

**IEEE TRANSACTIONS ON
MICROWAVE THEORY
AND TECHNIQUES**

MARCH 1977

VOLUME MTT-25

NUMBER 3

A PUBLICATION OF THE IEEE MICROWAVE THEORY AND TECHNIQUES SOCIETY



ACCENT ON THEORY

PAPERS

Analysis of Waveguide Post Configurations: Part I—Gap Immittance Matrices . . .	<i>J. S. Joshi and J. A. F. Cornick</i>	169
Analysis of Waveguide Post Configurations: Part II—Dual-Gap Cases	<i>J. S. Joshi and J. A. F. Cornick</i>	173
Double Circulation Frequency Operation of Stripline Y-Junction Circulators	<i>T. Nagao</i>	181
Waveguide Subsidiary Resonance Ferrite Limiters	<i>J. Helszajn, R. W. Murray, E. G. S. Davidson, and R. A. Suttie</i>	190
Dispersion Characteristics of the Dipolar Modes in a Waveguide Partially Filled with a Magnetized Ferrite Column	<i>S. Le-Ngoc, G. L. Yip, and S. Nemoto</i>	197
Interaction of Signals in Ferromagnetic Microwave Limiters	<i>P. R. Emtage and S. N. Stitzer</i>	210
Computer-Aided Synthesis of the Optimum Refractive-Index Profile for a Multimode Fiber	<i>K. Okamoto and T. Okoshi</i>	213

SHORT PAPERS

Propagation in Circular Waveguide Loaded with an Azimuthally Magnetized Ferrite Tube	<i>O. Parriaux and F. E. Gardiol</i>	221
Behavior of the Magnetostatic Wave in a Periodically Corrugated YIG Slab	<i>M. Tsutsumi, Y. Sakaguchi, and N. Kumagai</i>	224
On the Theory and Application of the Dielectric Post Resonator	<i>M. W. Pospieszalski</i>	228

LETTERS

Design of Coupled Microstrip Lines	<i>S. D. Shamasundara and N. Singh</i>	232
The Resonant Frequency of a Narrow-Gap Cylindrical Cavity	<i>H. E. Green</i>	233
Evaluation of MTT TRANSACTIONS (1976)	<i>M. E. Hines</i>	234
Correction to "Different Representations of Dyadic Green's Functions for a Rectangular Cavity"	<i>P. Rozenfeld</i>	235

CONTRIBUTORS 236

CALL FOR PAPERS

Special Issue on Microwaves in Medicine, with Accent on the Application of Electromagnetics to Cancer Treatment	
.....	<i>A. W. Guy</i> 238



IEEE MICROWAVE THEORY AND TECHNIQUES SOCIETY

The Microwave Theory and Techniques Society is an organization, within the framework of the IEEE, of members with principal professional interest in the field of microwave theory and techniques. All members of the IEEE are eligible for membership in the Society and will receive this TRANSACTIONS upon payment of the annual Society membership fee of \$8.00. Affiliate membership is available upon payment of the annual affiliate fee of \$20.00. For information on joining write to the IEEE at the address below.

