for a 7 GHz FM radio-relay equipment. The transmitter, which consists of an FM modulator and power amplifiers, provides an output power of 1 watt and transmitting capability of 960 telephone circuits.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

20 GHz Band GaAs-FET Waveguide-Type Amplifier

H. Tohyama. "20 GHz Band GaAs-FET Waveguide-Type Amplifier." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 246-248.

Negative conductance reflection-type GaAs-FET amplifier was studied. Calculation showed a packaged GaAs-FET could be operated at high frequency than 20 GHz. An amplifier with 17 dB gain at 20 GHz was obtained using a packaged GaAs-FET mounted in waveguide circuit.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session D3 -- Applications to Cancer Treatment I

"Session D3 -- Applications to Cancer Treatment I." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 249-249.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

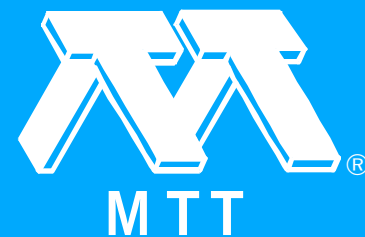


Abstracts

Microwave Thermography as a Diagnostic Tool for the Detection of Cancer (Abstract)

A.H. Barrett and P.C. Myers. "Microwave Thermography as a Diagnostic Tool for the Detection of Cancer (Abstract)." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 250-250.

Microwave thermography is the noninvasive detection of subcutaneous temperatures. Measurements at 1.3 and 3.3 GHz on several thousand patients in a breast cancer detection clinic show a true-positive detection rate of seventy percent and when combined with infrared thermography a rate of ninety percent is obtained.



[Contents](#)

[Publications](#)

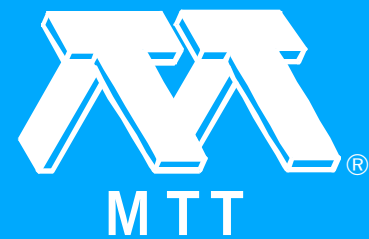
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Hyperthermia Dose Definition

E.R. Atkinson. "Hyperthermia Dose Definition." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 251-251.

In vitro thermal cytotoxicity data are consistent with the simple picture of chemical reaction kinetics governed by an activation energy. These kinetics are used to calculate, for any arbitrary heating profile used in clinical hyperthermia, the corresponding percent of cells killed by such treatment in in vitro tissue culture. The quantity calculated, which incorporates biological response to thermodynamic parameters, is suggested as a measure of hyperthermia dosage. Alternative dosage measures are discussed. Doses, defined by thermal cytokinetics, are derived for current clinical practice in whole body and local hyperthermia. Both types of treatment, although superficially very different, are shown to employ comparable dose magnitudes and these magnitudes are found to be in quantitative accord with the thermal cytotoxicity basis for dosage measurement.

[Click on title for a complete paper.](#)



Abstracts

Selective Heating of Cutaneous Human Tumors at 27.12 MHz (Abstract)

P. Antich, N. Tokita, J.H. Kim and E.W. Hahn. "Selective Heating of Cutaneous Human Tumors at 27.12 MHz (Abstract)." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 254-254.

Patients with multiple malignant cutaneous tumors were locally heated with equipment making use of inductive radio frequency heating at 27.12 MHz. In vivo thermometry of tumor and normal adjacent tissue has consistently shown the presence of favorable thermal phenonena.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Hyperthermia: Healing and Hazard in Tumor Bearing Rats

H. Moroson, S. Stowe and M. Schechter. "Hyperthermia: Healing and Hazard in Tumor Bearing Rats." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 255-257.

We have treated a metastasizing tumor in the rat with hyperthermia, as well as the contralateral normal limb by immersion in a 43 C bath. Whole body (rectal) temperatures were allowed to reach 40.5 - 41.0 C for one hour, and possible harmful effects on the host immune system investigated. Treatment which caused regression of the primary tumor also significantly reduced extent of retroperitoneal metastases. Lymphocytotoxicity against tumor target cells in vitro assayed one and two days after hyperthermia revealed no reduction in cell mediated immunity.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Changes in Tumor Blood Flow Produced by Microwave Induced Hyperthermia (Abstract)

C.H. Sutton and F.B. Carroll. "Changes in Tumor Blood Flow Produced by Microwave Induced Hyperthermia (Abstract)." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 258-258.

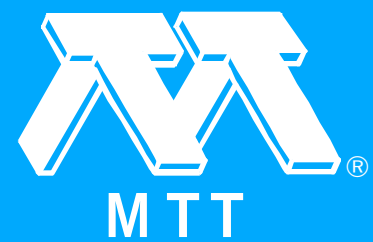
Blood flow changes were measured in subcutaneous implants of experimental murine brain tumors using a ^{133}Xe clearance technique. Tumor blood flow was increased by brief periods of moderate hyperthermia, but was decreased by excessive heating.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Increase in X-Ray Sensitivity of Cancer After Exposure to 434 MHz Electromagnetic Radiation

J.A.G. Holt. "Increase in X-Ray Sensitivity of Cancer After Exposure to 434 MHz Electromagnetic Radiation." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 259-262.

The proportion of cancer cells killed by using H-wave polarised 434 MHz electromagnetic radiation applied fifteen minutes before low doses (50 to 80 rads) of X-radiation (140, 220, 330 KV, 4 MeV and Co/sup 60/ sources) is between three and over one hundred times better than X-radiation alone. This increased sensitivity to X-radiation varies with the cancer's site, with the physical features of host and cancer, with the cancer growth rate, with the 434 MHz dose delivered and absorbed, with the normothermic X-radiation sensitivity and other as yet unknown factors. Fifty-two patients with E.N.T. cancer treated by combined therapy and compared with similar retrospective series treated in air at normothermic levels and a series treated under three atmospheres hyperbaric oxygenation, show primary clearances rates of 81%, 32% and 61% respectively. Longer survival is correspondingly improved. The increased radiation sensitivity is partly thermal but chiefly nonthermal in origin. Temperature measurements reveal a maximum differential rise of over 3.0/spl deg/C. in large avascular cancers. X-radiation sensitivity of some cancers after 434 MHz radiation remains enhanced for approximately thirty minutes even when the cancer is cooled to pre 434 MHz temperature. A second period of increased X-radiation sensitivity appears to exist between approximately twenty and thirty hours after 434 MHz radiation.

Click on title for a complete paper.



Abstracts

Session A4 -- FET Devices and Circuits

"Session A4 -- FET Devices and Circuits." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 263-263.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



X-Band--GaAs FET YIG-Tuned Oscillator

T. Ruttan. "X-Band--GaAs FET YIG-Tuned Oscillator." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 264-266.

The results of an X-band GaAs FET YIG-tuned oscillator development are reported. The best performance achieved was a minimum output power of 35 mW over the frequency range of 8.0 to 12.4 GHz with oscillations from 7.15 to 13.8 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Wide-Band Varactor-Tuned GaAs MESFET Oscillators at X- and Ku-Bands

H.Q. Tserng and H.M. Macksey. "Wide-Band Varactor-Tuned GaAs MESFET Oscillators at X- and Ku-Bands." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 267-269.

Performance results of wide-band (4-5GHz) varactor-tuned GaAs MESFET oscillators at X- and Ku-bands are presented. It is shown that output powers up to 210 mW can be achieved.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Design of GaAs MESFET Oscillator Using Large Signal S-Parameters (1977 [MWSYM])

Y. Mitsui, M. Nakatani and S. Mitsui. "Design of GaAs MESFET Oscillator Using Large Signal S-Parameters (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 270-272.

