

1973 Index

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This index covers all items—papers, correspondence, reviews, etc.—that appeared in this periodical during 1973, and items from prior years that were commented upon or corrected in 1973. The index is divided into an Author Index and a Subject Index, both arranged alphabetically.

The *Author Index* contains the primary entry for each item; this entry is listed under the name of the first author and includes coauthor names, title, location of the item, and notice of corrections and comments if any. Cross-references are given from each coauthor name to the name of the corresponding first author. The location of the item is specified by the journal name (abbreviated), year, month, inclusive pages, and microfiche code. [The microfiche code, given in parentheses following the inclusive pages, consists of four characters to be interpreted as follows: the first character identifies the microfiche number within the set of fiches for the issue; the second character identifies the row in which the first frame of the particular item is located; and the last two characters designate the position of that frame within the row.]

The *Subject Index* contains several entries for each item, each consisting of a subject heading, modifying phrase(s), first author's name, and location of the item. For information on coauthors, title, comments and corrections if any, etc., it is necessary to refer to the Author Index. Some generic subject headings are used in this index in addition to the usual technical headings, e.g., *Books* (books reviewed in this periodical), *Bibliographies* (both papers that are bibliographies and any other papers which contain more than 50 references), *Conferences* (technical meetings a substantial number of whose abstracts or papers have appeared in this periodical), and *Special Issues* (issues of this periodical devoted primarily to a specific subject). The Subject Index includes subject cross-references as required by the subject matter.

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- planar microwave networks; finite-element analysis. *Silvester, Peter, T-MTT 73 Feb 104-108 (1E02)*
- Distributed networks; cf. Distributed-lumped networks**
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- Dosimeters**
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- Electromagnetic propagation in plasmas**
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- conducting strip above dielectric-coated conducting plane surface waveguide; impedance and scattering properties. *Gillespie, Edmond A., T-MTT 73 Jun 413-419 (2B02)*
- lossy dielectric spheres; resonances and Q -factors calculated using Mie scattering theory. *Affolter, Peter, T-MTT 73 Sep 573-578 (1B03)*

- numerical solution; least-squares boundary residual method. *Davies, J. Brian, T-MTT 73 Feb 99-104 (1D09)*
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- with piezoelectric surface waves; signal processing applications. *Bert, Alain G., T-MTT 73 Apr 255-263 (2E04)*
- Electron emission**
- microwave dosimetry; thermally stimulated exoelectron emission response of high-dielectric-constant materials after exposure to microwave radiation. *Elle, Donald R., T-MTT 73 Dec 836-837 (3B04)*
- Elliptical waveguides**
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- Faraday effect**
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- FDM**
- abbr. of Frequency-division multiplexing
- FDM systems**
- 20-GHz radio relay system; channel multiplexing-demultiplexing networks. *Ohtomo, Isao, T-MTT 73 Jul 492-494 (2B11)*
- Ferrite circulators**
- lumped-element circulator for 4 GHz region; compatible with integrated circuits. *Knerr, Reinhard H., T-MTT 73 Mar 150-151 (1D08)*
- S-band high-power Y junction circulator; 800-kW peak power and 800-W average power. *Stern, R. A., T-MTT 73 Dec 840-842 (3B07)*
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- waveguide and stripline 4-port single-junction circulators; modal and eigenvalue analysis. *Helszajn, Joseph, T-MTT 73 Oct 630-633 (1D08)*
- waveguide junction circulators; exact field theory treatment. *El-Shundwily, M. Ezzat, T-MTT 73 Jun 392-403 (1D02)*
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- coaxial line filled with ferrite; sufficient conditions for quasi-TEM mode. *Weiner, Melvin M., T-MTT 73 Mar 156-157 (1E02)*
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- phase shifters; two-meander line on ferrite substrate. *Libbey, Waldo M., T-MTT 73 Jul 483-487 (2B02)*
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- Ferrite phase shifters**
- circular waveguide loaded with two ferrite toroids circumferentially magnetized at remanence in opposite direction. *Bernues, F. J., T-MTT 73 Dec 842-845 (3B09)*
- latching phase shifter in rectangular guide; phase shift and loss calculation. *Gardiol, Fred E., T-MTT 73 Jan 57-61 (2B10)*
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- FETs; cf.** MESFETs
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- Filters; cf.** Acoustic surface-wave filters; Distributed filters; Matched filters; Microwave filters; Transversal filters; UHF filters; VHF filters
- Finite-difference methods; cf.** Relaxation methods
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- planar microwave networks; admittance matrix calculation. *Silvester, Peter, T-MTT 73 Feb 104-108 (1E02)*
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- matching lossless reciprocal 5-port junctions; restrictions imposed by losslessness and reciprocity. *Hieber, A. L., T-MTT 73 Aug 547-552 (2B05)*
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- IMPATT power amplifiers; two-stage amplifier with 4-W output at 6 GHz. *Willing, Harry A., T-MTT 73 Nov 707-716 (2B01)*
- FM noise**
- Gunn oscillators; FM noise shown to vary inversely with external Q of resonant circuit. *Herbst, H., T-MTT 73 Feb 114-115*
- Focusing; cf.** Millimeter-wave focusing
- Frequency conversion**
- S-band to Ku-band converter; integrated circuit using varactor. *Bura, P., T-MTT 73 Mar 136-137 (1C06)*
- Frequency conversion; cf.** Mixers
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- Frequency multipliers**
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- IMPATT reflection amplifiers; dependence of amplifier properties on device material, doping profile, and operating conditions. *Laton, Richard W., T-MTT 73 Nov 668-680 (1C02)*
- LSA reflection amplifier at 9.5 GHz; GaAs diode oscillating in LSA mode with gain at frequency not harmonically related to fundamental frequency. *Lidgey, F. John, T-MTT 73 Nov 736-738 (2D06)*
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- IEEE Microwave Theory and Techniques Society**
- 1973 International Microwave Symposium; report on activities. *Watt, David F., T-MTT 73 Dec 747-751 (1B04)*
- 1973 National Lecture on solid-state reliability. *Allen, John L., T-MTT 73 Dec 752 (1B09)*
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5-port lossless reciprocal waveguide junctions; restrictions imposed by losslessness and reciprocity. *Hieber, A. L., T-MTT 73 Aug 547-552 (2B05)*

