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This index covers all items—papers, correspondence, reviews, etc.—that appeared in this periodical during 1972, and items from prior years that were commented upon or corrected in 1972. 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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Antenna arrays; cf. Phased arrays; Yagi-Uda arrays

Antenna measurements; antenna-efficiency measurements; integrated isotropic level compared with that of lossless reference antenna. *Eden, William D., T-MTT 72 Jan 82-83 (2D05)*

Antenna measurements; circular apertures; discrete-point representation of radiated power. *Kak, Avinash C., T-MTT 72 Jan 74-81 (2C09)*

Antenna measurements; cf. Computer-aided antenna measurements

Antennas; cf. Antenna arrays; Aperture antennas; Feed antennas; Microstrip antennas; Slot antennas

Aperture antennas; radiated power measurement; discrete-point representation for real power radiated by circular aperture. *Kak, Avinash C., T-MTT 72 Jan 74-81 (2C09)*

Apertures; coupling through small apertures in walls of arbitrary thickness; circular and rectangular apertures. *McDonald, Noel A., T-MTT 72 Oct 689-695 (2B01)*

Apertures; diffraction of wave beam by rectangular and circular apertures; field in Fresnel and Fraunhofer regions. *Tanaka, Kazumasa, T-MTT 72 Nov 749-755 (1E01)*

Approximation techniques; cf. Minimax approximation

Arrays; cf. Antenna arrays; Periodic arrays

Attenuation measurement; automated test system for multimodal circular waveguides; resonance return-loss or insertion-loss measurements. *Mastellari, G. Antonio, T-MTT 72 Jan 17-21 (1C07)*

Attenuation measurement; ferrite circulators; measurement of dissipative parameters of ferrite and insertion loss of below-resonance waveguide Y circulator loaded with ferrite; 1.3 to 11 GHz. *Roveda, Riccardo, T-MTT 72 Feb 89-96 (1B03)*

Attenuation measurement; microwave SSB modulator for bridge measurements; 10 GHz signal shifted by 1 kHz, carrier suppressed by 65 dB and unwanted sideband by over 57 dB. *Brooker, P. G., T-MTT 71 Oct 829-834 (1E03)*

Attenuation measurement; waveguide loss measurement using transmission cavity; computer-aided measurement of Q . *Uhlir, Arthur, Jr., T-MTT 72 Jan 38-41 (1E04)*

Attenuators; microwave integrated circuits; p-i-n variable attenuator with small phase shift; 0.5 to 3 GHz. *Parris, W. J., T-MTT 72 Sep 618-619 (2B05)*

Automated microwave measurements; attenuation measurement in multimodal circular waveguides; resonance return-loss or insertion-loss measurements. *Mastellari, G. Antonio, T-MTT 72 Jan 17-21 (1C07)*

Automated microwave measurements; delay lines; frequency-domain measurements using automatic network analyzer. *Uhlir, Arthur, Jr., T-MTT 72 Jan 51-53 (1F05)*

Automated microwave measurements; dielectric constant of thin films; cavity perturbation technique. *Rzepecka, Maria A., T-MTT 72 Jan 30-37 (1D08)*

Automated microwave measurements; dielectric constant of thin films; cavity perturbation technique. *Rzepecka, Maria A., T-MTT 72 Sep 628-630 (2C03)*

Automated microwave measurements; homodyne method for phase and amplitude measurement; RF substitution techniques. *Howarth, Barry A., T-MTT 72 Sep 623-626 (2B10)*

Automated microwave measurements; oscillators; constant power loci plots; p-i-n diode as variable-impedance termination. *Kosugi, Y., T-MTT 72 Dec 852-855 (2B06)*

Automated microwave measurements; special issue. *IEEE G-MTT, T-MTT 72 Jan Automated microwave measurements*; special issue guest editorial. *Stinehelfer, Harold E., T-MTT 72 Jan 2 (1B04)*

Automated microwave measurements; cf. Computer-aided microwave measurements

Automated testing; microwave attenuation measurement in multimodal circular waveguides; resonance return-loss or insertion-loss measurements. *Mastellari, G. Antonio, T-MTT 72 Jan 17-21 (1C07)*

Automated testing; phased-array modules; computer-controlled production test system for microwave modules. *Dale, Charles H., T-MTT 72 Jan 10-17 (1B12)*

Avalanche diode amplifiers; cf. IMPATT amplifiers

Avalanche diode oscillators; noise parameters for silicon and gallium arsenide oscillators; experimental evaluation; AM and FM noise measurements. *Ohtomo, Motoharu, T-MTT 72 Jul 425-437 (1B03)*

Avalanche diode oscillators; cf. IMPATT oscillators; TRAPATT oscillators

B

Bandpass filters; cavity-resonator filters; synthesis of narrow-bandpass filters having ripple in passband and stopband as coupled waveguide cavities. *Atia, Ali E., T-MTT 72 Apr 258-265 (1C04)*

Bandpass filters; comb-line filters with tunable frequency range of 2:1 in S-band;

mismatch and overcoupling compensation. *O'Clock, George D., Jr., T-MTT 72 Mar 238-239 (1E04)*

Bandpass filters; half-wave parallel coupled-line filter having up to two attenuation poles at finite frequencies in stopband. *Cristal, Edward G., T-MTT 72 Oct 696-699 (2B08)*

Bandpass filters; stripline triplexer that separates two contiguous channels. *Kihlen, Ralph, T-MTT 72 Jul 486-488 (2C03)*

Bandpass filters; stripline YIG filters; four-port nonreciprocal bandstop-bandpass filter. *Igarashi, Mitsuru, T-MTT 72 Dec 828-833 (1E03)*

Bandstop filters; elliptic-function waveguide filters; equipirre in passband and stopband. *Rhodes, J. David, T-MTT 72 Nov 715-718 (1B03)*

Bandstop filters; stripline YIG filters; four-port nonreciprocal bandstop-bandpass filter. *Igarashi, Mitsuru, T-MTT 72 Dec 828-833 (1E03)*

BARITT oscillators; dynamic resistance and capacitance as function of frequency and current density; use in predicting electronic tuning performance. *Sultan, Nizar B., T-MTT 72 Nov 773-775 (2B04)*

Beam waveguides; equispaced dielectric frames; field pattern and power loss measurements at 10 GHz and 37 GHz. *Checucci, Pier Francesco, T-MTT 72 Sep 608-613 (1E10)*

Bipolar transistors; microwave transistor small-signal equivalent network; computer-aided determination. *Hartmann, Karl, T-MTT 72 Feb 120-126 (1D10)*

Boundary-value problems; finite-element solutions within curved boundaries; boundaries defined as accurately as desired. *Richards, David J., T-MTT 72 Oct 650-657 (1C06)*

Boundary-value problems; variational techniques; formulation of Dirichlet condition as natural boundary condition. *Hazel, Terence George, T-MTT 72 Jun 385-390 (1E03)*

C

Capacitance; microstrip lines; matrix methods for three-dimensional problems. *Farfar, Andrew, T-MTT 72 Aug 497-504 (1B07)*

Capacitance; microstrip open circuits; integral equation formulation and numerical solution using projective method. *Silvester, P., T-MTT 72 Aug 511-516 (1C09)*

Capacitance; parallel rectangular metal plates separated by dielectric sheet; formulation as Fredholm integral equation and numerical solution by projective method. *Benedek, Peter, T-MTT 72 Aug 504-510 (1C02)*

Capacitors; microstrip dc blocking capacitors of interdigital type for octave bandwidth. *Lacombe, David, T-MTT 72 Aug 555-556 (2B10)*

Cavity perturbation techniques; calibration of cylindrical cavities used in plasma diagnostics; computer program for generation of calibration curves. *Fein, Michael E., T-MTT 72 Jan 22-30 (1C12)*

Cavity perturbation techniques; calibration of cylindrical cavities used in plasma diagnostics; computer program for generation of calibration curves. *Fein, Michael E., T-MTT 72 Jan 83 (2D06)*

Cavity perturbation techniques; conductivity and dielectric constant measurements for bulk semiconductor materials; method eliminating Q measurement. *Eldumiat, Ismail I., T-MTT 72 Feb 126-132 (1E04)*

Cavity perturbation techniques; dielectric constant measurement for thin films; automated microwave measurement. *Rzepecka, Maria A., T-MTT 72 Sep 628-630 (2C03)*

Cavity perturbation techniques; lumped-element impedance measurements using resonant transmission lines; 1 to 12 GHz measurements on inductors and capacitors. *DeBrecht, Robert E., T-MTT 72 Jan 41-48 (1E07)*

Cavity perturbation techniques; thin-film permittivity measurement; automated method for Q and resonant frequency measurement. *Rzepecka, Maria A., T-MTT 72 Jan 30-37 (1D08)*

Cavity perturbation techniques; waveguide loss measurement using transmission cavity; computer-aided Q measurement. *Uhlir, Arthur, Jr., T-MTT 72 Jan 38-41 (1E04)*

Cavity-resonator filters; narrow-bandpass filters having ripple in passband and stopband; synthesis as coupled waveguide cavities. *Atia, Ali E., T-MTT 72 Apr 258-265 (1C04)*

Cavity resonators; coupling between two identical cavities by small aperture in wall of arbitrary thickness. *McDonald, Noel A., T-MTT 72 Oct 689-695 (2B01)*

Cavity resonators; dielectric-loaded cylindrical cavities; computer program for calculating eigenmodes. *Joly, J. C., T-MTT 72 Jun 422 (2C09)*

Cavity resonators; lossy coupling mechanism; effect on internal Q . *Danielsen, M., T-MTT 72 Nov 758-760 (1E10)*

Cavity resonators; cf. Cavity perturbation techniques; Coaxial resonators; Resonators

Circular waveguides; attenuation measurement in multimodal guides; automated test system for resonance return-loss or insertion-loss measurements. *Mastellari, G. Antonio, T-MTT 72 Jan 17-21 (1C07)*

Circular waveguides; deformed shape; effect on H_{01} mode characteristics. *Lagasse, Paul, T-MTT 72 May 331-337 (1E02)*

Circular waveguides; lined with anisotropic dielectric material; propagation characteristics. *Chang, Christopher T. M., T-MTT 72 Aug 517-523 (1D03)*

Circulators; design procedure for junction circulators. *Salay, Steven J., T-MTT 72 Feb 192-193 (2F02)*

Circulators; quarter-wave coupled circulators with Chebyshev characteristics; synthesis procedure. *Helszajn, Joseph, T-MTT 72 Nov 764-769 (1F04)*

Circulators; cf. Ferrite circulators; Lumped-element circulators; Stripline circulators

Clavier, Andre G.; obituary. *Saad, Theodore S., T-MTT 72 Dec 792-793 (1B03)*

Coaxial cable discontinuities; capacitance of discontinuities formed by coplanar steps in both conductors of cable; computer program description. *Jurkus, A., T-MTT 72 Oct 708-709 (2C08)*

Coaxial cables; rectangular cross section; dimensions of conductors for specified characteristic impedance. *Riblet, Henry J., T-MTT 72 Aug 538-541 (1D12)*

Coaxial resonators; ferrite-filled resonator; lowest-order mode and quasi-TEM mode. *Wolff, Ingo, T-MTT 72 Aug 558-560 (2C01)*

Coaxial waveguides; reactive guiding surfaces; propagating modes. *Arora, Rajendra K., T-MTT 72 Mar 210-214 (1B12)*

Comb filters; bandpass filters with tunable frequency range of 2:1 in S-band; mismatch and overcoupling compensation. *O'Clock, George D., Jr., T-MTT 72 Mar 238-239 (1E04)*