A design method of GaAs MESFET oscillator using large signal S-parameters has been discussed. Together with the measurement results of the dependence of large signal S-parameters on power level and bias condition, computer analysis of the equivalent circuit for MESFET's has qualitatively clarified the large signal properties of MESFET'S. On the basis of these S-parameters has been designed the MESFET oscillator over the frequency range of 6-10 GHz, which has resulted in power output of 45 mW at 10 GHz with 19% efficiency and 350 mW at 6.5 GHz with 26% efficiency respectively. Good agreements between predicted and obtained performance of MIC positive feedback oscillator have been ascertained, verifying the validity of the design method using large signal S-parameters.

Click on title for a complete paper.



Abstracts

A Dielectric Resonator Oscillator with 5 PPM Long Term Frequency Stability at 4 GHz

J.K. Plourde, D.F. Linn, I. Tatsuguchi and C.B. Swan. "A Dielectric Resonator Oscillator with 5 PPM Long Term Frequency Stability at 4 GHz." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 273-276.

High Q, temperature stable dielectric resonators are excellent stabilizing elements for microwave transistor oscillators. A 4 GHz Ba/sub 2/Ti/sub 9/O/sub 20/ resonator integrated with a Si bipolar transistor in a compact oven has a frequency stability of 5 ppm/yr., 4° to 60°C (40 to 140°F). It is significantly simpler than alternative generators and has 10 to 20 dB lower FM noise. An 18 GHz generator is also described which uses a 4.5 GHz oscillator and a varactor quadrupler.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



A Half-Micron Gate Low Noise GaAs MESFET and Amplifiers

H. Koderu, Y. Kaneko and H. Sato. "A Half-Micron Gate Low Noise GaAs MESFET and Amplifiers." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 277-280.

A half-micron gate GaAs MESFET is designed and fabricated for the minimum gate parasitics. The single bonding-pad design of the gate and intentional side-etching of the lower layer of the double-layered Schottky-gate satisfy the above requirement. The best noise figure so far measured is 2.5 dB at 10 GHz for the packaged device and 2.1 dB at 12 GHz for the chip device. An X-band unit amplifier is designed for the FET chip. It can be cascaded to get a specified power gain or modified to have a necessary bandwidth.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High Power Microwave Static Induction Transistor

Y. Kajiwara, T. Yukimoto and K. Shirahata. "High Power Microwave Static Induction Transistor." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 281-284.

A new type of the transistor called "Static Induction Transistor (SIT)", based on a short channel vertical J-FET structure, has been successfully verified as a promising device for microwave high power operation. The experimental transistors we fabricated have demonstrated the following remarkable features; (1) $f_{sub\ max}$ of above 5 GHz, (2) amplifying output power of 13 watts at 1GHz and (3) oscillating output power of 100 watts at 200 MHz. These data are the highest among any reported FET transistors at this frequency range.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

An Experimental Evaluation of X-Band GaAs FET Mixers Using Single and Dual-Gate Devices

S.C. Cripps, O. Nielsen, D. Parker and J.A. Turner. "An Experimental Evaluation of X-Band GaAs FET Mixers Using Single and Dual-Gate Devices." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 285-288.

Experimental results are presented for X-band GaAs FET mixers. Two circuits using commercially available single-gate devices have yielded good conversion gains at 10 GHz, and a specially developed dual-gate device in a simple microwave circuit has yielded 11 dB conversion gain and 6.5 dB noise figure (D.S.B.), at 10 GHz.

Click on title for a complete paper.



Abstracts

Session B4 -- Filters I

"Session B4 -- Filters I." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 289-289.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Microwave Dielectric Resonator Filters Utilizing Ba/sub 2/Ti/sub 9/O/sub 20/ Ceramics

J.K. Plourde and D.F. Linn. "Microwave Dielectric Resonator Filters Utilizing Ba/sub 2/Ti/sub 9/O/sub 20/ Ceramics." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 290-293.

Dielectric resonators utilizing Ba/sub 2/Ti/sub 9/O/sub 20/ ceramic yield high Q's ($Q = 8000-10000$) along with excellent temperature stability ($T/\text{sub } f/ = 0-2 \text{ ppm}/^\circ\text{C}$) at 4 GHz. Integrable bandpass and bandreject filters having low losses and excellent temperature stability are obtained in structures containing Ba/sub 2/Ti/sub 9/O/sub 20/ resonators coupled to either stripline or waveguide.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

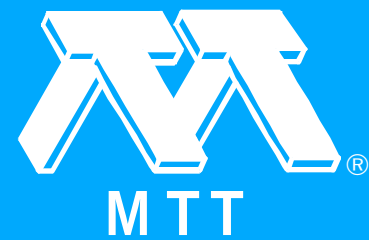


Abstracts

New Application of Evanescent Mode Waveguide to Filter Design (1977 [MWSYM])

R.V. Snyder. "New Application of Evanescent Mode Waveguide to Filter Design (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 294-297.

Evanescent waveguide (rectangular or round) sections are used in conjunction with an admittance inverter synthesis technique incorporating frequency variable turns ratios to realize wideband microwave (up to 1 octave) and low frequency (60 MHz) low-loss bandpass filters. This work extends and corrects previous published information.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Multi-Octave Comblne-Filter Multiplexer

P.M. LaTourrette. "Multi-Octave Comblne-Filter Multiplexer." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 298-301.

Common-junction comblne-filter multiplexers covering multi-octave frequency ranges have successfully been built. They offer significant cost and performance advantages over previous approaches to broadband microwave frequency multiplexing.



MTT



IEEE

[Contents](#)

[Publications](#)

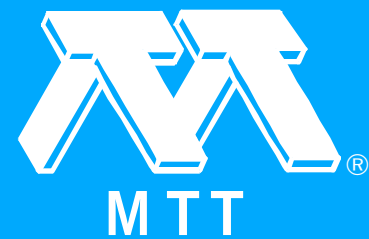
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

TEM Bandpass Filters Having Eighth-Wavelength Coupled Stubs

M.C. Horton. "TEM Bandpass Filters Having Eighth-Wavelength Coupled Stubs." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 302-304.

A simple technique is presented for design of TEM-mode bandpass filters that use eighth-wavelength coupled stubs in their realization. The filters, either of two dual forms, are identical in theoretical performance to conventional planar parallel-coupled filters often used in stripline fabrication; and to the interdigital filter, or the equivalent quarter-wavelength shorted stubs spaced at quarter-wavelength intervals along a transmission line. The design method uses existing tabulated element values and a novel Kuroda transformation which has been previously used in the design of directional filters.

[Click on title for a complete paper.](#)



Abstracts

The Design of Ladder Networks Containing Lumped and Distributed Elements

M.I. Sobhy and M. Safi. "The Design of Ladder Networks Containing Lumped and Distributed Elements." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 305-307.

A design procedure has been developed to design lumped/distributed ladder networks. The necessary and sufficient conditions on the coefficients of the characteristic polynomial have been obtained and a suitable low-pass to band-pass frequency transformation has been developed. The procedure was then applied to design a microwave filter and the results show good agreement with the theoretical predictions.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

On the Design of Matched Equalizers of Prescribed Gain Versus Frequency Profiles

D.J. Mellor. "On the Design of Matched Equalizers of Prescribed Gain Versus Frequency Profiles." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 308-311.

Design equations are derived for matched microstrip equalizers which provide a specified gain at three passband frequencies and present a good match to both source and load. Design examples compare measured results to theoretical predictions, and the application of matched equalizers to microwave amplifier design is discussed.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

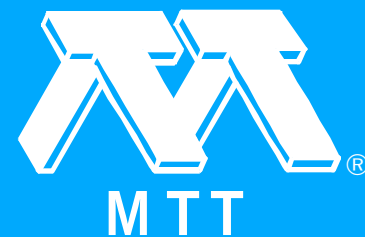


Abstracts

Exact Synthesis of Interstage Matching Networks for Broadband Microwave GaAs FET Amplifiers

W.H. Kut. "Exact Synthesis of Interstage Matching Networks for Broadband Microwave GaAs FET Amplifiers." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 312-316.