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tapered transmission lines; design equations for large transformation ratios. *Kajfez, Darko, T-MTT 73 May 364 (1F06)*

Impedance measurement: cf. Scattering parameters measurement**Impedance transformers: cf. Impedance matching****Indium antimonide devices**

magnetoplasma reflection-beam isolators for submillimeter wavelengths using Kerr magneto-optic effect in InSb; performance at 118 μm and 337 μm . *Kanda, Mothisa, T-MTT 73 Dec 786-790 (1E07)*

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magnetoplasma reflection-beam isolators for submillimeter wavelengths using Kerr magneto-optic effect in InSb; performance at 118 μm and 337 μm . *Kanda, Mothisa, T-MTT 73 Dec 786-790 (1E07)*

Inhomogeneous: cf. Nonhomogeneous**Injection-locked oscillators: cf. Phase-locked oscillators****Integral equations**

capacitance calculation for three-dimensional multiconductor systems; efficient computation technique. *Ruehli, Albert E., T-MTT 73 Feb 76-82 (1B10)*

Integral equations: cf. Variational techniques**Integrated circuits: cf. Integrated optics; Microwave integrated circuits****Integrated optics**

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periodic structures; coupled-mode analysis of components using periodic structures. *Chang, William S. C., T-MTT 73 Dec 775-785 (1D08)*

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IMPATT stable amplifiers; intermodulation distortion reduction using diode bias-current compensation method. *Komizo, Hidemitsu, T-MTT 73 Nov 721-728 (2C03)*

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Irises: cf. Waveguide discontinuities**Isolators: cf. Optical isolators; Plasma isolators****J**

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cascade of two-port networks connected by transmission lines; design procedure. *Levy, Ralph, T-MTT 73 Aug 519-526 (1C05)*

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circular disk on dielectric substrate; capacitance. *Itoh, Tatsuo, T-MTT 73 Jun 431-432 (2C08)*

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4 GHz circulator using beam-crossover technology; compatible with integrated circuits. *Knerr, Reinhard H., T-MTT 73 Mar 150-151 (1D08)*

M**Magneto-optic Kerr effect**

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microstrip; bandpass characteristics of single meander line; two-meander ferrite phase shifter. *Libbey, Waldo M., T-MTT 73 Jul 483-487 (2B02)*

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traveling-wave transistor composed of MESFET and transferred-electron traveling-wave amplifier; broadband performance in 8-18 GHz range. *Dean, Raymond H., T-MTT 73 Dec 805-809 (2C03)*

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conductivity measurement for films of thickness less than 100 Å; dc and microwave measurements using waveguide impedance method. *Chaurasia, H. K., T-MTT 73 Jan 51-52 (2B04)*