- Computer-aided antenna measurements;** directive gain computation from measurements; program description. *Kramer, C., T-MTT 72 Jan 83 (2D06)*
- Computer-aided antenna measurements;** feed systems; directive gain and relative phase measurements. *Dijk, Jakob, T-MTT 72 Jan 48-51 (1F02)*
- Computer-aided antenna measurements;** phased-array modules; computer-controlled production test system for airborne microwave modules. *Dale, Charles H., T-MTT 72 Jan 10-17 (1B12)*
- Computer-aided antenna measurements;** time-domain techniques for broadband microwave measurements. *Nicolson, A. Murray, T-MTT 72 Jan 3-9 (1B05)*
- Computer-aided circuit analysis;** planar circuits; analysis based on contour-integral solution of wave equation. *Okoshi, Takanori, T-MTT 72 Apr 245-252 (1B03)*
- Computer-aided circuit analysis;** cf. Computer-aided microwave analysis
- Computer-aided device analysis;** microwave bipolar transistors; determination of small-signal equivalent network. *Hartmann, Karl, T-MTT 72 Feb 120-126 (1D10)*
- Computer-aided filter design;** transmission-line filters; optimum synthesis. *Hoffman, G., T-MTT 72 Oct 709-710 (2C09)*
- Computer-aided measurement;** spectrum surveillance system for 5 kHz to 12 GHz; application to law enforcement systems. *McKay, H. Dean, T-MTT 72 Jan 69-74 (2C04)*
- Computer-aided measurement;** cf. Computer-aided microwave measurements
- Computer-aided microwave analysis;** bipolar microwave transistors; determination of small-signal equivalent network. *Hartmann, Karl, T-MTT 72 Feb 120-126 (1D10)*
- Computer-aided microwave analysis;** cavity resonators; eigenmodes for dielectric-loaded cylindrical cavity; computer program description. *Joly, J. C., T-MTT 72 Jun 422 (2C09)*
- Computer-aided microwave analysis;** coaxial cable discontinuities; capacitance of discontinuities formed by coplanar steps in both conductors of cable. *Jurkus, A., T-MTT 72 Oct 708-709 (2C08)*
- Computer-aided microwave analysis;** finite-element field plotting; computer program description. *Csendes, Zoltan J., T-MTT 72 Apr 294-295 (2F04)*
- Computer-aided microwave analysis;** microstrip capacitance calculation; projective method that preserves essential singularity in charge distribution at strip edges. *Silvester, P., T-MTT 72 Nov 756-758 (1E08)*
- Computer-aided microwave analysis;** multiconductor transmission lines; capacitance matrix calculation using network analog method. *Lennartsson, Bengt L., T-MTT 72 Sep 586-591 (1C12)*
- Computer-aided microwave analysis;** permeability tensor of magnetized ferrites; calculation from waveguide measurements; computer program description. *Entschladen, H., T-MTT 72 Jul 490-491 (2C07)*
- Computer-aided microwave analysis;** perturbation technique; renormalization to obtain nondivergent second-order term; application to inhomogeneously-loaded waveguide. *Hidaka, Takehiko, T-MTT 72 Feb 180-181 (2F02)*
- Computer-aided microwave analysis;** waveguides of arbitrary cross section; integral equation formulation; variational solution using moment methods. *Spielman, Barry E., T-MTT 72 Sep 578-585 (1C04)*
- Computer-aided microwave analysis;** cf. Computer-aided circuit analysis; Numerical methods
- Computer-aided microwave design;** optimization method; nonlinear minimax optimization of network responses; grazor search algorithm. *Bandler, John W., T-MTT 72 Sep 596-604 (1D10)*
- Computer-aided microwave design;** parametric amplifiers; broadband design for lower K-band. *Branner, G. R., T-MTT 72 Feb 176-178 (2D10)*
- Computer-aided microwave measurements;** antenna feed systems; directive gain and relative phase measurement. *Dijk, Jakob, T-MTT 72 Jan 48-51 (1F02)*
- Computer-aided microwave measurements;** cavity resonators used in plasma diagnostics; computer program for generating calibration curves for cylindrical cavities. *Fein, Michael E., T-MTT 72 Jan 22-30 (1C12)*
- Computer-aided microwave measurements;** cavity resonators used in plasma diagnostics; computer program for generating calibration curves for cylindrical cavities. *Fein, Michael E., T-MTT 72 Jan 83 (2D06)*
- Computer-aided microwave measurements;** phased-array modules; production test system. *Dale, Charles H., T-MTT 72 Jan 10-17 (1B12)*
- Computer-aided microwave measurements;** reflection coefficient measurement; errors due to residual SWR of slotted line or directional coupler; program for calculating errors. *Garver, Robert V., T-MTT 72 Jan 61-69 (2B08)*
- Computer-aided microwave measurements;** spectrum surveillance system for 5 kHz to 12 GHz; application to law enforcement systems. *McKay, H. Dean, T-MTT 72 Jan 69-74 (2C04)*
- Computer-aided microwave measurements;** time-domain reflectometer in which pulse spectrum lines are radiated individually, measured reflections are added to compute echo. *Robinson, Lloyd A., T-MTT 72 Dec 855-857 (2B09)*
- Computer-aided microwave measurements;** time-domain techniques for broadband measurements; application to scattering parameter, constitutive parameter, antenna, and scattering measurements. *Nicolson, A. Murray, T-MTT 72 Jan 3-9 (1B05)*
- Computer-aided microwave measurements;** transistors; MATE data acquisition system using time-shared computer. *Schindler, Max J., T-MTT 72 Jan 54-60 (2B01)*
- Computer-aided microwave measurements;** waveguide loss measurement using transmission cavity; computer-aided measurement of Q . *Uhler, Arthur, Jr., T-MTT 72 Jan 38-41 (1E04)*
- Computer-aided microwave measurements;** cf. Automated microwave measurements
- Computer-aided optimization;** least pth approximation; computationally practical approach for use in design problems. *Bandler, John W., T-MTT 72 Dec 834-840 (1E09)*
- Computer-aided optimization;** nonlinear minimax optimization of network and system responses; grazor search algorithm. *Bandler, John W., T-MTT 72 Sep 596-604 (1D10)*
- Computer-aided optimization;** nonlinear minimax optimization; grazor search program description. *Bandler, John W., T-MTT 72 Nov 784-785 (2C03)*
- Computer-aided testing;** data acquisition system using time-shared computer; MATE system. *Schindler, Max J., T-MTT 72 Jan 54-60 (2B01)*
- Computer-controlled data acquisition;** MATE system using time-shared computer; application to testing of microwave transistors. *Schindler, Max J., T-MTT 72 Jan 54-60 (2B01)*
- Computer program descriptions;** antennas; directive gain calculations. *Kramer, C., T-MTT 72 Jan 83 (2D06)*
- Computer program descriptions;** cavity resonators, eigenmodes for dielectric-loaded cylindrical cavity. *Joly, J. C., T-MTT 72 Jun 422 (2C09)*
- Computer program descriptions;** cavity resonators used in plasma diagnostics; program for generation of calibration curves for cylindrical cavities. *Fein, Michael E., T-MTT 72 Jan 22-30 (1C12)*
- Computer program descriptions;** cavity resonators used in plasma diagnostics; program for generation of calibration curves for cylindrical cavities. *Fein, Michael E., T-MTT 72 Jan 83 (2D06)*
- Computer program descriptions;** coaxial cable discontinuities; capacitance of discontinuities formed by coplanar steps in both conductors of cable. *Jurkus, A., T-MTT 72 Oct 708-709 (2C08)*
- Computer program descriptions;** finite-element field plotting program. *Csendes, Zoltan J., T-MTT 72 Apr 294-295 (2F04)*
- Computer program descriptions;** minimax optimization; grazor search program. *Bandler, John W., T-MTT 72 Nov 784-785 (2C03)*
- Computer program descriptions;** permeability tensor of magnetized ferrites; calculation from waveguide measurements. *Entschladen, H., T-MTT 72 Jul 490-491 (2C07)*
- Computer program descriptions;** transmission-line filters; optimum synthesis. *Hoffman, G., T-MTT 72 Oct 709-710 (2C09)*
- Conducting screens;** circular hole arrays in flat metallic plates; electromagnetic transmission. *Otoshu, Tom Y., T-MTT 72 Mar 235-236 (1E01)*
- Conductivity measurement;** semiconductor materials at microwave frequencies; cavity perturbation technique that eliminates Q measurement. *Eldumati, Ismail I., T-MTT 72 Feb 126-132 (1E04)*
- Coupled-mode analysis;** acoustic surface waves; coupling of Rayleigh waves from one substrate to adjacent substrate when either is nonpiezoelectric. *Li, Robert C. M., T-MTT 72 Jul 477-486 (2B06)*
- Coupled-mode analysis;** dielectric-loaded waveguides; vane of dielectric material extending into guide through slot in broad wall. *Arnold, Richard M., T-MTT 72 Oct 699-701 (2B11)*
- Coupled-mode analysis;** diffraction of wave beam by rectangular and circular apertures; field in Fresnel and Fraunhofer regions. *Tanaka, Kazumasa, T-MTT 72 Nov 749-755 (1E01)*
- Coupled-mode analysis;** random coupling of two waves traveling in opposite directions; coupled power equations. *Marcuse, D., T-MTT 72 Aug 541-546 (1F03)*
- Coupled-mode analysis;** two-mode random media in which both modes travel in same direction; transmission statistics for stationary random coupling. *Rowe, Harrison E., T-MTT 72 Jun 349-365 (1B03)*
- Coupled-mode analysis;** two-mode random media with frequency-dependent coupling; covariance of signal-signal and signal-spurious-mode transfer functions. *Young, D. T., T-MTT 72 Jun 365-372 (1C07)*
- Coupled-strip transmission lines;** 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)*
- Coupled-strip transmission lines;** broadside-coupled strips in layered dielectric medium and enclosed by rectangular shield; odd- and even-mode phase velocities. *Allen, James L., T-MTT 72 Oct 662-669 (1D06)*
- Coupled-strip transmission lines;** filters; parallel-coupled-line filters suitable for microstrip realizations; hairpin-line filters. *Cristal, Edward G., T-MTT 72 Nov 719-728 (1B07)*
- Coupled-strip transmission lines;** microstrip; dispersion curves for fundamental and higher order hybrid modes in single and coupled microstrip; finite-difference methods. *Corr, Douglas G., T-MTT 72 Oct 669-678 (1E01)*
- Coupled-strip transmission lines;** microstrip; frequency-dependent characteristics of single and coupled lines in shielded microstrip. *Krage, Mark K., T-MTT 72 Oct 678-688 (1E10)*
- Coupled transmission lines;** degeneracy of propagation constant; normal mode theory which accounts for some of the propagation constants being equal. *Guckel, H., T-MTT 72 Jun 412-413 (2B11)*
- Coupled transmission lines;** loss calculations. *Tripathi, V. K., T-MTT 72 Feb 178-180 (2D12)*
- Couplers;** small apertures in walls of arbitrary thickness; circular and rectangular apertures. *McDonald, Noel A., T-MTT 72 Oct 689-695 (2B01)*
- Couplers;** cf. Directional couplers; Microstrip couplers
- Coupling networks;** broadband coupling between resistive source and high- Q resonant load. *Reeder, Thomas M., T-MTT 72 Jul 453-458 (1D07)*
- Crime;** cf. Law enforcement
- Curved waveguides;** vector wave equation in orthogonal curvilinear coordinates; decoupled formulation; application to ferrite-filled and curved waveguides of general cross section. *Lewin, Leonard, T-MTT 72 May 338-342 (1E09)*

D

- Data acquisition;** cf. Computer-controlled data acquisition
- Delay lines;** frequency-domain measurements using automatic network analyzers. *Uhler, Arthur, Jr., T-MTT 72 Jan 51-53 (1F05)*
- Delay lines;** magnetostatic delay lines; delay limits due to dispersion. *Bini, M., T-MTT 72 Nov 771-773 (2B02)*
- Describing functions;** application to nonlinear active microwave circuits. *Gustafsson, Lennart, T-MTT 72 Jun 402-409 (2B01)*
- Device models;** cf. Semiconductor device models
- Dielectric constant measurement;** cavity method requiring only resonant frequency measurement; dielectric disk placed in cutoff circular-waveguide cavity. *Hanfling, J., T-MTT 72 Mar 233-235 (1D11)*
- Dielectric constant measurement;** computer-aided time-domain techniques for broadband microwave measurements. *Nicolson, A. Murray, T-MTT 72 Jan 3-9 (1B05)*
- Dielectric constant measurement;** semiconductor materials at microwave frequencies; cavity perturbation technique that eliminates Q measurement. *Eldumati, Ismail I., T-MTT 72 Feb 126-132 (1E04)*
- Dielectric constant measurement;** thin films at microwave frequencies; automated method using cavity perturbation technique. *Rzepecka, Maria A., T-MTT 72 Jan 30-37 (1D08)*
- Dielectric constant measurement;** thin films; automated microwave measurement using cavity perturbation technique. *Rzepecka, Maria A., T-MTT 72 Sep 628-630 (2C03)*
- Dielectric-loaded waveguide;** attenuation constant due to dielectric losses; dielectric slab in H -plane of rectangular guide. *Bui, Van Re, T-MTT 72 Sep 621-623 (2B08)*

Dielectric-loaded waveguide: dielectric steps in waveguide; scattered fields calculation using modified residue-calculus technique *Royer, Erlind G.* *T-MTT* 72 Apr 273-279 (1D07)

Dielectric-loaded waveguides: circular waveguides lined with anisotropic dielectric material; propagation characteristics *Chang, Christopher T. M.* *T-MTT* 72 Aug 517-523 (1D03)