The exact synthesis of distributed interstage matching networks for broadband microwave GaAs FET amplifiers is presented. The results presented are based on distributed models of the FET and the design is exact for both maximally-flat and equiripple tapered-magnitude gain characteristics with arbitrary gain slopes.



IEEE

Contents

Publications

Issues

Papers

Authors

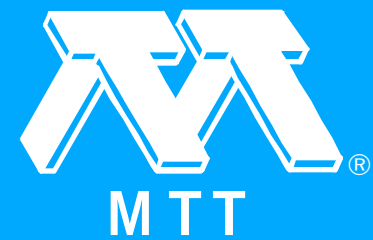
Click on title for a complete paper.



Abstracts

Session C4 -- Microwave Acoustics

"Session C4 -- Microwave Acoustics." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 317-317.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Surface Acoustic Wave Slanted Correlators for Linear FM Pulse-Compressors

B.R. Potter. "Surface Acoustic Wave Slanted Correlators for Linear FM Pulse-Compressors." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 318-320.

A surface acoustic wave slanted transducer pulse compressor with the power flat to within 1/2 dB over a 66% bandwidth is reported in this paper. It uses no matching networks and has -27 dB insertion loss with linear time delay over the band.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A SAW Pulse Compression Filter Using the Reflective Dot Array

H. van de Vaart and L.P. Solie. "A SAW Pulse Compression Filter Using the Reflective Dot Array." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 321-323.

A new type of pulse compression filter is described using the Reflective Dot Array (RDA). The RDA is similar to the Reflective Array Compressor (RAC), except that the array of reflecting grooves is replaced by an array of reflecting metallic dots. The RDA has the principal advantage of being part of the same mask and metalization as the interdigital transducers, allowing single step fabrication. A linear FM filter was developed with a center frequency of 60 MHz, bandwidth of 20 MHz and differential time delay of 10 μ s, with less than 4/slp deg/ of rms phase deviation from quadratic without phase compensating film, showing that high performance pulse compression filters can be produced at low cost.

[Click on title for a complete paper.](#)



Abstracts

Real Time Wideband Cepstrum Analysis Based on SAW Devices

M.A. Jack, P.M. Grant and J.H. Collins. "Real Time Wideband Cepstrum Analysis Based on SAW Devices." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 324-327.

Cepstrum analysis using Surface Acoustic Wave Fourier (Chirp) Transform processors has application in waveform detection and classification. Analyser capabilities are demonstrated theoretically and practically measuring the pulse width, duration, period and frequency of unknown input waveforms.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Synthesis of Acoustic-Surface-Wave-Resonator Filters Using any of Various Coupling Mechanisms

G.L. Matthaei, E.B. Savage and F. Barman. "Synthesis of Acoustic-Surface-Wave-Resonator Filters Using any of Various Coupling Mechanisms." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 328-331.

Simple, flexible means are presented for synthesis of acoustic-surface-wave-resonator band-pass filters from low-pass prototypes. Methods for filters using resonators coupled by transducers, reflecting arrays, and multi-strip couplers are treated.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

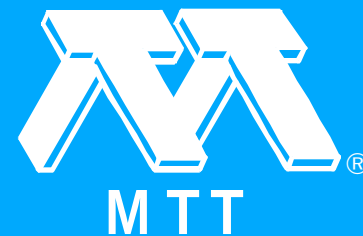


Abstracts

Microwave Devices Based on Magnetostatic Wave Reflecting Arrays

J.H. Collins, J.M. Owens, C.V. Smith, Jr., J.D. Adam and Z.M.D. Bardai. "Microwave Devices Based on Magnetostatic Wave Reflecting Arrays." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 332-335.

A novel concept for analog signal processing at microwave frequencies is described utilizing magnetostatic wave propagation in reflecting arrays formed on epitaxial YIG. Results for S-band notch filters and resonators together with a non-recursive transversal filter realization are given.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Actively Controlled SAW Multistrip Coupler

J.D. Crowley, J.F. Weller and T.G. Giallorenzi. "Actively Controlled SAW Multistrip Coupler." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 336-338.

An actively controlled SAW multistrip coupler has been fabricated which employs an SAW magic tee and a new acoustoelectric phase shifter. This device can be used as a continuously variable power divider or as a switch.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

X Band Bulk-Wave Delay Line Stabilized Oscillator

Y. Amblard and A. Peyrat. "X Band Bulk-Wave Delay Line Stabilized Oscillator." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 339-342.

A low noise X band oscillator, stabilized by a microwave delay line discriminator has been designed for Doppler radar applications. It uses a Gunn varactor VCO and a bulk-wave. 5 μ s delay line. The measured phase noise of this source is Single Sideband dBC of -90 dB in a 1 kHz band at 100 kHz from the Carrier, in fairly good accordance with calculated figures.

[Click on title for a complete paper.](#)



Abstracts

Session D4 -- Applications to Cancer Treatment II

"Session D4 -- Applications to Cancer Treatment II." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 343-343.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

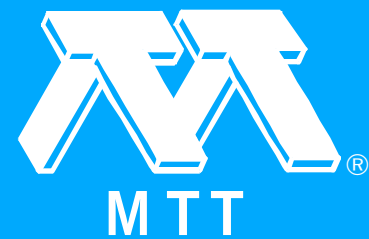
Preliminary In-Vivo Probe Measurements of Electrical Properties of Tumors in Mice

E.C. Burdette, J. Seals, J.C. Toler, F.L. Cain and R.L. Magin. "Preliminary In-Vivo Probe Measurements of Electrical Properties of Tumors in Mice." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 344-347.

The induction of hyperthermia into neoplastic tissues using electromagnetic radiation depends significantly upon the electrical properties of the tissues of interest. An in-vivo measurement probe based upon an antenna modelling theorem was designed and a measurement system that is capable of performing accurate in-vivo measurements has been developed and tested on several standard materials. This measurement probe and system were used to perform dielectric measurements on normal and neoplastic tissues from 0.01 to 2.0 GHz. The preliminary results of measurements performed on six malignant tumor types in mice are compared with results obtained on normal muscle tissue and on phantom modelling materials. The trends of the in-vivo measurements show differences that indicate the possibility of using such data and techniques in various types of future cancer research.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Non-Perturbing Microprobes for Measurement in Electromagnetic Fields

A. Deficis and A. Priou. "Non-Perturbing Microprobes for Measurement in Electromagnetic Fields." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 348-351.

A new generation of non-interfering microprobe is developing. It consists essentially of dielectric microthermometers, named the M.T.D. probes. Their specific temperature range cover -40°C to $+150^{\circ}\text{C}$ in several steps. The introduced perturbation is very low, inferior to 0.1 db whatever the frequency range is. The M.T.D. probes' medical and industrial applications are very important.

[Click on title for a complete paper.](#)



Abstracts

Near Zone Microwave Exposure of a Biological Sphere

K. Al-Badwaihy and S.A. Hafiz. "Near Zone Microwave Exposure of a Biological Sphere." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 352-353.

Power deposited into a spherical model of biological tissues is computed for an exciting axial electric or magnetic dipole at different locations and for different frequencies. It is found that near zone fields may deposit higher power into biological structures than plane waves having the same incident strength.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Effect of Surface Cooling and Blood Flow on the Electromagnetic Heating of Tissue

H.N. Kritikos, K.R. Foster and H.P. Schwan. "Effect of Surface Cooling and Blood Flow on the Electromagnetic Heating of Tissue." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 354-356.

