Microwave Abstracts

Based on technical merit and timeliness, microwave papers in journals published outside the United States have been selected and compiled below, many with annotations. Reprints of the papers may be obtained by writing directly to the author or to the source quoted. The papers are in English unless noted otherwise.

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PAPERS FROM JOURNALS PUBLISHED IN THE UNITED KINGDOM

Compiled by Dr. M. G. F. Wilson, University College London, London, U. K.

37

Propagation in Isotropic Plasma Waveguide, by P. J. B. Clarricoats, A. D. Olver, and J. S. L. Wong (University of Leeds, Yorkshire, U. K.); *Proc. IEE*, vol. 113, pp. 755–766, May 1966.

The properties of a circular waveguide enclosing either an axial or an annular column of isotropic plasma are discussed. The circularly symmetric mode of the axial column has characteristics suitable for forward wave devices, whereas the circularly symmetric mode of the annular structure is most suitable for backward wave devices.

38

Design of Wide-Range Varactor-Tuned Micowave Tunnel Diode Oscillators, by D. Cawsey (Royal Military College of Science, Swindon, Wiltshire, U. K.); *Proc. IEE*, vol. 113, pp. 943–947, June 1966.

A tunable tunnel-diode oscillator covering 1250 to 2500 MHz is described.

39

Application of the Magnetoresistance Effect in Semiconductors to Microwave Power Measurements, by S. Kataoka (Electrotechnical Laboratory, Tanashi-machi, Kitatama-gun, Tokyo, Japan); *Proc. IEE*, vol. 113, pp. 948–956, June 1966.

Five magnetoresistance wattmeters with InSb or InAs elements are described and compared at 10 or 34 GHz.

40

Braid Construction and Attenuation of Coaxial Cables at Microwave Frequencies, by J. L. Goldberg and R. J. Slaughter (British Insulated Callender's Cables Ltd., Warrington, Lancashire, and Central Research and Engineering Division, 38 Wood Lane, London, W 12, U. K.); *Proc. IEE*, vol. 113, pp. 957–962, June 1966.

Comparisons of many cables aie given.

41

Radiation from a Modulated Corrugated Surface Excited by a Waveguide, by D. S. Karjala and R. Mittra (University of Illinois, Urbana, Ill.); *Proc. IEE*, vol. 113, pp. 1143–1150, July 1966.

A formally exact solution is obtained. Results are given for the reflection coefficient, radiation pattern, the k-β diagram, and the amplitudes of the surface waves launched.

42

Propagation and Attenuation in the Double Strip *H* Guide, by R. F. B. Conlon and F. A. Benson (University of Sheffield, Yorkshire, U. K.); *Proc. IEE*, vol. 113, pp. 1311–1320, August 1966.

Numerical data are given for various geometries.

43

Field Distribution at Bends in Circular H_{0n} and Cylindrical Surface Waveguides, by H. E. M. Barlow (University College London, London, U. K.); *Proc. IEE*, vol. 113, pp. 1913–1919, December 1966.

A perturbation measurements technique is described whereby the electric field within a curved waveguide may be measured.

44

On Complex Waves, by G. D. Bernard and A. Ishimaru (Department of Electrical Engineering, M.I.T., Cambridge, Mass., and Department of Electrical Engineering, University of Washington, Seattle, Wash.); *Proc. IEE*, vol. 114, pp. 43–49, January 1967.

The validity of a certain approximate method of treating the radiation from a source excited interface is discussed. Examples are given together with comparisons between approximate and exact methods.

45

Wave Propagation in Rectangular Waveguide Containing a Semiconducting Film, by M. W. Gunn (McMaster University, Hamilton, Ontario, Canada); *Proc. IEE*, vol. 114, pp. 207–210, February 1967.

The propagation coefficient of a rectangular guide containing a centrally placed semiconducting film is found both theoretically and experimentally. Application to flap attenuators with small phase shifts is discussed.

46

New Features of Wave Propagation not Subject to Cutoff Between Two Parallel Guiding Surfaces, by H. E. M. Barlow (University College London, London, U. K.); *Proc. IEE*, vol. 114, pp. 421–427, April 1967.