Dielectric-loaded waveguides: corrections to 1970 *T-MTT* paper by Tsandoulas, Temme, and Willwerth and 1965 *Radio Electron. Eng.* paper by Chatterjee and Chatterjee. *Buu, Van Re.* *T-MTT* 72 Jun 421-422 (2C08)

Dielectric-loaded waveguides: laser-beam phase modulator using rectangular waveguide loaded with electrooptic material. *El-Shandwily, M. Ezzat.* *T-MTT* 72 Feb 132-137 (1E10)

Dielectric-loaded waveguides: longitudinal section mode analysis; application to ferrite phase shifter design. *Tsandoulas, G. N.* *T-MTT* 70 Feb 88-95 (1C02)

Dielectric-loaded waveguides: LSE₂₀ mode propagation in rectangular guides; application to ferrite phase shifter design. *Tsandoulas, G. N.* *T-MTT* 72 Apr 253-258 (1B11)

Dielectric-loaded waveguides: vane of dielectric material extending into guide through slot in broad wall; approximate analysis in terms of coupled empty waveguide modes. *Arnold, Richard M.* *T-MTT* 72 Oct 699-701 (2B11)

Dielectric loss measurement: ferrites; measurement of dissipative parameters of ferrite and insertion loss of below-resonance waveguide Y circulator loaded with ferrite; 1.3 to 11 GHz. *Roveda, Riccardo.* *T-MTT* 72 Feb 89-96 (1B03)

Dielectric waveguides: refractive index variation in transverse direction; propagation modes and scattering loss. *Suematsu, Yasuharu.* *T-MTT* 72 Aug 524-531 (1D10)

Dielectric waveguides: surface-wave dielectric image lines; Yagi-Uda array as surface-wave launcher. *McRitchie, W. Kenneth.* *T-MTT* 72 Aug 493-496 (1B03)

Differential equations: cf. Partial differential equations

Diffraction: cf. Electromagnetic diffraction

Diodes: cf. Semiconductor diodes

Diplexers: millimeter-wave channel diplexer using multimode waveguide filters. *Ren, Chung-Li.* *T-MTT* 72 Dec 820-827 (1D07)

Dipole arrays: electromagnetic surface-wave propagation; attenuation due to ohmic losses. *Amitay, Noach.* *T-MTT* 72 Feb 148-155 (2B06)

Directional couplers: use in reflection coefficient measurement; errors due to residual SWR of directional coupler. *Garver, Robert V.* *T-MTT* 72 Jan 61-69 (2B08)

Directional couplers: cf. Hybrid junctions; Microstrip directional couplers; Millimeter-wave directional couplers

Discontinuities: cf. Coaxial cable discontinuities; Microstrip discontinuities; Stripline discontinuities; Waveguide discontinuities

Dispersion: cf. Electromagnetic dispersion

Distortion: multimode waveguides; coupled-mode analysis of two-mode random media; transmission statistics for stationary random coupling. *Rowe, Harrison E.* *T-MTT* 72 Jun 349-365 (1B03)

Distortion: multimode waveguides; coupled-mode analysis for two-mode random media with frequency-dependent coupling. *Young, D. T.* *T-MTT* 72 Jun 365-372 (1C07)

Distortion: cf. Intermodulation distortion

Distributed-active networks: microwave power amplifier consisting of nonreciprocal transmission line periodically loaded by negative-resistance diodes. *Park, S. F.* *T-MTT* 72 Mar 202-209 (1B04)

Distributed-active networks: periodic array of metallic posts terminated with lumped semiconductor devices. *Gutmann, R. J.* *T-MTT* 72 Mar 215-223 (1C05)

Distributed filters: stripline triplexer that separates two contiguous channels. *Kihlén, Ralph.* *T-MTT* 72 Jul 486-488 (2C03)

Distributed filters: cf. Distributed-lumped filters; Microwave filters; Transmission-line filters

Distributed-lumped filters: impedance-matching networks combining low-pass filter and matching network properties. *Levy, Ralph.* *T-MTT* 72 Mar 223-233 (1D01)

Distributed-lumped networks: sensitivity analysis in terms of wave variables; adjoint networks. *Bandler, John W.* *T-MTT* 72 Feb 138-147 (1F04)

Distributed networks: rectangular structure composed of dielectric layer between two conducting layers, two ports having variable widths and positions; transmission zeros and filtering properties. *Bianco, Bruno.* *T-MTT* 72 May 297-303 (1B03)

Distributed networks: cf. Distributed-active networks; Distributed-lumped networks; Transmission lines

E

Eigenvalue problems: coupled transmission lines with some propagation constants equal. *Guckel, H.* *T-MTT* 72 Jun 412-413 (2B11)

Elastic waves: cf. Acoustic waves

Electric heating: cf. Microwave heating

Electromagnetic diffraction: wave beam diffracted by aperture; field in Fresnel and Fraunhofer regions for rectangular and circular apertures. *Tanaka, Kazumasa.* *T-MTT* 72 Nov 749-755 (1E01)

Electromagnetic dispersion: axially magnetized gyrotropic waveguides; hybrid-frequency cutoffs. *de Santis, Pietro.* *T-MTT* 72 Mar 237-238 (1E03)

Electromagnetic field computations: unbounded regions; finite-element methods. *McDonald, Bruce H.* *T-MTT* 72 Dec 841-847 (1F04)

Electromagnetic propagation: circular hole arrays in flat metallic plates. *Otoshi, Tom Y.* *T-MTT* 72 Mar 235-236 (1E01)

Electromagnetic propagation: random coupling of two waves traveling in opposite directions; coupled power equations. *Marcuse, D.* *T-MTT* 72 Aug 541-546 (1F03)

Electromagnetic propagation: cf. Electromagnetic surface-wave propagation

Electromagnetic propagation in plasmas: cf. Plasma-loaded waveguides

Electromagnetic scattering: dielectric steps in waveguide; scattered fields calculation using modified residue-calculus technique *Royer, Erlind G.* *T-MTT* 72 Apr 273-279 (1D07)

Electromagnetic scattering: ferrimagnetic circular cylinder in rectangular waveguide. *Okamoto, Nobuo.* *T-MTT* 71 Jun 521-527 (1C09)

Electromagnetic scattering: time-domain measurement techniques for broadband measurements; computer-aided measurement. *Nicolson, A. Murray.* *T-MTT* 72 Jan 3-9 (1B05)

Electromagnetic scattering: waveguide scattering problems; moment method solutions. *Wu, Sien-Chong.* *T-MTT* 72 Nov 744-749 (1D08)

Electromagnetic surface-wave excitation: dielectric image lines; Yagi-Uda array as surface-wave launcher. *McRitchie, W. Kenneth.* *T-MTT* 72 Aug 493-496 (1B03)

Electromagnetic surface-wave propagation: periodic dipole and slot arrays; attenuation due to ohmic losses. *Amitay, Noach.* *T-MTT* 72 Feb 148-155 (2B06)

Electromagnetic surface-wave transmission lines: dielectric image lines; Yagi-Uda array as surface-wave launcher. *McRitchie, W. Kenneth.* *T-MTT* 72 Aug 493-496 (1B03)

Electrooptic modulation: laser-beam phase modulator, waveguide loaded with electrooptic material. *El-Shandwily, M. Ezzat.* *T-MTT* 72 Feb 132-137 (1E10)

Elliptical resonators: microstrip resonators; mode chart and unloaded *Q*. *Kretschmar, Jan G.* *T-MTT* 72 May 342-343 (1F01)

Elliptical waveguides: application of electromagnetic wave solutions to heat conduction in elliptical geometries. *Laura, Patricio A.* *T-MTT* 72 Apr 292 (1F02)

Elliptical waveguides: attenuation factor for TE and TM modes; perturbation technique. *Kretschmar, Jan G.* *T-MTT* 72 Apr 280-284 (1E02)

Elliptical waveguides: mode classification; relation between modes in rectangular, elliptical, and parabolic guides; mode classification for guides of arbitrary cross sections. *Larsen, Tove.* *T-MTT* 72 Jun 379-384 (1D09)

Elliptic filters: waveguide bandstop filters; equiripple in passband and stopband. *Rhodes, J. David.* *T-MTT* 72 Nov 715-718 (1B03)

Equiripple filters: cf. Elliptic filters

Equivalent circuits: lumped-element thin-film circulators. *Kneir, Reinhard H.* *T-MTT* 72 Jul 446-452 (1C12)

Equivalent networks: inductive irises having finite thickness and interacting with neighboring irises. *Rozzi, Tullio E.* *T-MTT* 72 May 323-330 (1D06)

Equivalent networks: waveguide circuits; diode coupled to rectangular waveguide by inductive post. *White, Joseph F.* *T-MTT* 72 Jun 372-378 (1D02)

Equivalent networks: cf. Network models; Semiconductor device models

F

Fabry-Perot resonators: filled with anisotropic medium; optimum mirror shape for resonance of extraordinary wave. *Tanaka, Toshiki.* *T-MTT* 72 Aug 546-547 (2B01)

FDM filters: stripline triplexer that separates two contiguous channels. *Kihlén, Ralph.* *T-MTT* 72 Jul 486-488 (2C03)

Feed antennas: measurement of directive gain and relative phase; computer-aided measurement. *Dyk, Jakob.* *T-MTT* 72 Jan 48-51 (1F02)

Ferrite circulators: analysis including higher-order cylindrical modes and evanescent modes; explanation of hump discrepancy in measured reflection coefficient curve. *Castillo, Joseph B.* *T-MTT* 72 Jun 410-412 (2B09)

Ferrite circulators: design procedure for junction circulators. *Salay, Steven J.* *T-MTT* 72 Feb 192-193 (2F02)

Ferrite circulators: E-plane junction circulators; mode charts. *Helszajn, Joseph.* *T-MTT* 72 Feb 187-188 (2E09)

Ferrite circulators: measurement of dissipative parameters of ferrite and insertion losses of below resonance waveguide Y circulators loaded with ferrite; 1.3 to 11 GHz. *Roveda, Riccardo.* *T-MTT* 72 Feb 89-96 (1B03)

Ferrite circulators: quarter-wave coupled circulators with Chebyshev characteristics; synthesis procedure. *Helszajn, Joseph.* *T-MTT* 72 Nov 764-769 (1F04)

Ferrite circulators: stripline YIG circulators; four-port tunable circulator. *Igarashi, Mitsuru.* *T-MTT* 72 Dec 828-833 (1E03)

Ferrite devices: cf. YIG devices

Ferrite limiters: microwave subsidiary-resonance limiter with dynamic range greater than 200 kW; multilayer ferrite-dielectric sandwich on narrow wall of rectangular guide. *Allen, James L.* *T-MTT* 72 Feb 193-194 (2F03)

Ferrite-loaded resonators: coaxial resonators filled with ferrite; lowest-order mode and quasi-TEM mode. *Wolff, Ingo.* *T-MTT* 72 Aug 558-560 (2C01)

Ferrite-loaded waveguides: anomalous loss at ferrite boundary; explanation in terms of surface waves. *Lewin, Leonard.* *T-MTT* 72 Sep 604-607 (1E06)

Ferrite-loaded waveguides: hybrid-frequency cutoffs in axially magnetized waveguide filled with ferrite. *de Santis, Pietro.* *T-MTT* 72 Mar 237-238 (1E03)

Ferrite-loaded waveguides: rectangular guide containing axially magnetized cylindrical ferrite rod parallel to E-field of TE₁₀ mode; transmission and reflection coefficients. *Yoshida, Toshio.* *T-MTT* 72 Nov 739-743 (1D03)

Ferrite-loaded waveguides: scattering by ferrimagnetic circular cylinder in rectangular waveguide. *Okamoto, Nobuo.* *T-MTT* 71 Jun 521-527 (1C09)

Ferrite-loaded waveguides: vector wave equation in orthogonal curvilinear coordinates; decoupled formulation; application to ferrite-filled and curved waveguides of general cross section. *Lewin, Leonard.* *T-MTT* 72 May 338-342 (1E09)

Ferrite microstrip lines: experimental data; comparison with theoretical values. *Massé, Daniel J.* *T-MTT* 72 May 309-313 (1C04)

Ferrite phase shifters: digital latching phase shifters; use of feedthrough for damping higher-order modes excited by air gap at ferrite-waveguide-wall interface. *Hanfling, J. D.* *T-MTT* 72 Aug 549-552 (2B04)

Ferrite phase shifters: fabrication procedure for nonreciprocal toroidal ferrite phase shifters. *Ince, William J.* *T-MTT* 72 Oct 705-707 (2C05)