Temperature profiles are calculated in tissue models exposed to microwave radiation, by solving the heat transport equation taking into account thermal conduction, thermal convection due to blood flow, and surface cooling of the tissue. We consider two idealized models representing limiting cases of the microwave heating behavior of actual tissue sections. The first consists of a semi-infinite tissue slab exposed to plane electromagnetic radiation; the second considers focused microwave heating in a finite volume of tissue. In both cases, the steady state temperature profile is largely determined by the blood flow and can be considerably different from the microwave energy deposition pattern. In the steady state, the blood flow at physiological levels creates an effective diffusion length of about 1 cm which averages out the temperature variation in the tissue.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A Bolusing Technique for Batch Microwave Irradiation of Tumors in the Far Field

A.Y. Cheung, D. McCulloch, J.E. Robinson and G.M. Samaras. "A Bolusing Technique for Batch Microwave Irradiation of Tumors in the Far Field." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 357-359.

A technique of 2450 MHz microwave hyperthermia has been developed for the simultaneous irradiation of multiple mouse tumors in the far field. Superficial 1 cm tumors were exposed to microwaves by being drawn through the surface of a protective mouse shield, then encapsulated in a larger bolus of tissue equivalent material. This technique markedly improved tumor heating uniformity (to $\pm 0.15^\circ \text{C}$ at 450°C). A replicable bolus shape was formed using expanded polystyrene molds. Placement of the tumor mold assemblies on an equipower surface of our anechoic range permitted the simultaneous irradiation of multiple mouse tumors.

Click on title for a complete paper.



Abstracts

A System for Developing Microwave Induced Hyperthermia in Small Animals (1977 [MWSYM])

R.J. Baker, V. Smith, T.L. Phillips, L. Kobe and L. Kane. "A System for Developing Microwave Induced Hyperthermia in Small Animals (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 360-363.

A system for developing microwave induced hyperthermia in small animals is described, for the purpose of assessing the effects of heat alone and heat plus ionizing radiation on normal tissue and tumors. The temperature is monitored using thermistors, and with the use of a scanner, recorded on a single channel recorder. The thermometry technique is still under review. Thermographic studies on a sacrificed animal and thermistor measurements in a phantom reveal a pattern of deep heating in a well defined region. Preliminary biological measurements are presented, but currently long term animal survival remains a problem.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Design and Performance of a Circularly Polarized Direct Contact Applicator for Microwave Diathermy

G. Kantor, D.M. Witters and J.W. Greiser. "The Design and Performance of a Circularly Polarized Direct Contact Applicator for Microwave Diathermy." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 364-368.

A direct contact applicator, specifically designed for microwave diathermy, is described. Its performance characteristics are a circularly polarized field pattern, a relatively uniform heating pattern and low leakage radiation.



IEEE

Contents

Publications

Issues

Papers

Authors

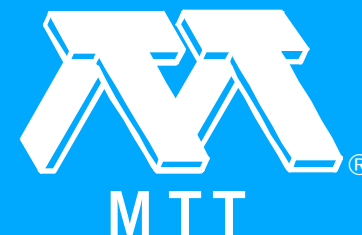
Click on title for a complete paper.



Abstracts

Session A5 -- Microwave and Millimeter Wave Integrated Circuits

"Session A5 -- Microwave and Millimeter Wave Integrated Circuits." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 369-369.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A 3-dB Interdigitated Coupler on Fused Silica

W.H. Childs and P.A. Carlton. "A 3-dB Interdigitated Coupler on Fused Silica." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 370-372.

This paper presents a simple model that describes the odd/even impedances and phase velocities of an inter-digitated structure. Complete design information is given for a 3-dB interdigitated coupler on fused silica. Experimental data are presented for a coupler centered at 10 GHz and another at 13.5 GHz. The coupler features extremely low dissipative loss (of the order of 0.1 dB) and an excellent power split (within 0.3 dB over a 25- to 30-percent bandwidth).

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Wide-Band Frequency Discriminator with High Linearity

U.H. Gysel and J.P. Watjen. "Wide-Band Frequency Discriminator with High Linearity." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 373-376.

A 7-to-11-GHz frequency discriminator with high linearity has been built using microwave integrated circuits (MICs). The critical subcomponent parameters of the discriminator were determined by computer analysis. The key elements of the design are balanced detectors with controlled terminations for internally generated harmonics and a gain equalizer to compensate for frequency-dependent losses. Linearity of the unit is better than $\pm 0.85\%$.

[Click on title for a complete paper.](#)



Abstracts

Components for Microwave Integrated Circuits with Evanescent Mode Resonators (1977 [MWSYM])

K. Schunemann, R. Knochel and G. Begemann. "Components for Microwave Integrated Circuits with Evanescent Mode Resonators (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 377-380.

The electrical performance of active microwave components for radio link systems is described, which have been realized utilizing evanescent mode resonators. This waveguide-below-cutoff technique is shown to be an alternative to the techniques established till now.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Calculation of Quasi-Planar Lines for mm-Wave Application

H. Hofmann. "Calculation of Quasi-Planar Lines for mm-Wave Application." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 381-384.

Dispersion of the phase-coefficient and the wave-impedance of slot-line, coplanar-strip-line, suspended-substrate line, and six different fin lines is calculated in one uniform treatment applying Galerkin's method on the electric interface fields. Results are presented at fin-line examples in the 8 and 3 mm wavelength regions, showing advantageous properties of the considered structures, especially of the newly presented antipodal-fin line, which allows an impedance variation from about 10 Ω to over 400 Ω . Tested applications are detectors, PIN-attenuators, coax to dielectric-line transition, and balanced-signal mixer, all for broadband application.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Planar Multiport Millimeter Integrated Circuits

P.J. Meier. "Planar Multiport Millimeter Integrated Circuits." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 385-388.

Recent progress with a class of planar millimeter circuits is reported. The potential of such circuits is demonstrated by examples which include a wideband low-loss 5-mm PIN attenuator, high-Q (1600 to 1735) planar filters, and a new type of printed-circuit directional coupler.



IEEE

Contents

Publications

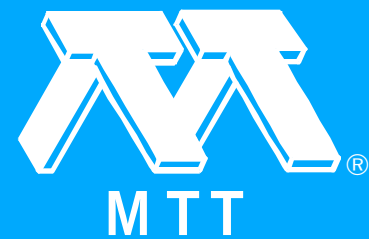
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Subharmonically Pumped Millimeter-Wave Mixers Built with Notch-Front and Beam-Lead Diodes

T.F. McMaster, E.R. Carlson and M.V. Schneider. "Subharmonically Pumped Millimeter-Wave Mixers Built with Notch-Front and Beam-Lead Diodes." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 389-391.

Low noise and wide tunable bandwidth have been achieved in two-diode subharmonically-pumped hybrid integrated downconverters. A single-sideband mixer noise figure of 5 dB was measured at 98 GHz with Schottky-barrier diodes of a unique chip design, "notch-front diodes", mounted in a two-diode downconverter. A second circuit has been developed with a tunable bandwidth of 66-110 GHz. Over this frequency range, conversion loss of 5-9 dB and receiver noise figure of 10-14 dB, including an IF noise figure of 4 dB, was measured in a circuit using commercial beam-lead diodes.

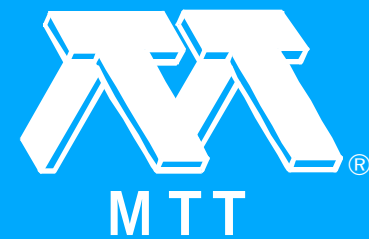
Click on title for a complete paper.