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dielectric constant of substrates; measurement technique. *Howell, John Q., T-MTT 73 Mar 142-143 (1C12) ♦*

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Microstrip couplers; cf. Microstrip directional couplers**Microstrip directional couplers**

T-junction discontinuity; effect on design of 3-dB branchline and rat-race couplers. *Vogel, R. W., T-MTT 73 Mar 145-146 (1D03)*

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right-angle bends; equivalent electrical length and additional capacitance. *Horton, R., T-MTT 73 Jun 427-429 (2C04)*

right-angle bends, T junctions, and crossings; discontinuity capacitances. *Silvester, Peter, T-MTT 73 May 341-346 (1D07)*

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irregular finite conductors on dielectric sheet; capacitance coefficients. *Patel, Parbhubhai D., T-MTT 71 Nov 862-869 (1C10) ♦*

meander lines; bandpass characteristics of single meander line; two-meander ferrite phase shifter. *Libbey, Waldo M., T-MTT 73 Jul 483-487 (2B02)*

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ring resonators; universal mode chart relating resonant frequency to ring width and circumference. *Wu, Y. S., T-MTT 73 Jul 487-489 (2B06)*

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Microwave amplifiers; cf. Avalanche diode amplifiers; IMPATT amplifiers;

Microwave transistor amplifiers; Parametric amplifiers; Phase-locked amplifiers; Reflection amplifiers; Transferred-electron amplifiers; Traveling-wave amplifiers; UHF amplifiers

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evanescent-mode waveguide filters; use in duplexers. *Mok, C. K., T-MTT 73 Jan 43-48 (1E09)*

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- Thermoluminescence**
microwave dosimetry; thermoluminescent and thermally stimulated exoelectron emission response of high-dielectric-constant materials after exposure to microwave radiation. *Elle, Donald R., T-MTT 73 Dec 836-837* (3B04)
- Thin-film circuits; cf.** Integrated optics
- Thin films; cf.** Metal films
- Three-port junctions**
quarter-wave coupled reciprocal 3-port symmetrical junctions for which eigennetwork appears as short-circuit at reference terminals; relation to class of 3-port circulators. *Helszajn, Joseph, T-MTT 73 Aug 533-537* (1D07)
- Time-domain measurements**
Gunn diode negative-conductance measurement by measuring envelope of transient amplitude of oscillations; validity of method. *Tomczawa, K., T-MTT 73 Sep 596-597* (1D02)
- Traffic control; cf.** Air-traffic control
- Transferred-electron amplifiers**
experimental study of stabilized amplifiers. *Talwar, Ashok K., T-MTT 73 Jul 477-481* (1E07)
package parasitics; effect on amplifier behavior. *Monroe, John W., T-MTT 73 Nov 731-735* (2D01)
traveling-wave transistor composed of MESFET and transferred-electron traveling-wave amplifier; broadband performance in 8-18 GHz range. *Dean, Raymond H., T-MTT 73 Dec 805-809* (2C03)
- Transferred-electron oscillators**
negative conductance of diode as function of microwave voltage; measurements and computer simulation studies. *Hartnagel, Hans L., T-MTT 73 Jul 468-477* (1D10)
post-mounted waveguide oscillators; distributed-lumped equivalent circuit for 12-18 GHz band. *Dean, Michael, T-MTT 73 Mar 121-127* (1B03)
quenched-domain mode oscillation in pulse-biased waveguide-mounted oscillators. *Curtice, Walter R., T-MTT 73 Jun 369-374* (1B03)
- Transferred-electron oscillators; cf.** Gunn oscillators
- Transformers; cf.** Impedance-matching networks
- Transistor amplifiers; cf.** Microwave transistor amplifiers
- Transistors; cf.** FETs
- Transitions; cf.** Stripline-waveguide transitions; Waveguide transitions
- Transmission-line discontinuities; cf.** Coaxial cable discontinuities; Microstrip discontinuities; Slot-line discontinuities
- Transmission-line filters**
bandpass filters having up to two attenuation poles at finite frequencies in stopband; half-wave parallel coupled-line filters. *Cristal, Edward G., T-MTT 72 Oct 696-699* (2B08) ♦
coaxial bandpass filters; discontinuity capacitances associated with abrupt change in center conductor diameter. *Giefing, A., T-MTT 73 Mar 135* (1C05)