Ferrite phase shifters: longitudinal section mode analysis; application to phase shifter design. *Tsandoulas, G. N.* *T-MTT* 70 Feb 88-95 (1C02)

Ferrite phase shifters: LSE₂₂ mode cutoff threshold as limiting factor in selection of dimensions of rectangular phase shifters. *Tsandoulas, G. N.* *T-MTT* 72 Apr 253-258 (1B11)

Ferrite phase shifters: nonreciprocal analog-latching phase shifter for X-band; 250 W average power, 50 kW peak power. *Hering, Karl H.* *T-MTT* 72 Apr 284-286 (1E06)

Ferrite phase shifters: reciprocal Faraday-rotation phase shifter; longitudinally magnetized ferrite-filled square waveguide; theoretical and experimental analysis. *Hord, William E.* *T-MTT* 72 Feb 112-119 (1D02)

Ferrites: permeability tensor of magnetized ferrites; calculation from waveguide measurements; computer program description. *Entschladen, H.* *T-MTT* 72 Jul 490-491 (2C07)

Ferrites: spin-wave instability in hexagonal ferrites under perpendicular pumping at large signal power; first-order nonlinear theory. *Helszajn, Joseph.* *T-MTT* 72 Jul 437-446 (1C03)

- Ferromagnetic resonance:** spin-wave instability in hexagonal ferrites under perpendicular pumping at large signal power; first-order nonlinear theory. *Helszajn, Joseph. T-MTT 72 Jul 437-446 (1C03)*
- Fiber waveguides:** coupled-mode analysis for two-mode random media; transmission statistics for stationary random coupling. *Rowe, Harrison E. T-MTT 72 Jun 349-365 (1B03)*
- Fiber waveguides:** coupled-mode analysis for two-mode random media with frequency-dependent coupling; transmission statistics. *Young, D T. T-MTT 72 Jun 365-372 (1C07)*
- Field plotting:** finite-element field plotting; computer program description. *Csendes, Zoltan J. T-MTT 72 Apr 294-295 (2F04)*
- Filters:** cf. Acoustic surface-wave filters; Distributed filters; Ladder filters; Microwave filters; Millimeter-wave filters
- Finite-difference methods:** microstrip lines; dispersion curves for fundamental and higher order hybrid modes in single and coupled microstrip. *Corr, Douglas G. T-MTT 72 Oct 669-678 (1E01)*
- Finite-difference methods:** microstrip lines; dominant mode analysis. *Whurton, R. P. T-MTT 72 Aug 552-555 (2B07)*
- Finite-difference methods:** multiconductor transmission lines; capacitance matrix calculation using network analog method. *Lennarsson, Bengt L. T-MTT 72 Sep 586-591 (1C12)*
- Finite-element methods:** computer program for field plotting. *Csendes, Zoltan J. T-MTT 72 Apr 294-295 (2F04)*
- Finite-element methods:** curved boundaries defined as accurately as desired. *Richards, David J. T-MTT 72 Oct 650-657 (1C06)*
- Finite-element methods:** electromagnetic field problems in unbounded regions. *McDonald, Bruce H. T-MTT 72 Dec 841-847 (1F04)*
- FM amplifiers:** nonlinear power amplifiers in stable and injection-locked modes; dynamic equations. *Takayama, Yoichiro. T-MTT 72 Sep 591-595 (1D05)*
- FM noise:** Gunn and avalanche oscillators; noise measurements. *Ohtomo, Motoharu. T-MTT 72 Jul 425-437 (1B03)*
- FM noise:** IMPATT amplifiers and oscillators. *Thaler, Hans-Jorg. T-MTT 71 Aug 692-705 (1C10)*
- FM noise:** microwave measurements; accuracy of measurements using carrier-suppression filter and phase detector. *Fikari, Joseph L. T-MTT 72 Oct 720-703 (2C02)*
- FM noise:** negative resistance oscillators at modulation frequencies beyond bandwidth of stabilizing cavity; AM and FM noise. *Schiek, Burkhard. T-MTT 72 Oct 635-641 (1B03)*
- Focusing:** cf. Millimeter-wave focusing
- Frequency allocation:** computer-controlled spectrum surveillance system for 5 kHz to 12 GHz; application to law enforcement systems. *McKay, H. Dean. T-MTT 72 Jan 69-74 (2C04)*
- Frequency converters:** varactor converters; intermodulation distortion in abrupt-junction current-pumped varactor converters. *Gardiner, John Graham. T-MTT 71 Sep 741-749 (1B03)*
- Frequency-division multiplexing:** cf. FDM
- Frequency measurement:** computer-controlled spectrum surveillance system for 5 kHz to 12 GHz; application to law enforcement systems. *McKay, H. Dean. T-MTT 72 Jan 69-74 (2C04)*
- Frequency measurement:** instantaneous frequency-measuring receivers; history of development. *Goddard, N. E. T-MTT 72 Apr 292-293 (2F02)*
- Frequency measurement:** cf. Cavity perturbation techniques

G

- Gallium arsenide diodes:** avalanche and Gunn oscillator noise parameters. AM and FM noise measurements. *Ohtomo, Motoharu. T-MTT 72 Jul 425-437 (1B03)*
- Garnet microstrip lines:** experimental data; comparison with theoretical values. *Massé, Daniel J. T-MTT 72 May 309-313 (1C04)*
- Green's function:** for Poisson equation in two-dielectric region. *dos Santos, Antonio F. T-MTT 72 Nov 777 (2B08)*
- Guided electromagnetic waves:** vector wave equation in orthogonal curvilinear coordinates; decoupled formulation; application to ferrite-filled and curved waveguides of general cross section. *Lewin, Leonard. T-MTT 72 May 338-342 (1E09)*
- Guided electromagnetic waves:** cf. Electromagnetic surface-wave propagation; Waveguides
- Gunn amplifiers:** CW waveguide amplifier in X-band range; power gains between 10 and 15 dB and half-power bandwidths greater than 1 GHz. *Séne, Amadou. T-MTT 72 Oct 645-650 (1C01)*
- Gunn diodes:** use as microwave power limiters. *Atchison, C. S. T-MTT 72 Feb 181-182 (2E03)*
- Gunn oscillators:** diode coupled to rectangular waveguide by inductive post; equivalent circuit. *White, Joseph F. T-MTT 72 Jun 372-378 (1D02)*
- Gunn oscillators:** noise parameters; experimental evaluation, AM and FM noise measurements. *Ohtomo, Motoharu. T-MTT 72 Jul 425-437 (1B03)*
- Gunn oscillators:** single-tuned circuit suitable for Gunn diode characterization. *Dorman, P. W. T-MTT 72 Oct 701-702 (2C01)*
- Gunn oscillators:** stabilized K_a-band oscillator; frequency stability of 3×10^{-5} from 0 to 50°C. *Nagano, S. T-MTT 72 Feb 174-176 (2D08)*
- Gunn oscillators:** waveguide-mounted oscillators; equivalent circuit representation of impedance presented to device terminals. *Jethwa, C. P. T-MTT 72 Sep 565-572 (1B03)*
- Gunn oscillators:** YIG-tuned oscillators; wideband phase locking and phase shifting using feedback control; X-band oscillators. *Rubin, David. T-MTT 72 Apr 286-289 (1E08)*

H

- Heating:** cf. Microwave heating
- Homodyne detection:** automated microwave measurement system, phase and amplitude measurement using RF substitution method. *Howarth, Barry A. T-MTT 72 Sep 623-626 (2B10)*
- Hybrid junctions:** millimeter-wave directional couplers; 55 GHz branch-guide coupler, waveguide couplers. *Botter, Martin F. T-MTT 72 Feb 182-184 (2E04)*

I

- IEEE Microwave Theory and Techniques Group:** 1972 National Lectureship. *Saad, Theodore S. T-MTT 72 Dec 797-798 (1B08)*
- IEEE Microwave Theory and Techniques Group:** appointment of new editor for Transactions. *Haddad, George L. T-MTT 72 Jan 1 (1B01)*
- IEEE Microwave Theory and Techniques Group:** editorial policies. *Rosenbaum, Fred J., Ed. T-MTT 72 Mar 201 (1B03)*
- IMPATT amplifiers:** intermodulation products generated when two equal-amplitude signals are applied to input of X-band amplifier. *Trew, Robert J. T-MTT 72 Dec 805-812 (1C04)*
- IMPATT amplifiers:** noise characteristics; experimental and theoretical investigations. *Thaler, Hans-Jorg. T-MTT 71 Aug 692-705 (1C10)*
- IMPATT amplifiers:** nonlinear power amplifiers using IMPATT diodes in stable and injection-locked modes. *Takayama, Yoichiro. T-MTT 72 Apr 266-272 (1C12)*
- IMPATT oscillators:** cavity-stabilized oscillator followed by one-stage high-power reflection-type IMPATT amplifier; K-band oscillator. *Ito, Yukio. T-MTT 72 Dec 799-805 (1B10)*
- IMPATT oscillators:** noise characteristics; experimental and theoretical investigations. *Thaler, Hans-Jorg. T-MTT 71 Aug 692-705 (1C10)*
- Impedance matching:** broadband coupling between resistive source and high-Q resonant load. *Reeder, Thomas M. T-MTT 72 Jul 453-458 (1D07)*
- Impedance matching:** circulators; quarter-wave coupled circulators with Chebyshev characteristics. *Helszajn, Joseph. T-MTT 72 Nov 764-769 (1F04)*
- Impedance matching:** parametric amplifiers; wideband K-band parameter amplifier with triple-tuned gain characteristics. *Okajima, Toru. T-MTT 72 Dec 812-819 (1C11)*
- Impedance matching:** tapered matching section without impedance steps at ends; near-optimum matching. *Hecken, Rudolph P. T-MTT 72 Nov 734-739 (1C10)*
- Impedance-matching networks:** distributed-lumped network combining low-pass filter and matching network properties. *Levy, Ralph. T-MTT 72 Mar 223-233 (1D01)*
- Impedance-matching networks:** stepped-impedance transformers; exact synthesis procedure. *Chang, Feng-Cheng. T-MTT 72 Sep 620-621 (2B07)*
- Impedance measurement:** lumped-element inductors and capacitors from 1 to 12 GHz; perturbation method using resonant transmission line. *DeBrecht, Robert E. T-MTT 72 Jan 41-48 (1E07)*
- Impedance measurement:** cf. Scattering parameters measurement
- Impedance transformers:** cf. Impedance-matching networks
- Inhomogeneous:** cf. Nonhomogeneous
- Injection-locked oscillators:** cf. Phase-locked oscillators
- Instantaneous frequency-measuring receivers:** history of development. *Goddard, N. E. T-MTT 72 Apr 292-293 (2F02)*
- Integral equations:** capacitance of rectangular metal plates separated by dielectric sheet; formulation as Fredholm integral equation and numerical solution by projective method. *Benedek, Peter. T-MTT 72 Aug 504-510 (1C02)*
- Integral equations:** iris discontinuity problem; relative convergence phenomenon arising in use of moment method and mode-matching method. *Mitra, Raj. T-MTT 72 Feb 96-104 (1B10)*
- Integral equations:** microstrip capacitance calculation; projective method that preserves essential singularity in charge distribution at strip edges. *Silvester, P. T-MTT 72 Nov 756-758 (1E08)*
- Integral equations:** microstrip open circuits; integral equation formulation and numerical solution using projective method. *Silvester, P. T-MTT 72 Aug 511-516 (1C09)*
- Integral equations:** waveguide aperture problems described by integral equation, use of moment method to reduce integral equation to matrix equation. *Thong, Vu Khac. T-MTT 72 Jun 416-418 (2C03)*
- Integral equations:** waveguide discontinuity problems; singular integral equation method that retains expansion terms of all modes appearing in Green's function. *Lewin, Leonard. T-MTT 72 Dec 849-852 (2B03)*
- Integral equations:** waveguides of arbitrary cross section; integral equation formulation; variational solution using moment methods. *Spielman, Barry E. T-MTT 72 Sep 578-585 (1C04)*
- Integrated circuits:** cf. Microwave integrated circuits
- Interdigital filters:** acoustic surface-wave dispersive filters; phase corrections for apodized interdigital arrays. *Gerard, Henry M. T-MTT 72 Feb 188-192 (2E10)*
- Interdigital transducers:** acoustic surface-wave transducers; network model of dispersive transducer with nonuniform electrode spacing. *Smith, W. Richard. T-MTT 72 Jul 458-471 (1D12)*
- Intermodulation distortion:** IMPATT amplifiers, intermodulation products generated when two equal-amplitude signals are applied to input of X-band amplifier. *Trew, Robert J. T-MTT 72 Dec 805-812 (1C04)*
- Intermodulation distortion:** varactor frequency converters; abrupt-junction current-pumped varactor. *Gardiner, John Graham. T-MTT 71 Sep 741-749 (1B03)*
- International Microwave Symposium:** report on 1972 symposium. *Knox, Robert M. T-MTT 72 Dec 794-797 (1B05)*