Abstracts

Session B5 -- Filters II

"Session B5 -- Filters II." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 393-393.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.

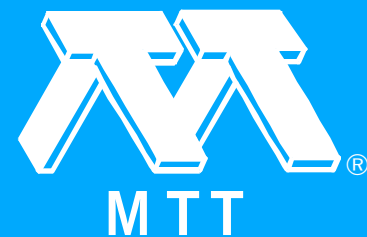


Abstracts

Low Loss Linear Phase Filters

S. Kallianteris. "Low Loss Linear Phase Filters." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 394-396.

A new filter structure in which low loss linear phase filters can be realized is described. These filters are longitudinal, employ TE/sub 103/ dual mode resonators. Experimental results of such a filter are presented, compared with results of equivalent fundamental mode Chebyshev, linear phase filters. These results demonstrate that such filters are suitable for multiplexer in satellite transponders operating above 10 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Dual Mode Canonical Waveguide Filters (1977 [MWSYM])

A.E. Atia and A.E. Williams. "Dual Mode Canonical Waveguide Filters (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 397-399.

This paper presents a new dual mode circular waveguide cavity structure which realizes the general class of coupled cavity transfer functions. Included are the exact elliptic function response and the linear phase and arbitrary phase responses. Experimental data taken on 4- and 8-pole narrowband elliptic function filters centered at approximately 4 GHz are described and shown to correlate well with theory.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

An Exact Solution for a Six-Cavity Dual-Mode Elliptic Bandpass Filter

G. Pfitzenmaier. "An Exact Solution for a Six-Cavity Dual-Mode Elliptic Bandpass Filter." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 400-403.

The paper treats the synthesis and realization of a six-cavity dual-TE/sub 101/-mode bandpass filter exhibiting all four theoretically possible attenuation poles at finite frequencies. A novel arrangement of the cavities in the dual-mode resonators effects the feasibility of an exact elliptic filter taking the place of the well known six-cavity pseudo-elliptic filter, which presents only two attenuation poles at finite frequencies. Measured curves of an example of implementation at 4 GHz show the results to be in good agreement with the theoretical responses.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

All GFEC Dual Mode Quasi Elliptic Multiplexers for Satellite Transponders

C.K. Mok and N. Epstein. "All GFEC Dual Mode Quasi Elliptic Multiplexers for Satellite Transponders." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 404-406.

This paper describes lightweight GFEC 4 GHz multiplexer, consisting of dual mode quasi elliptic filters mounted on a waveguide manifold. These filters are for use in communications satellites to meet the high performance requirements with state-of-the-art technology. Experimental results of a typical channel are given, and spurious performance of these filters is discussed. Thermal results of the filters indicate an average frequency shift of about 0.5 MHz over 50°C.

[Click on title for a complete paper.](#)



Abstracts

Tuning Procedure for Symmetric Coupled-Resonator Filters

H.C. Bell, Jr.. "Tuning Procedure for Symmetric Coupled-Resonator Filters." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 407-408.

A tuning procedure for symmetric coupled-resonator filters is presented that significantly reduces development and production tuning time. A method of analysis and application to a 12-resonator combline filter are described. The analysis method allows direct calculation of the loss slope and delay responses.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Short-Circuit Tuning Method for Singly Terminated Filters (1977 [MWSYM])

M.H. Chen. "Short-Circuit Tuning Method for Singly Terminated Filters (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 409-411.

This paper describes a filter tuning method based upon the match of measured and computed input impedances for a short-circuited filter. Two singly terminated filters, an 8-pole Chebychev filter and a 6-pole pseudo-elliptic function filter, tuned by using this method have demonstrated excellent performance.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Measurement Systems to Display $\text{Re}(z/\text{sub s. t./})$ of Singly Terminated Filters

W.G. Erlinger. "Measurement Systems to Display $\text{Re}(z/\text{sub s. t./})$ of Singly Terminated Filters." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 412-414.

Two measurement systems to display the real part of singly terminated filters are presented. Both systems utilize test equipment standard to most microwave laboratories. The theory of operation and measurement errors are discussed for both systems.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Loss Mechanisms in Coupled Cavity Filters

H.L. Thal, Jr.. "Loss Mechanisms in Coupled Cavity Filters." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 415-418.

The losses in coupled cavity filters due to coupling apertures, tuning screws and surface roughness have been determined experimentally. This information can be used to predict and minimize the insertion loss in various filter configurations.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

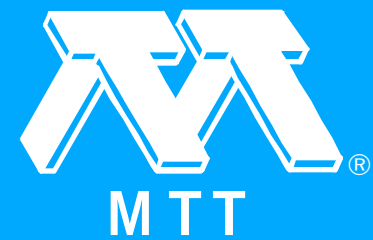
[Click on title for a complete paper.](#)



Abstracts

Session C5 -- Satellite Communications Systems

"Session C5 -- Satellite Communications Systems." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 419-419.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

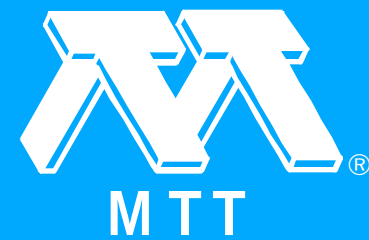
Click on title for a complete paper.



Abstracts

A TV Satellite Broadcast System for the Public Broadcasting Service

*J.M. Moore. "A TV Satellite Broadcast System for the Public Broadcasting Service." 1977
MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 420-420.*



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Public Service Satellite Communications Opportunities

E.A. Wolff. "Public Service Satellite Communications Opportunities." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 421-423.

A Public Service Communications Satellite study has been undertaken at the NASA Goddard Space Flight Center (GSFC) to define the problems and opportunities of a renewed NASA role and the form such NASA involvement should take. Civilian communications satellite technology could be applied now to the betterment of life on earth. Citizens who reside in remote regions do not enjoy the quality of public services available to those in more densely populated areas. There are people in the United States without access to the normal communications services (telephone and television). There are people in thinly populated rural areas that lack the services of medical professionals enjoyed by urban residents. The use of satellite techniques holds tremendous promise for increasing the effectiveness of public safety personnel by enabling more rapid response and coordination to emergency situations. Small portable, mobile, and hand-held communication devices are an essential ingredient for efficient services for ambulances, police, fire and rescue vehicles.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The Centimeter Wave Beacons of the COMSTAR Domestic Communications Satellites

W.J. Getsinger. "The Centimeter Wave Beacons of the COMSTAR Domestic Communications Satellites." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 424-426.

COMSTAR satellites carry all-solid-state Beacons which transmit around 19 and 28.6 GHz for propagation studies. This paper describes the Centimeter Wave Beacon structure, signal characteristics, and electronics, emphasizing the output IMPATT amplifiers and other microwave circuits.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A 12 GHz Low Cost Earth Terminal for Direct TV Reception from Broadcast Satellites (1977 [MWSYM])

R.J. Douville. "A 12 GHz Low Cost Earth Terminal for Direct TV Reception from Broadcast Satellites (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 427-429.

A low-cost 12 GHz receiver for TV reception from high power broadcast satellites is described. The system uses a 1.2m antenna with a high efficiency feed positioned at the focus. The front end, mounted behind the feed, consists of an image-enhanced mixer, followed by a low noise amplifier. The 1.2 GHz IF output is fed to an indoor unit which uses SAW devices both for filtering and FM demodulation at 70 MHz. Audio and video receiver outputs go directly to the baseband circuitry of a standard TV receiver.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Cost-Effective Modular Down Converter for S-Band WEFAX Reception

H.P. Shuch. "A Cost-Effective Modular Down Converter for S-Band WEFAX Reception." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 430-432.