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- sine-plane design procedure. *Pang, Khee K., T-MTT 73 Oct 607-611* (1B09)
- Transmission-line networks; cf.** Distributed networks
- Transmission lines; cf.** Coaxial waveguides; Coupled-strip transmission lines; Coupled transmission lines; Distributed networks; Meander lines; Microstrip lines; Multiconductor transmission lines; Nonlinear transmission lines; Nonuniform transmission lines; Slot lines; Striplines
- Transversal filters**
acoustic surface-wave filters; design of tapping structure that synthesizes in sampled form the impulse response of any specified transfer function. *Atzeni, Carlo, T-MTT 73 Aug 505-519* (1B03)
acoustic surface-wave filters; admittance formalism for derivation of performance characteristics. *Burgess, Alan S., T-MTT 73 Oct 611-618* (1C01)
- TRAPATT diodes**
 n^+p-p^+ and p^+n-n^+ silicon diodes; comparison of properties. *Haddad, George I., T-MTT 73 Jul 501-502* (2C08)
- Traveling-wave amplifiers**
transistor composed of MESFET and transferred-electron traveling-wave amplifiers; broadband performance in 8-18 GHz range. *Dean, Raymond H., T-MTT 73 Dec 805-809* (2C03)
- T-septum waveguides**
two propagating modes with same phase velocity; numerical solution using orthonormal block method and finite-element method. *Alexopoulos, N. G., T-MTT 73 Mar 157-158* (1E03)
- Tunnel-diode mixers**
self-oscillating mixers; conversion loss becomes infinite when oscillation magnitude is maximum. *Toker, Canan, T-MTT 73 Jun 430-431* (2C07)
- Two-port networks**
scattering parameters of passive lossy nonreciprocal two-port networks. *Hindin, Harvey J., T-MTT 71 Sep 781* (1E07)

U

- UHF amplifiers**
power transistor amplifier design using large-signal scattering parameters; 1-GHz, 18-W amplifier. *Leighton, William H., T-MTT 73 Dec 809-814* (2C07)
- UHF filters**
acoustic surface-wave bandpass filters using interdigital transducers; design using impulse-response description. *Hartmann, Clinton S., T-MTT 73 Apr 162-175* (1B04)

V

- Varactor diodes**
frequency multiplier using MIS varactors; 5.5-W pulsed output power at 5.4 GHz. *Schumacher, F., T-MTT 73 Oct 648-649* (1F02)
microstrip-mounted varactor package; equivalent circuit. *Cohen, Jerome, T-MTT 73 Jun 412-413* (2B01)
resistance variation with frequency at UHF; effect of varactor capacitance on parametric amplifier noise temperature. *Inal, Kubilay, T-MTT 73 May 327-333* (1C05) ♦
- Varactor frequency converters**
S-band to Ku-band integrated converters. *Bura, P., T-MTT 73 Mar 136-137* (1C06)
- Varactor tuners**
Gunn oscillator in full-height waveguide cavity; wideband X-band oscillator. *Joshi, J. S., T-MTT 73 Mar 137-139* (1C07)
- Variational techniques**
boundary-value problems; formulation of Dirichlet condition as natural boundary condition. *Hazel, Terence George, T-MTT 72 Jun 385-390* (1E03) ♦
electromagnetic scattering; least-squares boundary residual method. *Davies, J. Brian, T-MTT 73 Feb 99-104* (1D09)
waveguide inductive irises; two thick interacting inductive irises. *Rozzi, Tullio E., T-MTT 73 Feb 82-88* (1C04)
waveguides; variational expression involving longitudinal fields in inhomogeneous guide; equivalence to simple relationship between power flow, stored energy, and phase velocity. *Daly, P., T-MTT 73 Feb 113-114* (1E11)
- VHF filters**
acoustic surface-wave bandpass filters using interdigital transducers; design using impulse-response description. *Hartmann, Clinton S., T-MTT 73 Apr 162-175* (1B04)
acoustic surface-wave bandpass filter for use in frequency synthesizer. *Hickernell, F. S., T-MTT 73 Apr 300-302* (3D05)