J

- Junctions:** cf. Hybrid junctions; Waveguide junctions

L

- Ladder filters:** distributed-lumped network combining impedance matching and low-pass filter properties. *Levy, Ralph. T-MTT 72 Mar 223-233 (1D01)*
- Laser-beam modulation:** phase modulator; waveguide loaded with electrooptic material. *El-Shandwily, M. Ezzat. T-MTT 72 Feb 132-137 (1E10)*
- Law enforcement:** spectrum surveillance system for 5 kHz to 12 GHz, computer-controlled system. *McKay, H. Dean. T-MTT 72 Jan 69-74 (2C04)*
- Layered media:** cf. Stratified media
- Light modulation:** cf. Laser-beam modulation
- Limiters:** cf. Phase-locked oscillators
- Lithium ferrite circulators:** stripline circulators for parametric amplifiers; operation from cryogenic temperatures to room temperatures. *Okajima, Toru. T-MTT 72 Dec 812-819 (1C11)*
- Loaded waveguides:** cf. Dielectric-loaded waveguides, Ferrite-loaded waveguides;

- Nonhomogeneously-loaded waveguides; Plasma-loaded waveguides; Semiconductor-loaded waveguides
- Locked oscillators**; locking equations which account for nonsinusoidal device waveforms; calculation of locking bandwidth. *Quine, John P.*, *T-MTT* 72 Jun 418-420 (2C05)
- Losses**; cf. Dielectric losses; Magnetic losses; Waveguide losses
- Lossy waveguide junctions**; dissipation and scattering matrices in terms of eigenvalues of dissipation matrix *Helsajn, Joseph*, *T-MTT* 72 Nov 779-782 (2B10)
- Low-pass filters**; distributed-lumped network combining impedance matching and low-pass filter properties. *Levy, Ralph*, *T-MTT* 72 Mar 223-233 (1D01)
- Lumped-distributed networks**; cf. Distributed-lumped networks
- Lumped-element circulators**; equivalent circuit for thin-film circulators. *Kneir, Reinhard H.*, *T-MTT* 72 Jul 446-452 (1C12)
- Lumped-element circulators**; switching circulators; switching by changing two capacitance values while keeping magnetic biasing field constant *Kneir, Reinhard H.*, *T-MTT* 72 Jun 396-401 (1F02)
- Lumped-element measurements**; impedance measurements on inductors and capacitors from 1 to 12 GHz; perturbation method using resonant transmission line *DeBrecht, Robert E.*, *T-MTT* 72 Jan 41-48 (1E07)
- M**
- Magnetic loss measurement**; ferrites, measurement of dissipative parameters of ferrite and insertion of below-resonance waveguide Y circulator loaded with ferrite; 1.3 to 11 GHz *Roveda, Riccardo*, *T-MTT* 72 Feb 89-96 (1B03)
- Magnetic microstrip lines**; effective relative permeability, propagation and attenuation filling factors. *Pucel, Robert A.*, *T-MTT* 72 May 304-308 (1B11)
- Magnetic microstrip lines**; cf. Ferrite microstrip lines; Garnet microstrip lines
- Magnetic resonance**; cf. Ferromagnetic resonance
- Magnetostatic delay lines**; delay limits due to dispersion. *Bini, M.*, *T-MTT* 72 Nov 771-773 (2B02)
- Matching**; cf. Impedance matching
- MATE data acquisition system**; computer-aided testing system using time-shared computer; application to testing of microwave transistors. *Schindler, Max J.*, *T-MTT* 72 Jan 54-60 (2B01)
- Matrix methods**; eigenvalue calculation; anomalous convergence of iterative methods *Albani, M.*, *T-MTT* 72 Sep 630-631 (2C05)
- Matrix methods**; microstrip discontinuities; three-dimensional problems *Farrar, Andrew*, *T-MTT* 72 Aug 497-504 (1B07)
- Matrix methods**; cf. Mode-matching methods; Moment methods
- Meshes**; cf. Conducting screens
- Microstrip antennas**; slot antennas at X-band, input impedance and radiation patterns. *Yoshimura, Yoshikazu*, *T-MTT* 72 Nov 760-762 (1E12)
- Microstrip circuits**; dc blocking capacitors; interdigital-type capacitors for octave bandwidth. *Lacombe, David*, *T-MTT* 72 Aug 555-556 (2B10)
- Microstrip circuits**; integrated-circuit oscillators for broadband high-performance receivers; thin-film microstrip circuits. *Okean, Herman C.*, *T-MTT* 72 Feb 155-164 (2C01)
- Microstrip circuits**; tunnel-diode amplifiers for broadband high-performance receivers; thin-film microstrip circuits for 8 to 12 GHz and 6 to 8 GHz bands *Okean, Herman C.*, *T-MTT* 72 Feb 165-172 (2C11)
- Microstrip components**; cf. Microstrip terminations
- Microstrip directional couplers**; quadrature couplers; broadband backward-wave quadrature coupler *Waugh, Raymond*, *T-MTT* 72 Nov 777-779 (2B08)
- Microstrip discontinuities**; capacitance calculation; projective method that preserves essential singularity in charge distribution at strip edges. *Silvester, P.*, *T-MTT* 72 Nov 756-758 (1E08)
- Microstrip discontinuities**; fringe capacitance due to abrupt truncation of uniform line; spectral-domain approach using Galerkin's method. *Itoh, Tsutomu*, *T-MTT* 72 Dec 847-849 (2B01)
- Microstrip discontinuities**; gap capacitance in strip conductors, variational formulation of equivalent circuit; numerical results. *Maeda, Minoru*, *T-MTT* 72 Jun 390-396 (1E08)
- Microstrip discontinuities**; gaps and steps; equivalent capacitive networks, integral equation approach *Benedek, Peter*, *T-MTT* 72 Nov 729-733 (1C05)
- Microstrip discontinuities**; matrix methods for three-dimensional problems *Farrar, Andrew*, *T-MTT* 72 Aug 497-504 (1B07)
- Microstrip discontinuities**; open-circuit capacitance calculation; integral equation formulation and numerical solution using projective method. *Silvester, P.*, *T-MTT* 72 Aug 511-516 (1C09)
- Microstrip discontinuities**; open-end and edge effects, empirical equation for microstrip on alumina substrate. *Jan, O. P.*, *T-MTT* 72 Sep 626-628 (2C01)
- Microstrip filters**; parallel-coupled-line filters suitable for microstrip and stripline realizations; hairpin-line filters. *Cristal, Edward G.*, *T-MTT* 72 Nov 719-728 (1B07)
- Microstrip lines**; anisotropy in alumina substrates; effect on dielectric constant of line *van Heuven, Johan H. C.*, *T-MTT* 72 Nov 775-777 (2B06)
- Microstrip lines**; capacitance calculation; matrix methods for three-dimensional problems *Farrar, Andrew*, *T-MTT* 72 Aug 497-504 (1B07)
- Microstrip lines**; capacitance calculation; projective method that preserves essential singularity in charge distribution at strip edges. *Silvester, P.*, *T-MTT* 72 Nov 756-758 (1E08)
- Microstrip lines**; capacitance matrix calculation for multiconductor system using network analog method *Lennartsson, Bengt L.*, *T-MTT* 72 Sep 586-591 (1C12)
- Microstrip lines**; capacitance of rectangular metal plates separated by dielectric sheet; formulation as Fredholm integral equation and numerical solution by projective method *Benedek, Peter*, *T-MTT* 72 Aug 504-510 (1C02)
- Microstrip lines**; dispersion curves for fundamental and higher order hybrid modes in single and coupled microstrip; finite-difference methods *Corr, Douglas G.*, *T-MTT* 72 Oct 669-678 (1E01)
- Microstrip lines**; dominant mode analysis; numerical methods and experimental measurements. *Wharton, R. P.*, *T-MTT* 72 Aug 552-555 (2B07)
- Microstrip lines**; frequency-dependent characteristics of single and coupled lines in shielded microstrip. *Krage, Mark K.*, *T-MTT* 72 Oct 678-688 (1E10)
- Microstrip lines**; magnetic substrates; effective relative permeability propagation and attenuation filling factors. *Pucel, Robert A.*, *T-MTT* 72 May 304-308 (1B11)
- Microstrip lines**; magnetic substrates; experimental data for microstrip on ferrite and garnet substrates. *Massé, Daniel J.*, *T-MTT* 72 May 309-313 (1C04)
- Microstrip resonators**; elliptical resonators; mode chart and unloaded Q . *Kretschmar, Jan G.*, *T-MTT* 72 May 342-343 (1F01)
- Microstrip terminations**; 50- Ω termination having maximum VSWR of 1.46 from 1 to 13 GHz. *LaCombe, David*, *T-MTT* 72 Apr 290-292 (1E12)
- Microwave amplifiers**; nonlinear power amplifiers in stable and injection-locked modes; dynamic equations for modulated signals *Takayama, Yoichiro*, *T-MTT* 72 Sep 591-595 (1D05)
- Microwave amplifiers**; power amplifier consisting of nonreciprocal transmission line periodically loaded by negative-resistance diodes. *Paik, S. F.*, *T-MTT* 72 Mar 202-209 (1B04)
- Microwave amplifiers**; cf. Gunn amplifiers; IMPATT amplifiers; Parametric amplifiers; Tunnel-diode amplifiers; UHF amplifiers
- Microwave circuits**; diode coupled to rectangular waveguide by inductive post, equivalent circuit. *White, Joseph F.*, *T-MTT* 72 Jun 372-378 (1D02)
- Microwave circuits**; nonlinear active microwave circuits; describing function analysis. *Gustafsson, Lennart*, *T-MTT* 72 Jun 402-409 (2B01)
- Microwave filters**; parallel-coupled-line filters suitable for microstrip and stripline realizations, hairpin-line filters. *Cristal, Edward G.*, *T-MTT* 72 Nov 719-728 (1B07)
- Microwave filters**; cf. Bandpass filters; Bandstop filters; Cavity-resonator filters; Comb filters; Distributed filters; Equiprimitive filters; Low-pass filters; Millimeter-wave filters; Transmission-line filters; YIG filters
- Microwave heating**; TEM mode systems; air knife inside applicator as center conductor of TEM structure. *Johnston, D. A.*, *T-MTT* 72 Aug 547-549 (2B02)
- Microwave integrated circuits**; attenuators; p-i-n variable attenuator with small phase shift, 0.5 to 3 GHz *Parris, W. J.*, *T-MTT* 72 Sep 618-619 (2B05)
- Microwave integrated circuits**; oscillators for broadband high-performance receivers; thin-film microstrip circuits. *Okean, Herman C.*, *T-MTT* 72 Feb 155-164 (2C01)
- Microwave integrated circuits**; planar circuits; analysis based on contour-integral solution of wave equation. *Okoshi, Takanori*, *T-MTT* 72 Apr 245-252 (1B03)
- Microwave integrated circuits**; tunnel-diode amplifiers for broadband high-performance receivers; thin-film microstrip circuits for 8 to 12 GHz and 6 to 8 GHz bands. *Okean, Herman C.*, *T-MTT* 72 Feb 165-172 (2C11)
- Microwave integrated circuits**; cf. Microstrip; Slot lines
- Microwave limiters**; Gunn diodes as power limiters. *Atchison, C. S.*, *T-MTT* 72 Feb 181-182 (2E03)
- Microwave limiters**; subsidiary-resonance limiter with dynamic range greater than 200 kW, multilayer ferrite-dielectric sandwich on narrow wall of rectangular guide. *Allen, James L.*, *T-MTT* 72 Feb 193-194 (2F03)
- Microwave measurements**; microstrip lines; dominant mode analysis. *Wharton, R. P.*, *T-MTT* 72 Aug 552-555 (2B07)
- Microwave measurements**; cf. Attenuation measurement; Automated microwave measurements; Cavity perturbation techniques; Computer-aided microwave measurements; Conductivity measurement; Dielectric constant measurement; Dielectric loss measurement; Impedance measurement; Lumped-element measurements; Magnetic loss measurement; Noise measurement; Permeability measurement; Phase measurement; Q measurement; Scattering parameter measurements
- Microwave oscillators**; describing function analysis. *Gustafsson, Lennart*, *T-MTT* 72 Jun 402-409 (2B01)
- Microwave oscillators**; diode coupled to rectangular waveguide by inductive post; equivalent circuit *White, Joseph F.*, *T-MTT* 72 Jun 372-378 (1D02)
- Microwave oscillators**; integrated-circuit oscillators for broadband high-performance receivers; thin-film microstrip circuits *Okean, Herman C.*, *T-MTT* 72 Feb 155-164 (2C01)
- Microwave oscillators**; measurements; automatic drawing of constant power loci plots using p-i-n diode as variable-impedance termination *Kovugi, Y.*, *T-MTT* 72 Dec 852-855 (2B06)
- Microwave oscillators**; noise of negative resistance oscillators at modulation frequencies beyond bandwidth of stabilizing cavity; AM and FM noise. *Schick, Burkhard*, *T-MTT* 72 Oct 635-641 (1B03)
- Microwave oscillators**; cf. Avalanche diode oscillators; BARITT oscillators, Gunn oscillators; IMPATT oscillators; Millimeter-wave oscillators; Phase-locked oscillators; Punchthrough oscillators; TRAPATT oscillators; UHF oscillators; YIG-tuned oscillators
- Microwave receivers**; instantaneous frequency-measuring receivers, history of development *Goddard, N. E.*, *T-MTT* 72 Apr 292-293 (2F02)
- Microwave switches**; phase switches, 4-level phase switch using two switching diodes and one circulator *Schlosser, Wolfgang O.*, *T-MTT* 72 Sep 614-616 (2B01)
- Microwave Symposium**; report on 1972 International Microwave Symposium *Knox, Robert M.*, *T-MTT* 72 Dec 794-797 (1B05)
- Microwave Theory and Techniques Group**; cf. IEEE Microwave Theory and Techniques Group
- Microwave transistors**; small-signal equivalent network of bipolar transistors; computer-aided determination *Hartmann, Karl*, *T-MTT* 72 Feb 120-126 (1D10)
- Microwave transistors**; testing, computer-controlled data acquisition system using time-shared computer, MATE system. *Schindler, Max J.*, *T-MTT* 72 Jan 54-60 (2B01)
- Millimeter-wave directional couplers**; hybrid junctions, 55 GHz top-wall coupler and 94 GHz branch-guide coupler, waveguide couplers. *Botjer, Martin F.*, *T-MTT* 72 Feb 182-184 (2E04)
- Millimeter-wave filters**; channel diplexer using multimode waveguide filters *Ren, Chung-Li*, *T-MTT* 72 Dec 820-827 (1D07)
- Millimeter-wave focusing**; refocusing and redirecting by cylindrical mirrors, experimental results in 50 to 55 GHz band *Arnaud, Jacques A.*, *T-MTT* 72 May 344-345 (1F03)
- Millimeter waveguides**; beam waveguide consisting of equispaced dielectric frames, field pattern and power loss measurements at 10 GHz and 37 GHz *Checacci, Pier Francesco*, *T-MTT* 72 Sep 608-613 (1E10)
- Millimeter waveguides**; coupled-mode analysis for two-mode random media, transmission statistics for stationary random coupling *Rowe, Harrison E.*, *T-MTT* 72 Jun 349-365 (1B03)
- Millimeter waveguides**; coupled-mode analysis for two-mode random media with frequency-dependent coupling, transmission statistics *Young, D. T.*, *T-MTT* 72 Jun 365-372 (1C07)
- Millimeter-wave oscillators**, Gunn oscillators, frequency stability of 3×10^{-5} from 0 to 50°C for K_a band *Nagano, S.*, *T-MTT* 72 Feb 174-176 (2D08)
- Millimeter-wave propagation**; cf. Millimeter-wave focusing