The relocation of weather satellite facsimile downlinks from VHF into S-band has generated a requirement for reliable, low cost microwave receiving equipment. This paper explores many of the design trade-offs encountered in developing one such receiver system.



IEEE

Contents

Publications

Issues

Papers

Authors

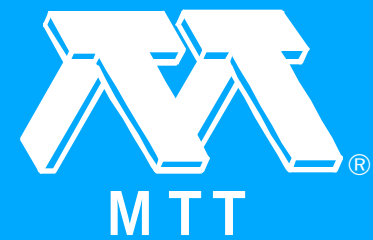
Click on title for a complete paper.



Abstracts

Session D5 -- Waveguides and Transmission Lines

"Session D5 -- Waveguides and Transmission Lines." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 433-433.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Q Factors of Free and Shielded Cylindrical Dielectric Resonators

P. Guillon and Y. Garault. "Q Factors of Free and Shielded Cylindrical Dielectric Resonators." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 434-437.

In this paper, the radiation quality factor of cylindrical dielectric resonators has been evaluated by solving the characteristic equation of the chosen mode in the complex plane. In all cases this Q factor is too low for practical applications. So in order to prevent the losses by radiation we enclose the dielectric resonator in a metallic cylindrical shield. For such a geometry the unloaded quality factor of the shielded resonator has been calculated.



Abstracts

Radiation from Triangular and Circular Resonators in Microstrip

M. Cuhaci and D.S. James. "Radiation from Triangular and Circular Resonators in Microstrip." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 438-441.

For the fundamental mode, experimental results reveal a slightly higher radiation Q-factor for the triangular microstrip resonator than for the corresponding circular geometry. Theoretical results have been computed for the triangle case. Radiation patterns and interesting circuit applications for the triangle resonator have also been investigated.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theoretical Analysis of a Ridged-Waveguide Mounting Structure

S. Mizushina, N. Kuwabara and H. Kondoh. "Theoretical Analysis of a Ridged-Waveguide Mounting Structure." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 442-444.

The driving-point impedance of a single-gap thin conductor strip, a model of the ribbon-and-pedestal of device package, mounted across the gap of a ridged waveguide has been derived using the induced EMF method. The dyadic Green's function for the ridged waveguide was derived to facilitate the analysis. An equivalent circuit was developed which involved an infinite array of transformers representing the couplings between the conductor strip and the waveguide normal modes. Numerical results for a typical example were also given, demonstrating a remarkably smooth behavior of the driving-point impedance of the mount over a frequency range from 5.4 GHz to 25.4 GHz.

[Click on title for a complete paper.](#)



Abstracts

Analysis of Waveguide Junctions by Rank Reduction

D.N. Zuckerman and P. Diament. "Analysis of Waveguide Junctions by Rank Reduction." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 445-448.

A new low-rank spectral expansion technique for solving intractable equations obtained from waveguide equivalence theorem decompositions is illustrated for a hybrid junction. The technique takes into account higher-order modes and eliminates spurious resonances.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Fields in Nonuniform Transmission Lines

P.A. McGovern. "Fields in Nonuniform Transmission Lines." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 449-452.

Baseband waves in nonuniform transmission lines are analyzed by a perturbation procedure emphasizing one-dimensional axial propagation. Successive orders of approximation generate both localized fields and new waves propagating out from nonuniform regions.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Propagating Modes Along a Thin Wire Located Near a Grounded Dielectric Slab (1977 [MWSYM])

E.F. Kuester and D.C. Chang. "Propagating Modes Along a Thin Wire Located Near a Grounded Dielectric Slab (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 453-455.

The mode supported by a wire located parallel to a grounded dielectric slab are investigated. While at low frequencies, a "quasi-TEM" behavior is exhibited, it is shown numerically that under certain conditions, a very different "surface-attached" character appears. These results indicate the possibility of similar behavior occurring in the related configuration of open microstrip.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The Electromagnetic Fields and the Phase Constants of Dielectric Image Lines (1977 [MWSYM])

K. Solbach and I. Wolff. "The Electromagnetic Fields and the Phase Constants of Dielectric Image Lines (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 456-458.

A method is described for the exact calculation of the field distributions and the phase constants of single and coupled dielectric image lines. The theoretical results have been proved by experiments with dielectric image lines fabricated of casting resins.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Analysis of Dispersion in Arbitrarily Configured Dielectric-Loaded Transmission Structures

A.K. Ganguly and B.E. Spielman. "Analysis of Dispersion in Arbitrarily Configured Dielectric-Loaded Transmission Structures." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 459-462.

An accurate solution to the problem of wave propagation along arbitrarily-configured transmission media composed of conductors and/or inhomogeneous dielectrics is presented. The solution is available in the form of a digital computer program, which yields computed cutoff frequencies and dispersion characteristics for both fundamental and higher-order modes. Sample calculations are presented for shielded microstrip, to illustrate the validity of the analysis, and channelized suspended microstrip. The solution approach presented is distinctive in its ability to easily treat complicated, salient features of arbitrary cross sections, as is typified by the channel in the suspended-microstrip example.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Infrared Detection of Surface Charge and Current Distributions

R.W. Burton and J.D. Selim. "Infrared Detection of Surface Charge and Current Distributions." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 463-466.

A technique has been devised using infrared detection of I²R heating of conducting materials to determine the surface charge and current distributions on various objects. The measurement process is explained and comparisons between experimentally determined and actual charge and current distributions are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

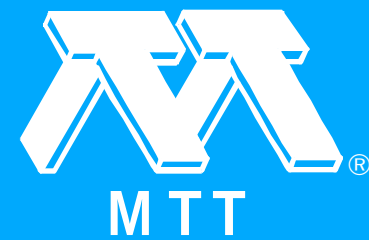
Click on title for a complete paper.



Abstracts

Session A6 -- Low Noise Components and Techniques

"Session A6 -- Low Noise Components and Techniques." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 467-467.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Low Noise and Linear FET Amplifiers for Satellite Communications

P. Mercer, D.A. Cowan and A.B. Bell. "Low Noise and Linear FET Amplifiers for Satellite Communications." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 468-471.

FET Amplifiers with ambient noise figures as low as 4.8 dB at 12 GHz, 35 dB gain and intercept points as high as +28 dBm have been developed for use in communications satellites. Predicted mean time to failure is in excess of 10^6 hours.



MTT



IEEE

[Contents](#)

[Publications](#)

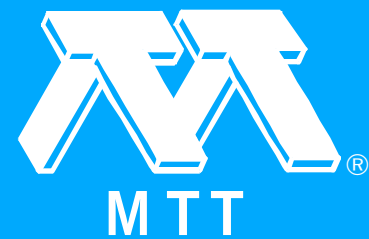
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

An Environmentalized Low-Noise Parametric Amplifier (1977 [MWSYM])

E.C. Niehenke. "An Environmentalized Low-Noise Parametric Amplifier (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 472-475.

A 14 oz, low noise, X-band parametric amplifier has been developed for an airborne environment (-55° to +71°C). This unit exhibits a 1.8 dB noise figure at 10 GHz and, at 18 dB peak gain, a 3 dB single-tuned bandwidth of 230 MHz that is electronically tunable over 700 MHz. A 1 dB gain compression occurs at -27 dBm input power. Performance is achieved through use of unique upper sideband terminated circuitry and a new low-parasitic, hermetic varactor package.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Broadbanding an Electronically Switched Two-Channel Ka-Band Parametric Amplifier

S. Nussbaum and E. Sard. "Broadbanding an Electronically Switched Two-Channel Ka-Band Parametric Amplifier." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 476-479.