W

- Wave equations**
circular cylindrical coordinate wave equation in homogeneous isotropic regions containing the origin; reason for eliminating Neumann function from solution. *Bolle, D. M., T-MTT 73 Mar 158-159* (1E05)
- Waveguide antennas**
parallel-plate waveguides, two identical guides having same axis of symmetry; radiation field and mutual coupling between guides. *Elmoazzen, Y. E., T-MTT 73 Dec 825-833* (2D11)
- Waveguide bends**
spurious modes in multimode H-plane bends of nonuniform curvature; rectangular and annular guides. *Bahar, Ezekiel, T-MTT 73 Dec 819-824* (2D05)
- Waveguide discontinuities**
circular waveguide step-discontinuity; power conversion coefficients and launch phase of propagating modes excited by discontinuity. *English, William J., T-MTT 73 Oct 633-636* (1D11)
inductive irises; variational treatment of two thick interacting induction irises. *Rozzi, Tullio E., T-MTT 73 Feb 82-88* (1C04)
junction between partially dielectric-filled rectangular guides; equivalent circuit. *Chang, Christopher T. M., T-MTT 73 Jun 403-411* (1E01)
numerical solution of scattering problems; least-squares boundary residual method. *Davies, J. Brian, T-MTT 73 Feb 99-104* (1D09)

round metal post with gap between post and guide floor; scattered fields for incident electric field parallel to post. *Bradshaw, John A., T-MTT 73 May 313-322 (1B03)*

scattering by waveguide junctions; moment method with mixed basis functions. *Chow, Y. Leonard, T-MTT 73 May 333-340 (1C11)*

windows; thick rectangular resonant windows with finite conductivity in rectangular guide; reflection and transmission properties. *Luebbers, Raymond J., T-MTT 73 Jul 461-468 (1D03)*

Waveguide discontinuities; cf. Waveguide junctions; Waveguide transitions

Waveguide junctions

dielectric-loaded waveguides; equivalent circuit for junction between partially filled rectangular guides. *Chang, Christopher T. M., T-MTT 73 Jun 403-411 (1E01)*

matching 5-port lossless reciprocal waveguide junctions; restrictions imposed by losslessness and reciprocity. *Hieber, A. L., T-MTT 73 Aug 547-552 (2B05)*

numerical method for solution of junction problems. *Oraizi, H., T-MTT 73 Oct 640-642 (1E06)*

scattering by homogeneous and inhomogeneous junctions; moment method with mixed basis functions. *Chow, Y. Leonard, T-MTT 73 May 333-340 (1C11)*

Waveguide mounts

Gunn oscillators; equivalent circuit for impedance presented to device terminals. *Jethwa, C. P., T-MTT 72 Sep 565-572 (1B03) ♦*

transferred-electron oscillators; distributed-lumped equivalent circuit for post-mounted oscillator in 12-18 GHz band. *Dean, Michael, T-MTT 73 Mar 121-127 (1B03)*

varactor-tuned Gunn oscillator in full-height waveguide cavity; wideband X-band oscillator. *Joshu, J. S., T-MTT 73 Mar 137-139 (1C07)*

Waveguide obstacles; cf. Waveguide discontinuities

Waveguides

numerical methods; successive extrapolated relaxation method. *Della Torre, E., T-MTT 73 Jul 490-491 (2B09)*

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T-septum waveguide capable of propagating two modes with same phase velocity; numerical solution using orthonormal block method and finite-element method. *Alexopoulos, N. G., T-MTT 73 Mar 157-158 (1E03)*

Waveguides; cf. Acoustic waveguides; Beam waveguides; Circular waveguides; Dielectric-loaded waveguides; Dielectric waveguides; Electromagnetic surface waveguides; Elliptical waveguides; Millimeter waveguides; Nonhomogeneously loaded waveguides; Optical waveguides; Plasma-loaded waveguides; Ridged waveguides

Waveguide switches

p-i-n switching window mounted in resonant iris. *Cottrell, Peter E., T-MTT 73 May 358-359 (1E12)*

Waveguide transitions

circular waveguides; optimum tapered transitions. *Hecken, Rudolph P., T-MTT 73 Jun 374-380 (1B08)*

Waveguide transitions; cf. Stripline-waveguide transitions

Wave scattering; cf. Electromagnetic scattering

Y

YIG filters

bandpass filter for incorporation into microstrip circuits; narrow-band filter with finite-pole frequencies. *Roschmann, Peter, T-MTT 73 Jan 52-57 (2B05)*

YIG-tuned oscillators

IMPATT oscillators; lumped model. *Moore, I. J. H. S., T-MTT 73 Jun 422-425 (2B11)*

Z

Zolotarev functions

branch-guide couplers with tight-coupling values; design method based on Zolotarev functions. *Levy, Ralph, T-MTT 73 Feb 95-99 (1D05)* *McMillan, Edwin M., T-NS 73 Jun 8-15 (1B10)*