Minimax approximation: least p th approximation for computer-aided optimization. *Bandler, John W., T-MTT 72 Dec 834-840 (1E09)*

Minimax approximation: optimization method, grazor search program description. *Bandler, John W., T-MTT 72 Nov 784-785 (2C03)*

Minimax approximation: optimization method, nonlinear minimax optimization of network responses; grazor search algorithm. *Bandler, John W., T-MTT 72 Sep 596-604 (1D10)*

Mixers: tunnel-diode mixer at 600 MHz; self-oscillating mixer with conversion gain dependent on bias. *Toker, Canun, T-MTT 72 Sep 616-618 (2B03)*

Mobile radio systems: spectrum surveillance system for law enforcement agencies; computer-controlled system. *McKay, H. Dean, T-MTT 72 Jan 69-74 (2C04)*

Mode coupling: cf. Coupled-mode analysis

Models: cf. Network models; Semiconductor device models

Mode-matching methods: ferrite circulators; higher order approximations. *Castillo, Joseph B., T-MTT 72 Jun 410-412 (2B09)*

Mode-matching methods: integral equation solution for iris discontinuity problem; relative convergence phenomenon arising in use of moment method and mode-matching method. *Mitra, Raj, T-MTT 72 Feb 96-104 (1B10)*

Moment methods: integral equation solutions for iris discontinuity problem; relative convergence phenomenon arising in use of moment method and mode-matching method. *Mitra, Raj, T-MTT 72 Feb 96-104 (1B10)*

Moment methods: microstrip discontinuities, three-dimensional problems. *Farrar, Andrew, T-MTT 72 Aug 497-504 (1B07)*

Moment methods: waveguide aperture problems described by integral equation; use of moment method to reduce integral equation to matrix equations. *Thong, Vu Khac, T-MTT 72 Jun 416-418 (2C03)*

Moment methods: waveguide scattering due to discontinuities. *Wu, Sien-Chong, T-MTT 72 Nov 744-749 (1D08)*

Moment methods: waveguides of arbitrary cross section; integral equation formulation; variational solution using moment methods. *Spelman, Barry E., T-MTT 72 Sep 578-585 (1C04)*

MSM diodes: cf. BARITT diodes

Multiconductor transmission lines: capacitance matrix calculation using network analog method. *Lennartsson, Bengt L., T-MTT 72 Sep 586-591 (1C12)*

Multiplexing: cf. Dplexers; FDM

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Network analysis: cf. Adjoint networks; Sensitivity analysis

Network models: multiconductor transmission lines; capacitance matrix calculation using network analog method. *Lennartsson, Bengt L., T-MTT 72 Sep 586-591 (1C12)*

Network models: network model of dispersive interdigital transducer with nonuniform electrode spacing. *Smith, W. Richard, T-MTT 72 Jul 458-471 (1D12)*

Network models: waveguide-mounted Gunn oscillators; equivalent circuit representation of impedance presented to device terminals. *Jethwa, C. P., T-MTT 72 Sep 565-572 (1B03)*

Network models: cf. Equivalent networks

Networks: cf. Distributed networks; Filters, Impedance-matching networks; Planar circuits; Two-port networks

Noise: negative resistance oscillators at modulation frequencies beyond bandwidth of stabilizing cavity; AM and FM noise. *Schiek, Burkhard, T-MTT 72 Oct 635-641 (1B03)*

Noise: cf. Semiconductor noise

Noise measurement: Gunn and avalanche oscillator noise parameters; AM and FM noise measurements. *Ohtomo, Motoharu, T-MTT 72 Jul 425-437 (1B03)*

Noise measurement: microwave frequencies; accuracy of AM and FM noise measurements using carrier-suppression filter and phase detector. *Fikart, Joseph L., T-MTT 72 Oct 720-703 (2C02)*

Nonhomogeneously-loaded waveguides: perturbation techniques; renormalization to obtain nondivergent second-order perturbation term. *Hidaka, Takehiko, T-MTT 72 Feb 180-181 (2E02)*

Nonlinear networks: active microwave circuits; describing function analysis. *Gustafsson, Lennart, T-MTT 72 Jun 402-409 (2B01)*

Nonlinear oscillators: describing function analysis. *Gustafsson, Lennart, T-MTT 72 Jun 402-409 (2B01)*

Nonuniform transmission lines: matching section without impedance steps at ends; near-optimum matching. *Hecken, Rudolph P., T-MTT 72 Nov 734-739 (1C10)*

Nonuniform transmission lines: scattering parameters and admittance. *Bergqvist, Åke, T-MTT 72 Aug 557-558 (2B12)*

Numerical methods: capacitance of rectangular metal plates separated by dielectric sheet; formulation as Fredholm integral equation and numerical solution by projective method. *Benedek, Peter, T-MTT 72 Aug 504-510 (1C02)*

Numerical methods: microstrip, frequency-dependent characteristics of single and coupled lines in shielded microstrip. *Krage, Mark K., T-MTT 72 Oct 678-688 (1E10)*

Numerical methods: microstrip open circuits, integral equation formulation and numerical solution using projective method. *Silvester, P., T-MTT 72 Aug 511-516 (1C09)*

Numerical methods: waveguide diaphragm problems; eigenmode series transformation that improves convergence. *Rozzi, Tullio E., T-MTT 72 Nov 770-771 (2B01)*

Numerical methods: waveguides; null-field method for guides of arbitrary cross section. *Ng, Fook Loy, T-MTT 72 Oct 658-662 (1D02)*

Numerical methods: cf. Finite-difference methods; Finite-element methods; Integral equations; Matrix methods; Modified residue-calculus techniques; Moment methods; Relaxation methods; Variational techniques

O

Optical diffraction: wave beam diffracted by aperture; field in Fresnel and Fraunhofer regions for rectangular and circular apertures. *Tanaka, Kazumasa, T-MTT 72 Nov 749-755 (1E01)*

Optical PM: traveling-wave modulator; waveguide loaded with electrooptic material. *El-Shandwily, M. Ezzat, T-MTT 72 Feb 132-137 (1E10)*

Optical resonators: cf. Fabry-Perot resonators

Optical waveguides: cf. Fiber waveguides

Optimization techniques: least p th approximation; computationally practical

approach for use in design problems. *Bandler, John W., T-MTT 72 Dec 834-840 (1E09)*

Optimization techniques: nonlinear minimax optimization of network and system responses; grazor search algorithm. *Bandler, John W., T-MTT 72 Sep 596-604 (1D10)*

Optimization techniques: nonlinear minimax optimization; grazor search program description. *Bandler, John W., T-MTT 72 Nov 784-785 (2C03)*

Oscillators: cf. Locked oscillators; Microwave oscillators; Millimeter-wave oscillators; Phase-locked oscillators; UHF oscillators

P

Parabolic waveguides: mode classification; relation between modes in rectangular, elliptical, and parabolic guides; mode classification for guides of arbitrary cross sections. *Larsen, Tove, T-MTT 72 Jun 379-384 (1D09)*

Parametric amplifiers: broadband design for lower K -band; computer-aided optimization. *Branner, G. R., T-MTT 72 Feb 176-178 (2D10)*

Parametric amplifiers: wideband K -band parametric amplifier with triple-tuned gain characteristics, operation from cryogenic temperatures to room temperatures. *Okajima, Toru, T-MTT 72 Dec 812-819 (1C11)*

Partial differential equations: finite-element solutions within curved boundaries; boundaries defined as accurately as desired. *Richards, David J., T-MTT 72 Oct 650-657 (1C06)*

Partial differential equations: variational techniques; formulation of Dirichlet condition as natural boundary condition. *Hazel, Terence George, T-MTT 72 Jun 385-390 (1E03)*

Periodic arrays: electromagnetic surface-wave propagation on dipole and slot arrays; attenuation due to ohmic losses. *Amitay, Noach, T-MTT 72 Feb 148-155 (2B06)*

Periodic arrays: electromagnetic transmission through circular hole arrays in flat metallic plates. *Otoshi, Tom Y., T-MTT 72 Mar 235-236 (1E01)*

Periodic arrays: embedding network for microwave semiconductor devices; array of metallic posts terminated with lumped devices. *Gutmann, R. J., T-MTT 72 Mar 215-223 (1C05)*

Periodic arrays: cf. Yagi-Uda arrays

Permeability: tensor of magnetized ferrites; calculation from waveguide measurements, computer program description. *Entschladen, H., T-MTT 72 Jul 490-491 (2C07)*

Permeability measurement: computer-aided time-domain techniques for broadband microwave measurements. *Nicolson, A. Murray, T-MTT 72 Jan 3-9 (1B05)*

Permittivity: cf. Dielectric constant

Perturbation techniques: elliptical waveguides; attenuation factor for TE and TM modes. *Kretschmar, Jan G., T-MTT 72 Apr 280-284 (1E02)*

Perturbation techniques: renormalization to obtain nondivergent second-order perturbation term; application to inhomogeneously-loaded waveguide. *Hidaka, Takehiko, T-MTT 72 Feb 180-181 (2E02)*

Perturbation techniques: cf. Cavity perturbation techniques

Phased arrays: testing, computer-controlled production test system for airborne microwave modules. *Dale, Charles H., T-MTT 72 Jan 10-17 (1B12)*