A technique using realizable waveguide networks to broadband an electronically switched, dual-channel, Ka-band parametric amplifier has been developed. A waveguide network producing a controlled resonant susceptance slope at two frequency bands, separated by 1.14 GHz, has been built to accomplish broadbanding of each channel independently. An amplifier gain of 18 dB over a bandwidth greater than 100 MHz, and a noise figure of 3.6 dB were achieved at each channel.

[Click on title for a complete paper.](#)

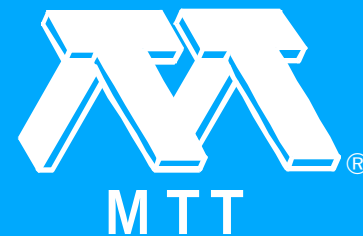


Abstracts

Low Noise Octave Bandwidth Waveguide Mixer

L.T. Yuan. "Low Noise Octave Bandwidth Waveguide Mixer." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 480-482.

A new broadband mixer capable of operating over two full adjacent waveguide bands (18 to 26.5 GHz and 26.5 to 40 GHz) is described. The maximum conversion loss is 6.5 dB from 20 to 40 GHz with a corresponding average DSB noise figure of 5.7 dB.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Analysis of Noise in Room-Temperature Millimeter-Wave Mixers

D.N. Held and A.R. Kerr. "Analysis of Noise in Room-Temperature Millimeter-Wave Mixers." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 483-486.

Noise in room-temperature millimeter-wave mixers consists almost entirely of shot and thermal noise generated by the mixer diode. The shot noise is shown to have down-converted components which are correlated with one another. This correlation explains the previously observed "anomalous" noise in millimeter-wave mixers.



IEEE

Contents

Publications

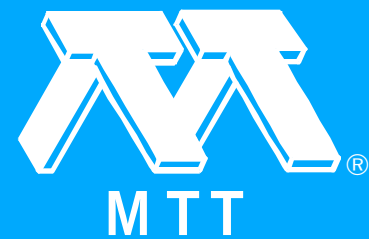
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Image Conversion Effects in Diode Mixers

M.E. Hines. "Image Conversion Effects in Diode Mixers." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 487-490.

A time-domain technique is presented for the analysis of mixers. Three simple circuit models using "ideal diodes" have been analyzed exactly, yielding values for their optimum impedance conditions and expressions for the conversion coefficients for all small-signal first-order conversion products. Some new physical insights are obtained. Without image rejection, 3.92 dB conversion loss is the minimum for an untuned mixer, 3.36 dB with single-stub tuning, and 3.0 dB with resonator tuning. For the optimum bias level and IF impedance, no image signal is generated in any of these cases. With an image band-stop filter, lower conversion loss is predicted when the impedances are changed, but, the improvement predicted is small unless the conversion loss without the image filter can approach 3.0 dB.

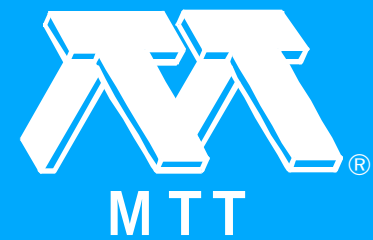
[Click on title for a complete paper.](#)



Abstracts

Session B6 -- Passive Components

"Session B6 -- Passive Components." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 491-491.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Experimental Attenuation of Rectangular Waveguides at Millimeter-Wavelengths (1977 [MWSYM])

F.J. Tischer. "Experimental Attenuation of Rectangular Waveguides at Millimeter-Wavelengths (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 492-494.

Experimental values of attenuation between 25 and 200 GHz, DC values of conductivity, temperature effects, size effects, and surface roughness were measured and carefully evaluated. Excess ratios of attenuation due to the above effects were formulated and determined.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

High Directivity CTL-Couplers and a New Technique for the Measurement of CTL-Coupler Parameters (1977 [MWSYM])

S. Rehnmark. "High Directivity CTL-Couplers and a New Technique for the Measurement of CTL-Coupler Parameters (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 495-498.

A very powerful method to measure the parameters of a one-section Coupled Transmission Line (CTL) coupler is presented. Three transmission measurements at the frequency of maximum coupling is sufficient to give the even and odd mode impedances (Z_{e} , Z_{o}) and the even and odd mode lengths (Θ_{e} , Θ_{o}). Explicit equations are presented for the necessary calculations. A new method for wideband improvement of CTL-coupler directivity when $\Theta_{\text{e}}/\text{spl ne}/\Theta_{\text{o}}$ has been developed. The theory is presented with all necessary equations and it covers both $\Theta_{\text{e}} > \Theta_{\text{o}}$ (microstrip) and $\Theta_{\text{e}} < \Theta_{\text{o}}$. The new method makes use of short compensating sections in the coupler to achieve a directivity pole at an arbitrary frequency. The wanted bandwidth determines the optimum location of the pole. Several examples with design data are given.

Click on title for a complete paper.



Abstracts

A Broadband Planar N-Way Combiner/Divider

Z. Galani and S.J. Temple. "A Broadband Planar N-Way Combiner/Divider." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 499-502.

The experimental and predicted performance of the new broadband planar N-way combiner/divider is presented. The advantage of this combiner/divider over those previously published is that it can be realized in a planar structure. Experimental data on the planar combiner/divider for $N=4$ and $N=7$ indicates an average isolation of 20 dB between the N ports from 8 to 12 GHz, and compares favorably with analytic predictions.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

New N-Way Hybrid Power Dividers (1977 [MWSYM])

N. Nagai, E. Maekawa and K. Ono. "New N-Way Hybrid Power Dividers (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 503-505.

New n-way hybrid power dividers are synthesized by using M sections of n-wire coupled (or uncoupled) transmission-lines of equal length with isolation resistors which are connected among neighboring wires.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

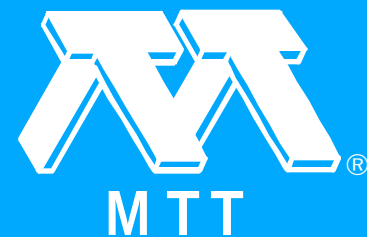


Abstracts

A New Odd Number N-Way Power Combiner/Divider

C.L. Chao. "A New Odd Number N-Way Power Combiner/Divider." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 506-510.

A new circuit configuration for odd number N-way power combiner/dividers is discussed, with emphasis on a planar microstrip structure. Theoretical results and experimental confirmation are included for a variety of odd number power divisions.



IEEE

Contents

Publications

Issues

Papers

Authors

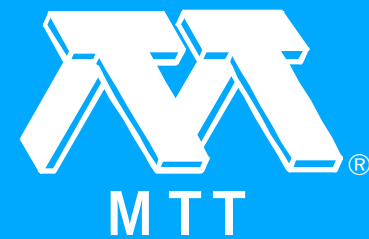
Click on title for a complete paper.



Abstracts

Session C6 -- Ferrites

"Session C6 -- Ferrites." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 511-511.



[Contents](#)

[Publications](#)

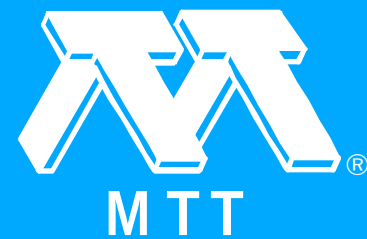
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Canonical Representation and Figure of Merit of Circulator

K. Araki and Y. Naito. "Canonical Representation and Figure of Merit of Circulator." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 512-515.

Proposing a canonical representation, valid for analysis and synthesis, of circulator, the paper also attempts to prove the circulator's figure of merit to be invariant under an arbitrary lossless reciprocal and cyclic-symmetry imbedding.