It is shown that coating one of the guiding surfaces with dielectric leads to a reduction in the attenuation of the guide. The technique may be applied to striplines and coaxial cables.

47

UHF Tunnel-Diode Amplifier, by M. K. McPhun (University of Warwick, Coventry, Warwick, U. K.); *Proc. IEE*, vol. 114, pp. 428–434, April 1967.

A reflection-type amplifier for 450 MHz was constructed in stripline for a particular repeater application. A gain of 20 dB, a noise figure of 5 dB, and a 5.8 percent bandwidth are reported.

48

Transverse Equivalent Networks for Slotted Inhomogeneous Circular Waveguides, by A. A. Oliner and P. J. B. Clarricoats (Polytechnic Institute of Brooklyn, Brooklyn, N. Y., and University of Leeds, Yorkshire, U. K.); *Proc. IEE*, vol. 114, pp. 445–456, April 1967.

The longitudinally slotted waveguide contains a dielectric rod. Provided the rod radius is not too large it is shown that a simple transverse representation is permissible. Expressions for the slot susceptance and conductance are given.

49

Propagation Behaviour of Slotted Inhomogeneous Circular Waveguides, by P. J. B. Clarricoats, A. A. Oliner, and A. D. Olver (University of Leeds, Yorkshire, U. K., Polytechnic Institute of Brooklyn, Brooklyn, N. Y., and BBC Research Department, Kingswood Warren, Surrey, U. K.); *Proc. IEE*, vol. 114, pp. 457–464, April 1967.

An approximate transverse equivalent network representation is used to determine the propagation behavior of a slotted circular waveguide containing an axial dielectric rod. Results are given for E and H modes of azimuthal order zero and unity.

50

An *H*-Plane High Power TEM Ferrite Junction Circulator, by J. Helszajn (University of Leeds, Yorkshire, U. K.); *Radio and Electronic Engineer*, vol. 33, pp. 257–262, April 1967.

The circulator was tested at kWcw 2.5 and 150 kW peak at 1300 MHz, with a 7 percent bandwidth. Four thin garnet disks were used.

51
Characteristics of Varactor Diodes at Low Temperatures, by D. Chakraborty and R. Coackley (Post Office Research Station, Dollis Hill, London, NW 2, U. K.); *Radio and Electronic Engineer*, vol. 33, pp. 97–104, February 1967.

The performance of silicon and diffused mesa-type GaAs varactor diodes is measured. It is concluded that GaAs is most suitable for operation at liquid helium temperatures.

52
Power Imbedding at the Carrier Frequency of Multiple Wave Trains used in Radar Systems, by T. S. Chen (RCA, Electronic Components and Devices Division, Harrison, N. J.); *Internat'l J. Control*, vol. 4, pp. 1–28, July 1966.

Methods are discussed for improving the power spectrum of two N multiple wave trains used in certain radar systems so that increased power clusters at the carrier frequency. Constructive and destructive interference phenomena in the spectra of two sinusoidal wave trains are analyzed.

53
Waveguide Resonant-Iris Filters with Very Wide Passband and Stopbands, by T. S. Chen (RCA, Electronic Components and Devices Division, Harrison, N. J.); *Internat'l J. Electronics*, vol. 21, no. 5, pp. 401–424, 1966.

Improved filters are described which are suitable for solid-state frequency multiplier chains.

54
On the Interpretation of Plasma Measurements in a Waveguide Interactometer, by T. Kaliszewski (ADCOM Inc., Cambridge, Mass.); *Internat'l J. Electronics*, vol. 21, no. 1, pp. 1–16, 1966.

Plasma parameters are measured by a modified waveguide method which relies upon the Luxemburg effect.

55
The Design and Manufacture of Waveguide Tchebycheff Directional Couplers, by K. E. Hancock (Canadian Marconi Co., Montreal, Ontario, Canada); *Electronic Engineering*, vol. 39, pp. 292–297, May 1967.

Practical designs are given for coupled-mode directional couplers.