Phase-locked oscillators: describing function analysis. *Gustafsson, Lennart, T-MTT 72 Jun 402-409 (2B01)*

Phase-locked oscillators: YIG-tuned Gunn oscillators; wideband phase locking and phase shifting using feedback control; X-band oscillators. *Rubin, David, T-MTT 72 Apr 286-289 (1E08)*

Phase-locked oscillators: cf. Locked oscillators

Phase measurement: automated microwave measurement using RF substitution techniques; homodyne detection method. *Howarth, Barry A., T-MTT 72 Sep 623-626 (2B10)*

Phase measurement: phase shifter calibration; absolute calibration of periodic phase shifter without use of standard phase shifter. *Somlo, P. I., T-MTT 72 Aug 532-537 (1E06)*

Phase modulation: cf. PM

Phase shifters: broadband diode phase shifters; design equations for switched line, reflection, loaded line, and phase shifter using lumped-element high-pass and low-pass circuits. *Garver, Robert V., T-MTT 72 May 314-323 (1C09)*

Phase shifters: calibration of periodic phase shifter without use of standard phase shifter. *Somlo, P. I., T-MTT 72 Aug 532-537 (1E06)*

Phase shifters: digital diode-loaded-line phase shifters; 75° separation between loading susceptances. *Yahara, T., T-MTT 72 Oct 703-704 (2C03)*

Phase shifters: cf. Ferrite phase shifters

Phase-shift keying: cf. PSK

p-i-n diodes: automated microwave measurements using p-i-n diode as variable-impedance termination. *Kosugi, Y., T-MTT 72 Dec 852-855 (2B06)*

p-i-n diodes: microwave attenuators; current-controlled variable attenuator with small phase shift; 0.5 to 3 GHz. *Parris, W. J., T-MTT 72 Sep 618-619 (2B05)*

Planar circuits: computer analysis based on contour-integral solution of wave equation. *Okoshi, Takanori, T-MTT 72 Apr 245-252 (1B03)*

Plasma diagnostics: calibration of cylindrical cavities used in plasma diagnostics; computer program for generation of calibration curves. *Fein, Michael E., T-MTT 72 Jan 22-30 (1C12)*

Plasma diagnostics: calibration of cylindrical cavities used in plasma diagnostics; computer program for generation of calibration curves. *Fein, Michael E., T-MTT 72 Jan 83 (2D06)*

Plasma-loaded waveguides: hybrid-frequency cutoffs in axially magnetized waveguide filled with plasma. *de Santis, Pietro, T-MTT 72 Mar 237-238 (1E03)*

PM: cf. Optical PM

Poisson equation: Green's function for Poisson equation in a two-dielectric region. *dos Santos, Antonio F., T-MTT 72 Nov 777 (2B08)*

Police: cf. Law enforcement

Power equations: random coupling of two waves traveling in opposite directions; coupled power equations. *Marcuse, D., T-MTT 72 Aug 541-546 (1F03)*

Propagation: cf. Electromagnetic propagation

PSK modulators: four-level phase switch using two switching diodes and one circulator. *Schlosser, Wolfgang O., T-MTT 72 Sep 614-616 (2B01)*

Punchthrough oscillators: dynamic resistance and capacitance as function of frequency and current density; use in predicting electronic tuning performance. *Sultan, Nizar B., T-MTT 72 Nov 773-775 (2B04)*

Q

- Q measurement**; lumped-element impedance measurement using resonant transmission line; 1 to 12 GHz measurements on inductors and capacitors *DeBrecht, Robert E., T-MTT 72 Jan 41-48 (1E07)*
- Q measurement**; varactor diodes; measurement in presence of external loss *Roe, James M., T-MTT 71 Aug 728-729 (2B01)*
- Q measurement**; cf. Cavity perturbation techniques

R

- Random media**; coupled-mode analysis for two-mode random media; transmission statistics for stationary random coupling *Rowe, Harrison E., T-MTT 72 Jun 349-365 (1B03)*
- Random media**; coupled-mode analysis for two-mode random media with frequency-dependent coupling; covariance of signal-signal and signal-spurious-mode transfer functions *Young, D. T., T-MTT 72 Jun 365-372 (1C07)*
- Random media**, coupled power equations for random coupling of two waves traveling in opposite directions *Marcuse, D., T-MTT 72 Aug 541-546 (1F03)*
- Reflection coefficient measurement**; cf. Scattering parameters measurement
- Relaxation methods**; striplines, calculation of characteristics of coplanar-type striplines *Hatsuda, Takeshi, T-MTT 72 Jun 413-416 (2B12)*
- Residue-calculus techniques**; cf. Modified residue-calculus techniques
- Resonator filters**; cf. Cavity-resonator filters
- Resonators**; cf. Cavity resonators; Coaxial resonators; Fabry-Perot resonators. Microstrip resonators; Transmission-line resonators

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- Scattering**; cf. Electromagnetic scattering
- Scattering matrices**; lossy waveguide junctions; dissipation and scattering matrices in terms of eigenvalues of dissipation matrix *Helszajn, Joseph, T-MTT 72 Nov 779-782 (2B10)*
- Scattering matrices**; waveguide discontinuities; calculation of scattering matrix for lossless discontinuities using small aperture and small obstacle theory; unitary scattering matrix derivation *Ren, Chung-Li, T-MTT 72 Jul 488-490 (2C05)*
- Scattering parameters**; sensitivity analysis in terms of wave variables for distributed-lumped networks; adjoint networks *Bandler, John W., T-MTT 72 Feb 138-147 (1F04)*
- Scattering parameters**; UHF amplifier design using scattering parameters *Gledhill, C. S., T-MTT 72 Apr 289-290 (1E11)*
- Scattering parameters measurement**; efficiencies of two-port networks with arbitrary load; calculation from input reflection coefficient data measured with output terminated in sliding short *Beatty, Robert W., T-MTT 72 May 343-344 (1F02)*
- Scattering parameters measurement**; errors due to residual SWR of slotted lines or directional couplers, reflection coefficient measurement *Garver, Robert V., T-MTT 72 Jan 61-69 (2B08)*
- Scattering parameters measurement**; lumped-element thin-film circulators; improved equivalent circuit *Knerr, Reinhard H., T-MTT 72 Jul 446-452 (1C12)*
- Scattering parameters measurement**; microwave transistors; data acquisition system using time-shared computers; MATE system *Schindler, Max J., T-MTT 72 Jan 54-60 (2B01)*
- Scattering parameters measurement**; multipoint waveguide junctions; application of Deschamps' graphical method *Chang, C. T. M., T-MTT 72 Feb 186-187 (2E08)*
- Scattering parameters measurement**; reflection coefficient as function of distance; swept-frequency instrument *Somlo, P. I., T-MTT 72 Feb 105-112 (1C07)*
- Scattering parameters measurement**; time-domain reflectometer in which pulse spectrum lines are radiated individually, measured reflections are added to compute echo *Robinson, Lloyd A., T-MTT 72 Dec 855-857 (2B09)*
- Scattering parameters measurement**; time-domain techniques for broadband microwave measurements; computer-aided measurement *Nicolson, A. Murray, T-MTT 72 Jan 3-9 (1B05)*
- Screens**; cf. Conducting screens
- Semiconductor device models**; cf. Transistor models
- Semiconductor devices**; embedding network for microwave semiconductor devices; periodic array of metallic posts terminated with lumped devices *Gutmann, R. J., T-MTT 72 Mar 215-223 (1C05)*
- Semiconductor device testing**; microwave transistors; data acquisition system using time-shared computer; MATE system *Schindler, Max J., T-MTT 72 Jan 54-60 (2B01)*
- Semiconductor diode amplifiers**; microwave power amplifier consisting of nonreciprocal transmission line periodically loaded by negative-resistance diodes *Paik, S. F., T-MTT 72 Mar 202-209 (1B04)*
- Semiconductor diode amplifiers**; nonlinear power amplifiers in stable and injection-locked modes; dynamic equations for modulated signals *Takayama, Yoichiro, T-MTT 72 Sep 591-595 (1D05)*
- Semiconductor diode amplifiers**; cf. Gunn amplifiers; IMPATT amplifiers; Tunnel-diode amplifiers
- Semiconductor diode circuits**; waveguide circuits; equivalent circuit for diode coupled to rectangular waveguide by inductive post *White, Joseph F., T-MTT 72 Jun 372-378 (1D02)*
- Semiconductor diode oscillators**; cf. Avalanche diode oscillators; BARITT oscillators; Gunn oscillators; Microwave oscillators; Punchthrough oscillators; TRAPATT oscillators
- Semiconductor diode diodes**; cf. Gunn diodes; Varactor diodes
- Semiconductor-loaded waveguides**; periodic array of metallic posts terminated with lumped semiconductor devices *Gutmann, R. J., T-MTT 72 Mar 215-223 (1C05)*
- Semiconductor materials**; measurement of dielectric constant and conductivity at microwave frequencies; cavity perturbation technique that eliminates Q measurement *Eldumiati, Ismail I., T-MTT 72 Feb 126-132 (1E04)*
- Semiconductor noise**; Gunn and avalanche oscillators; experimental evaluation of noise parameters; AM and FM noise measurements *Ohtomo, Motoharu, T-MTT 72 Jul 425-437 (1B03)*
- Semiconductor noise**; IMPATT amplifiers and oscillators *Thaler, Hans-Jorg, T-MTT 71 Aug 692-705 (1C10)*

- Sensitivity analysis**; wave sensitivity computations for distributed-lumped networks; adjoint networks *Bandler, John W., T-MTT 72 Feb 138-147 (1F04)*
- Silicon diodes**; avalanche oscillator noise parameters; AM and FM noise measurements *Ohtomo, Motoharu, T-MTT 72 Jul 425-437 (1B03)*
- Single-sideband**; cf. SSB
- Slot antennas**; microstrip slot antenna at X-band; input impedance and radiation pattern *Yoshimura, Yoshikazu, T-MTT 72 Nov 760-762 (1E12)*
- Slot arrays**; electromagnetic surface-wave propagation; attenuation due to ohmic losses *Amiaty, Noach, T-MTT 72 Feb 148-155 (2B06)*
- Slot-line components**; fields in air and dielectric regions of slot-line cross section *Cohn, Seymour B., T-MTT 72 Feb 172-174 (2D06)*
- Slotted lines**; use in reflection coefficient measurement; errors due to residual SWR *Garver, Robert V., T-MTT 72 Jan 61-69 (2B08)*
- Southworth, George C.**; obituary *Saad, Theodore S., T-MTT 72 Dec 792-793 (1B03)*
- Special issues**; automated microwave measurements *IEEE G-MTT, T-MTT 72 Jan*
- Spectrum allocation**; cf. Frequency allocation
- Spectrum surveillance**; computer-controlled system for 5 kHz to 12 GHz; application to law enforcement systems *McKay, H. Dean, T-MTT 72 Jan 69-74 (2C04)*
- SSB modulation**; 10 GHz modulator with 1 kHz frequency shift; carrier suppressed by 65 dB and unwanted sideband by over 57 dB *Brooker, P. G., T-MTT 71 Oct 829-834 (1E03)*
- Stratified media**; broadside-coupled strips in layered dielectric medium and enclosed by rectangular shield; odd- and even-mode phase velocities *Allen, James L., T-MTT 72 Oct 662-669 (1D06)*
- Stripline circuits**; multichannel filters; triplexer unit that separates two contiguous channels *Kihlen, Ralph, T-MTT 72 Jul 486-488 (2C03)*
- Stripline circulators**; design procedure for junction circulators *Salay, Steven J., T-MTT 72 Feb 192-193 (2F02)*
- Stripline circulators**; lithium ferrite circulators for parametric amplifiers; operation from cryogenic temperatures to room temperatures *Okajima, Toru, T-MTT 72 Dec 812-819 (1C11)*
- Stripline circulators**; YIG circulators; four-port tunable circulator *Igarashi, Mitsuru, T-MTT 72 Dec 828-833 (1E03)*
- Stripline discontinuities**; impedance step discontinuities in symmetric stripline; resulting series lumped inductance and compensation *Nalbadian, Vahakn, T-MTT 72 Sep 573-578 (1B11)*
- Stripline filters**; parallel-coupled-line filters suitable for microstrip and stripline realizations; hairpin-line filters *Cristal, Edward G., T-MTT 72 Nov 719-728 (1B07)*
- Stripline filters**; YIG filters; four-port nonreciprocal bandstop-bandpass filter *Igarashi, Mitsuru, T-MTT 72 Dec 828-833 (1E03)*
- Striplines**; coplanar-type striplines; calculation of characteristics using relaxation methods *Hatsuda, Takeshi, T-MTT 72 Jun 413-416 (2B12)*
- Striplines**; Green's function for Poisson equation in a two-dielectric region *dos Santos, Antonio F., T-MTT 72 Nov 777 (2B08)*
- Striplines**, cf. Coupled-strip transmission lines
- Surface waves**; cf. Acoustic surface waves; Electromagnetic surface waves
- Switches**; cf. Microwave switches