[Click on title for a complete paper.](#)



Abstracts

Diplexer and Broadbanding Operations of Stripline Y-Junction Circulators

T. Nagao. "Diplexer and Broadbanding Operations of Stripline Y-Junction Circulators." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 516-518.

Diplexer and broadbanding operations of stripline Y-junction circulators are reported. The former is realized, involving a combination of positive-sense and negative-sense circulations, in the Y-junction loaded with conductor-ferrite composites. The latter is performed with conductor-dielectric-ferrite composites. The frequency band, changeable with a biasing magnetic field, reached 45 percent in the experiment when four circulations were put into use. These operations are treated only above resonance.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The Modal Spectrum of Ferrite-Loaded Striplines

D.M. Bolle. "The Modal Spectrum of Ferrite-Loaded Striplines." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 519-522.

This paper presents the latest results of a theoretical investigation into the full modal spectrum of those ferrite-loaded planar waveguiding structures which represent the device geometries employed in broad-band stripline isolators and circulators.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Longitudinally Magnetized Ferrite Phase Shifters Using a Reduced Height Rectangular Waveguide

B.C.S. Lint and A. Priou. "Longitudinally Magnetized Ferrite Phase Shifters Using a Reduced Height Rectangular Waveguide." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 523-525.

A new reciprocal ferrite phase-shifter in 4 millimeter wavelength is described. This electronically controlled phaser uses a reduced height rectangular waveguide and the ferrite material is longitudinally magnetized. A theoretical approach of the problem from the coupled-mode formalism is elaborated. The first performances of a 90° phaser element at 70 GHz are obtained with 1.5 db maximum insertion loss and a VSWR < 1.5. That corresponds to a figure of merit equal to 60 deg/db. The measured characteristics of the phaser show good agreement with computational values.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Band Stop Filter Using LPE-YIG Films

T.-L. Tsai and J. Sethares. "Band Stop Filter Using LPE-YIG Films." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 526-527.

Current injection into flat ribbon strips adjacent to YIG films provides rapid linear tuning and low insertion loss band-stop filters on a planar structure. Results show promise for high frequency hopping devices over a fairly wide bandwidth.



[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

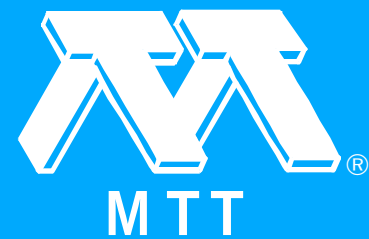
A High Power X-Band Frequency Selective Passive YIG Limiter

S.N. Stitzer, P.S. Carter, Jr. and H. Goldie. "A High Power X-Band Frequency Selective Passive YIG Limiter." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 528-531.

This paper describes a multistage frequency-selective power limiter in which the limiting takes place in three tandem connected stages. The diameters of the YIG sphere power limiting elements used in each stage are optimized for sharpest selectivity, lowest threshold, and widest dynamic range. The passive YIG limiter provides 28 dB of dynamic range, will handle up to 3 watts CW, has a 1 percent bandwidth in X-band and a below threshold loss of 1.7 dB. Limited output power is under 5 milliwatts; third order intermodulation products at the output are better than 20 dB down from a 0 dBm in-band signal beating with a second in-band signal of +33 dBm. The device has application to high power FW/CW monostatic radars when simultaneous transmission and reception is required, RF signal leveling, ordinary limiting, and protection of communications receivers from strong RF signals without causing loss of reception during the overload period.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave Applications of Thin Magnetic Resistive Sheets

K. Suetake, Y. Shimizu, Y. Kotsuka, K. Ishino and Y. Hashimoto. "Microwave Applications of Thin Magnetic Resistive Sheets." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 532-536.

A magnetic resistive sheet -- a ferrite tile backed with a metal foil or plate -- is recognized as a new type lossy device in the microwave field. Its new applications -- absorbing wall, matched loads, attenuators and line filter -- are introduced in this paper, especially very thin microwave absorbers (1.7mm in thickness, with V.S.W.R. ≤ 1.2 , in 8.6 - 10.2 GHz) and a novel variable coaxial attenuator are presented.

[Click on title for a complete paper.](#)



Abstracts

Session D6 -- Antennas and Components

"Session D6 -- Antennas and Components." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 537-537.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Leaky-Wave Antenna and Band-Reject Filter for Millimeter-Wave Integrated Circuits

T. Itoh. "Leaky-Wave Antenna and Band-Reject Filter for Millimeter-Wave Integrated Circuits." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 538-541.

Grating structures fabricated in inverted strip dielectric waveguide have for the first time been used as millimeter-wave leaky-wave antennas and band-reject filters. Experimental results agree reasonably well with theoretical predictions.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Millimetre-Wave Insular Guide Frequency Scanned Array

N. Williams, A.W. Rudge and S.E. Gibbs. "Millimetre-Wave Insular Guide Frequency Scanned Array." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 542-544.

The paper describes the design construction and experimental evaluation of a novel frequency scanning linear array. Dielectric image-line is used to provide a compact low-loss feed network which is integrated with dielectric-rod antenna radiators to produce arrays which are well suited for applications at frequencies above 20GHz.

[Click on title for a complete paper.](#)



Abstracts

2 GHz Feed for Horn-Reflector Antenna Utilizing Evanescent Mode Filter

C.-L. Ren and H.-C. Wang. "2 GHz Feed for Horn-Reflector Antenna Utilizing Evanescent Mode Filter." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 545-546.

A network is described which is capable of coupling 2 GHz frequencies into the horn-reflector antenna used with the existing 4, 6 and 11 GHz radio systems without disturbing their performance. The use of the 2 GHz band is an economically attractive solution to communication congestion near urban areas.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Propagation and Radiation Behaviour of Dielectric Coated E-Plane Sectoral Horn

A.K. Kamal, S.C. Gupta and R.A. Nair. "Propagation and Radiation Behaviour of Dielectric Coated E-Plane Sectoral Horn." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 547-549.

The analytical and experimental results of the radiation behaviour of an improved feed system with increased directivity, greater gain and low sidelobe levels consisting of a dielectric coated E-plane sectoral horn are reported. The characteristic equation for the separation constant for the HE/sub 1P/ mode is obtained and the radiation characteristics with power gain for the system are derived for HE/sub 11/ mode excitation. Analytical results are established by good agreement with experiments. Results of the experimental investigations in further improving the radiation characteristics of the dielectric coated E-plane sectoral horn using dielectric spheres are also included.

Click on title for a complete paper.



Abstracts

Reduction of Rain-Crosspolarization by its Dependence on Polarization Directions

L.-s. Lee. "Reduction of Rain-Crosspolarization by its Dependence on Polarization Directions." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 550-553.

Reduction of rain-induced crosspolarization is vital if system designers are to fully exploit frequency reuse. In this paper, a new method is developed for determining the expected crosspolarization level as a function of the polarization directions. It is also shown that we can reduce the crosspolarization by rotating the polarization angles between two fixed angles according to the wind directions.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Index of Authors (1977 [MWSYM])

"Index of Authors (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 554-556.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

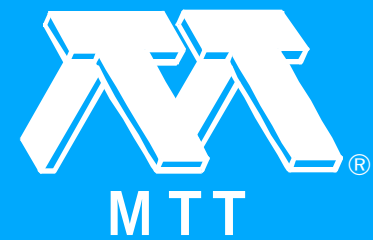
Click on title for a complete paper.



Abstracts

Exhibition Guide (1977 [MWSYM])

"Exhibition Guide (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): 558-561.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (1977 [MWSYM])

"Back Cover (1977 [MWSYM])." 1977 MTT-S International Microwave Symposium Digest 77.1 (1977 [MWSYM]): b1-b1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