ADMINISTRATIVE COMMITTEE

L. R. WHICKER, *President*

H. SOBOL, *Vice President*

B. E. SPIELMAN, *Secretary-Treasurer*

S. F. ADAM

J. E. DEGENFORD, JR.

H. G. OLTMAN, JR.

F. J. ROSENBAUM

J. L. ALLEN

J. B. HORTON

D. PARKER

H. E. SCHRANK

J. C. AUKLAND

F. H. HOWE

R. A. RIVERS*

R. A. SPARKS

K. J. BUTTON

E. L. KOMAREK

G. P. RODRIGUE*

H. E. STINEHELPER, JR.

H. W. COOPER*

H. J. KUNO

C. T. RUCKER

* *Ex officio (past chairmen)*

Honorary Life Members

A. C. BECK

W. W. MUMFORD

K. TOMIYASU

National Lecturer

D. D. KING

T. S. SAAD

F. STERZER

J. M. OSEPCHUCK

S-MTT Chapter Chairmen

Albuquerque

C. BAUM

India

D. P. SETH

Portland

P. P. FASANG

Atlanta

N. W. COX

NY/Long Island

A. J. KELLY

Princeton

R. L. CAMISA

Baltimore

T. M. NELSON

Los Angeles Council

H. POMERANZ

St. Louis

R. H. GLAENZER

Boston

C. P. HARTWIG

Milwaukee

J. H. BATTOCLETTI

San Diego

G. SCHAFFNER

Boulder-Denver

J. W. HART

Montreal

M. NACHMAN

Santa Clara V./O-EB/SF

L. BESSER

Central Illinois

B. E. CHERRINGTON

N. J. Coast

L. G. COHEN

Schenectady

R. J. GUTMANN

Chicago

J. P. PHILLIPS

North Jersey

E. W. NIEMIEC

Seattle

G. L. MITCHELL

Columbus

R. G. KOUYOUMJIAN

Orange County

J. C. AUKLAND

S. E. Michigan

W. J. FLEMING

Dallas

D. N. MCQUIDDY, JR.

Orlando

D. N. BOWYER

Syracuse

H. SCHUMAN

Florida West Coast

W. C. HEIHAUS

Ottawa

D. S. JAMES

Tel Aviv

Y. HIPSH

Houston

S. A. LONG

Philadelphia

J. J. CAMPBELL

Tokyo, Japan

T. MAKIMOTO

Huntsville

M. D. FAHEY

Phoenix

G. D. BRUNNER

Washington, DC

B. SHELEG

IEEE TRANSACTIONS® ON MICROWAVE THEORY AND TECHNIQUES

Editor

D. PARKER

H. G. OLTMAN, JR.
(Applications)

J. E. DEGENFORD, JR.
(Business Editor)

Associate Editors

B. PERLMAN
(Computer Program
Descriptions)

M. CAULTON
(Special Issues)

T. OKOSHI
(Abstracts Editor—Asia)

H. E. SCHRANK
(Institutional
Listing)

Address all manuscripts to the Editor, D. Parker, Stanford Res. Inst., Building 44, 333 Ravenswood Ave., Menlo Park, CA 94025. Submission of three copies of manuscripts, including figures, will expedite the review. **Publication Policy:** All papers will be reviewed for their technical merit, and decisions to publish will be made independently of an author's ability or willingness to pay page charges. Voluntary page charges of \$70 per printed page will be requested for papers of five pages or less. Page charges of \$100 per page are mandatory for each page in excess of five printed pages. Also, the MTT-S Administrative Committee has established a quota for the number of pages printed in each issue of this TRANSACTIONS whose costs are not defrayed by payment of page charges. Papers not covered by page charges may be delayed until space in an issue is available. The Editor can waive the quota requirement for exceptional papers or because of other extenuating circumstances.

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

Officers

JOSEPH K. DILLARD, *President*

ROBERT F. COTELLESA, *Executive Vice President*

BURKHARD H. SCHNEIDER, *Secretary-Treasurer*

ROBERT F. BRISKMAN, *Vice President, Technical Activities*

JAMES H. MULLIGAN, JR., *Vice President, Professional Activities*

IRENE C. PEDEN, *Vice President, Educational Activities*

ROBERT M. SAUNDERS, *Vice President, Regional Activities*

JEROME J. SURAN, *Vice President, Publication Activities*

Headquarters Staff

HERBERT A. SCHULKE, JR., *General Manager*

THOMAS W. BARTLETT, *Controller*

DONALD CHRISTIANSEN, *Editor of Spectrum*

RICHARD M. EMBERSON, *Staff Director, Educational, Field,
Standards, and Technical Services*

ELWOOD K. GANNETT, *Staff Director, Publishing Services*

JOHN M. KINN, JR., *Staff Director, Professional Services*

CHARLES F. STEWART, JR., *Senior Staff Director*

Publications Department

H. JAMES CARTER, *Manager, Publication Production*

Supervisors, Publication Production: ANN H. BURGMAYER, CAROLYN ELENOWITZ, GAIL S. FERENC*

Associate Editors: LINDA GRADY-TROIA, PRIJONO HARDJOWIROGO, CASIMIR PSUJEK, CLARA ZAPITI

* *Responsible for this Transactions.*

IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES is published monthly by The Institute of Electrical and Electronics Engineers, Inc. **Headquarters:** 345 East 47 Street, New York, NY 10017. Responsibility for the contents rests upon the authors and not upon the IEEE, the Society, or its members. **IEEE Service Center** (for orders, subscriptions, address changes): 445 Hoes Lane, Piscataway, NJ 08854. **Telephones:** Headquarters 212-644 + extension: Information -7900, General Manager -7910, Controller -7748, Educational Services -7860, Publishing Services -7560, Region/Section Services -7750, Technical Services -7890. IEEE Service Center 201-981-0060. Washington Office/Professional Services 202-785-0017. Individual copies: IEEE members \$5.00 (first copy only), nonmembers \$10.00 per copy. Annual subscription price: IEEE members, dues plus Society fee. Price for nonmembers on request. Available in microfiche and microfilm. Abstracting is permitted with mention of source. For republication permission write to Director, Publishing Services at IEEE Headquarters. All rights reserved. Copyright © 1977 by The Institute of Electrical and Electronics Engineers, Inc. Printed in U.S.A. Second-class postage paid at New York, NY and at additional mailing offices.