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- Testing**; cf. Automated testing
- Thin-film circuits**; microwave integrated circuit oscillators for broadband high-performance receivers; thin-film microstrip circuits *Okean, Herman C., T-MTT 72 Feb 155-164 (2C01)*
- Thin-film circuits**; microwave tunnel-diode amplifiers for broadband high-performance receivers; thin-film microstrip circuits for 8 to 12 GHz and 6 to 8 GHz bands *Okean, Herman C., T-MTT 72 Feb 165-172 (2C11)*
- Thin-film circulators**; lumped-element circulators; equivalent circuit *Knerr, Reinhard H., T-MTT 72 Jul 446-452 (1C12)*
- Thin films**; dielectric constant measurement at microwave frequencies; automated method using cavity perturbation technique *Rzepecka, Maria A., T-MTT 72 Jan 30-37 (1D08)*
- Thin films**; dielectric constant measurement; automated microwave measurement using cavity perturbation technique *Rzepecka, Maria A., T-MTT 72 Sep 628-630 (2C03)*
- Time-domain reflectometry**; automated broadband microwave measurements; applications *Nicolson, A. Murray, T-MTT 72 Jan 3-9 (1B05)*
- Time-domain reflectometry**; synthetic spectrum approach; pulse spectrum lines radiated individually, measured reflections added to compute echo *Robinson, Lloyd A., T-MTT 72 Dec 855-857 (2B09)*
- Time-sharing computer systems**; use in data acquisition system; MATE system for computer-aided testing *Schindler, Max J., T-MTT 72 Jan 54-60 (2B01)*
- Transducer models**; network model of dispersive interdigital transducer with nonuniform electrode spacing *Smith, W. Richard, T-MTT 72 Jul 458-471 (1D12)*
- Transducers**; cf. Acoustic transducers
- Transferred-electron oscillators**; cf. Gunn oscillators
- Transformers**; cf. Impedance-matching networks
- Transistor models**; microwave bipolar transistors; computer-aided determination of small-signal equivalent network *Hartmann, Karl, T-MTT 72 Feb 120-126 (1D10)*
- Transistors**; cf. Microwave transistors
- Transmission coefficient measurements**; cf. Scattering parameters measurement
- Transmission-line discontinuities**; cf. Coaxial cable discontinuities; Microstrip discontinuities; Stripline 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)*
- Transmission-line filters**; computer-aided design; computer program for optimum synthesis *Hoffman, G., T-MTT 72 Oct 709-710 (2C09)*
- Transmission-line filters**; parallel-coupled-line filters suitable for microstrip and stripline realizations; hairpin-line filters *Cristal, Edward G., T-MTT 72 Nov 719-728 (1B07)*
- Transmission-line filters**; cf. Distributed filters
- Transmission-line resonators**; Q measurement for impedance measurement of lumped-element inductors and capacitors from 1 to 12 GHz; perturbation method *DeBrecht, Robert E., T-MTT 72 Jan 41-48 (1E07)*

- Transmission lines**, coaxial lines of rectangular cross section; dimensions of conductors for specified characteristic impedance *Riblet, Henry J., T-MTT 72 Aug 538-541 (1D12)*
- Transmission lines**, cf. Coupled-strip transmission lines; Coupled transmission lines; Distributed networks; Electromagnetic surface-wave transmission lines; Microstrip lines; Multiconductor transmission lines; Nonuniform transmission lines; Slot lines; Striplines
- TRAPATT oscillators**, Fairchild FD-300 diode operated at 502 MHz; 40% efficiency, 90 W peak power output *Cohen, Elot D., T-MTT 72 Feb 184-186 (2E06)*
- Tunnel-diode amplifiers**, microwave integrated circuits for broadband high-performance receivers; thin-film microstrip circuits for 8 to 12 GHz and 6 to 8 GHz bands *Okean, Herman C., T-MTT 72 Feb 165-172 (2C11)*
- Tunnel-diode mixers**, self-oscillating mixer with conversion gain dependent on bias; 600 MHz signal frequency. *Toker, Canan, T-MTT 72 Sep 616-618 (2B03)*
- Two-port networks**, conjugate-matched two-port as UHF amplifier *Gledhill, C. S., T-MTT 72 Apr 289-290 (1E11)*
- Two-port networks**, efficiencies of two-ports with arbitrary load; calculation from input reflection coefficient data measured with output terminated in sliding short *Beatty, Robert W., T-MTT 72 May 343-344 (1F02)*

U

- UHF amplifiers**, design using scattering parameters. *Gledhill, C. S., T-MTT 72 Apr 289-290 (1E11)*
- UHF oscillators**, TRAPATT oscillations from Fairchild FD-300 diode; 502 MHz, 40% efficiency, 90 W peak power output. *Cohen, Elot D., T-MTT 72 Feb 184-186 (2E06)*

V

- Varactor diodes**, frequency converters; intermodulation distortion in abrupt-junction current-pumped varactor converters *Gardiner, John Graham, T-MTT 71 Sep 741-749 (1B03)*
- Varactor diodes**, Q measurement for mounted diodes *Roe, James M., T-MTT 71 Aug 728-729 (2B01)*
- Variational techniques**, boundary-value problems; formulation of Dirichlet condition as natural boundary condition *Hazel, Terence George, T-MTT 72 Jun 385-390 (1E03)*
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- Variational techniques**, inductive irises having finite thickness and interacting with neighboring irises; equivalent network. *Rozzi, Tullio E., T-MTT 72 May 323-330 (1D06)*
- Variational techniques**, microstrip discontinuities; equivalent circuit for gap capacitance in strip conductors. *Maeda, Minoru, T-MTT 72 Jun 390-396 (1E08)*
- Variational techniques**, microstrip fringe capacitance calculation; spectral-domain approach using Galerkin's method. *Itoh, Tsutomu, T-MTT 72 Dec 847-849 (2B01)*

W

- Waveguide bends**, cf. Curved waveguides
- Waveguide discontinuities**, aperture problems described by integral equations; use of moment method to reduce integral equation to matrix equation. *Thong, Vu Khac, T-MTT 72 Jun 416-418 (2C03)*
- Waveguide discontinuities**, coupled-mode analysis for random media with stationary random coupling; transmission statistics. *Rowe, Harrison E., T-MTT 72 Jun 349-365 (1B03)*
- Waveguide discontinuities**, coupled-mode analysis for random media with frequency-dependent coupling; transmission statistics. *Young, D T., T-MTT 72 Jun 365-372 (1C07)*
- Waveguide discontinuities**, diaphragms; eigenmode series transformation that improves convergence. *Rozzi, Tullio E., T-MTT 72 Nov 770-771 (2B01)*
- Waveguide discontinuities**, diaphragms; singular integral equation method that retains expansion terms of all modes appearing in Green's function. *Lewin, Leonard, T-MTT 72 Dec 849-852 (2B03)*
- Waveguide discontinuities**, dielectric steps in waveguide; scattered fields calculation using modified residue-calculus technique *Royer, Erlind G., T-MTT 72 Apr 273-279 (1D07)*

- Waveguide discontinuities**, diode coupled to rectangular circuit by inductive post; equivalent circuit. *White, Joseph F., T-MTT 72 Jun 372-378 (1D02)*
- Waveguide discontinuities**, E -plane waveguide step with simultaneous change of media, susceptance calculation using singular integral equations *Montgomery, James P., T-MTT 72 Nov 763-764 (1F03)*
- Waveguide discontinuities**, inductive irises having ferrite thickness and interacting with neighboring irises; equivalent network *Rozzi, Tullio E., T-MTT 72 May 323-330 (1D06)*
- Waveguide discontinuities**, iris discontinuity problem; integral equation solution using moment method and mode-matching method; relative convergence phenomenon. *Mitra, Raj, T-MTT 72 Feb 96-104 (1B10)*
- Waveguide discontinuities**, lossless discontinuities; scattering matrix calculation using small aperture and small obstacle theory, unitary scattering matrix derivation. *Ren, Chung-Li, T-MTT 72 Jul 488-490 (2C05)*
- Waveguide discontinuities**, measurement of reflection coefficient as function of distance along guide; swept-frequency reflectometer. *Somlo, P. I., T-MTT 72 Feb 105-112 (1C07)*
- Waveguide discontinuities**, scattering problems; moment method solutions *Wu, Sien-Chong, T-MTT 72 Nov 744-749 (1D08)*
- Waveguide discontinuities**, cf. Waveguide transitions
- Waveguide junctions**, efficiencies of two-ports with arbitrary load; calculation from input reflection coefficient data measured with output terminated in sliding short. *Beatty, Robert W., T-MTT 72 May 343-344 (1F02)*
- Waveguide junctions**, lossy junctions, dissipation and scattering matrices in terms of eigenvalues of dissipation matrix. *Helszajn, Joseph, T-MTT 72 Nov 779-782 (2B10)*
- Waveguide junctions**, measurement of scattering coefficients of multipoint junctions; application of Deschamps' graphical method. *Chang, C T M., T-MTT 72 Feb 186-187 (2E08)*
- Waveguide junctions**, cf. Hybrid junctions; Waveguide transitions
- Waveguide losses**, measurement using cavity perturbation technique; computer-aided Q measurement. *Uhlir, Arthur, Jr., T-MTT 72 Jan 38-41 (1E04)*
- Waveguide mounts**, diode coupled to rectangular waveguide by inductive post, equivalent circuit. *White, Joseph F., T-MTT 72 Jun 372-378 (1D02)*
- Waveguide mounts**, Gunn oscillators; equivalent circuit representation of impedance presented to device terminals *Jethwa, C P., T-MTT 72 Sep 565-572 (1B03)*
- Waveguide obstacles**, cf. Waveguide discontinuities
- Waveguides**, arbitrary cross section, integral equation formulation; variational solution using moment methods *Spielman, Barry E., T-MTT 72 Sep 578-585 (1C04)*
- Waveguides**, mode classification for guides of arbitrary cross section; relation between modes in rectangular, elliptical, and parabolic waveguides. *Larsen, Tove, T-MTT 72 Jun 379-384 (1D09)*
- Waveguides**, numerical solution for guides of arbitrary cross section; null-field method *Ng, Fook Loy, T-MTT 72 Oct 658-662 (1D02)*
- Waveguides**, square and rectangular waveguides with rounded corners, eigenfunctions, eigenvalues, and attenuation constants; application to deformed circular waveguides *Lagasse, Paul, T-MTT 72 May 331-337 (1E02)*
- Waveguides**, vector wave equation in orthogonal curvilinear coordinates, decoupled formulation; application to ferrite-filled and curved waveguides of general cross section. *Lewin, Leonard, T-MTT 72 May 338-342 (1E09)*
- Waveguides**, cf. Acoustic waveguides; Beam waveguides; Circular waveguides; Coaxial waveguides; Curved waveguides; Dielectric-loaded waveguides; Dielectric waveguides; Electromagnetic surface waveguides; Elliptical waveguides; Ferrite-loaded waveguides; Nonhomogeneously-loaded waveguides; Plasma-loaded waveguides; Semiconductor-loaded waveguides; Transmission lines
- Waveguide transitions**, mode classification; relation between modes in rectangular, elliptical, and parabolic guides; mode classification for guides of arbitrary cross sections. *Larsen, Tove, T-MTT 72 Jun 379-384 (1D09)*
- Waveguide transitions**, rectangular to circular waveguide; circular H_{01} mode characteristics *Lagasse, Paul, T-MTT 72 May 331-337 (1E02)*

Y

- Yagi-Uda arrays**, surface-wave launchers for dielectric image lines *McRitchie, W Kenneth, T-MTT 72 Aug 493-496 (1B03)*
- YIG circulators**, stripline circulators, four-port tunable circulator. *Igarashi, Mitsuru, T-MTT 72 Dec 828-833 (1E03)*
- YIG filters**, stripline filters; four-port nonreciprocal bandstop-bandpass filter *Igarashi, Mitsuru, T-MTT 72 Dec 828-833 (1E03)*
- YIG-tuned oscillators**, Gunn oscillators; wideband phase locking and phase shifting using feedback control; X -band oscillators. *Rubin, David, T-MTT 72 Apr 286-289 (1E08)*