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 obtainable by writing directly to the author or to the source quoted. The papers are in English unless noted otherwise.

—K. Tomiyasu, *Associate Editor for Abstracts*

Papers from Journals Published in Italy

Compiled by Ingr. Nicola Rubino, Centro Microonde, Firenze, Italy.

1

Waveguide Cavities with Coupling Irises of Finite Thickness by G. P. Bava (Istituto di Elettronica e Telecomunicazioni, Politecnico di Torino, Torino, Italy); *Alta Frequenza*, vol. 34, no. 1, pp. 24–29, January 1965.

Study of transmission properties of microwave cavities; mathematical treatment, practical diagrams, comparison of theory and experimental results. (In Italian.)

2

Phase Velocity of a Wave Propagating in an Open, Periodic Structure with Particular Reference to Simon's Structure by V. Pozzolo and R. Zich (Istituto di Elettronica e Telecomunicazioni, Politecnico di Torino, Torino, Italy); *Alta Frequenza*, vol. 34, no. 3, pp. 188–197, March 1965.

Iterative method of calculation for first-approximation results, improved by use of variational techniques. (In Italian.)

3

Radiation Pattern of a Two-Styles Antenna Based on a Spherical Perfect Conductor by P. Bruscaglioni and A. Consortini (Centro Microonde, Firenze, Italy); *Alta Frequenza*, vol. 34, no. 3, pp. 198–203, March 1965.

Green's function method is followed to evaluate the electromagnetic field radiated by an electric, elementary dipole near a conductive sphere. Radiation resistances and patterns are given for several values of two parameters: electrical length of the styles, and the ratio between the radius of the sphere and the wavelength. (In Italian.)

4

Formation and Characteristics of Giant Pulses in Optical Masers by D. V. Missio (Microwave and Power Tube Division, SMDO, Raytheon Co., Waltham, Mass.) and K. N. Seeber (Space and Information Systems Division, Raytheon Co., Bedford, Mass.); *Alta Frequenza*, vol. 34, no. 5, pp. 322–331, May 165; English Issue no. 2, pp. 68E–77E.

Analysis of the population inversion and photon density in optical masers taking into account the excitation of all cavity modes. The various phases of the Q spoiling process are considered in detail. Numerical and experimental results are given for a ruby laser. (In English.)

5

Propagation of E.M. Waves in a Rectangular Guide with Anisotropic Wall by P. Bernardi (Istituto di Elettronica, Università di Roma, Italy); *Alta Frequenza*, vol. 34, no. 7, pp. 490–518, July 1965.

The conditions on the impedance wall required to obtain a unique electromagnetic field for the structure are obtained. The characteristic equation is derived and solved for some particular cases. The application of the theory to the measurement of dielectric constant of dissipative materials is discussed and some experimental results are given. (In Italian.)

6

Analysis of the New Conservation Law in Electromagnetic Theory by D. J. Candlin (Tait Institute of Mathematical Physics, University of Edinburgh, Edinburgh, England); *Il Nuovo Cimento*, vol. 37, no. 4, pp. 1390–1395, June 16, 1965.

The new conserved tensor in electromagnetic theory, introduced by Lipkin is shown to be a member of an infinite sequence of moments constructed from the wave vector. The physical interpretation is discussed. (In English.)

7

Interaction of Focused Laser Radiation with a Beam of Charged Particles by G. Toraldo di Francia (Istituto di Fisica Superiore, Università di Firenze, Firenze, Italy); *Il Nuovo Cimento*, vol. 37, no. 4, pp. 1553–1560, June 16, 1965.

A charged particle is assumed to be shot through the focal region of a high intensity laser beam concentrated by a lens. It is shown that to a first approximation no net acceleration is experienced by the particle, independent of the amplitude distribution produced on the lens pupil. To the same approximation no bunching is obtained if a beam of charged particles is shot through the focal region. (In English.)

8

Power Overshoot of a 6328 Å Gas Laser by F. Barocchi and P. Burlamacchi (Centro Microonde, Firenze, Italy), M. Mancini and G. Toraldo di Francia (Istituto di Fisica Superiore, Firenze, Italy); *Il Nuovo Cimento*, vol. 37, no. 4, pp. 1810–1811, June 16, 1965.

Peak power transients were observed in the emitted light of a nearly confocal He-Ne laser at 6328 Å. Such transients should give useful information on quantum levels and their decay times. (In English.)

9

A Crossed Beam Optical Gate with a Saturable Absorber by F. T. Arecchi, V. Degiorgio, and A. Sona (Laboratori CISE, Milano, Italy); *Il Nuovo Cimento*, vol. 38, no. 2, pp. 1096–1098, July 16, 1965.

It is shown how a saturable absorber, such as a solution of vanadium phthalocyanine in nitrobenzene, driven by a giant ruby laser pulse can be used in fast optical gate or coincidence experiments. (In English.)

10

Output Power and Energy in a Q-Switched Ruby Laser with a Saturable Absorber by G. Potenza and A. Sona (Laboratori CISE, Milano, Italy); *Il Nuovo Cimento*, vol. 38, no. 3, pp. 1438–1440, August 1, 1965.

An experimental analysis has been performed on the emission characteristics of a Q-switched ruby laser with a saturable absorber. (In English.)

11

Coherence of a Laser Beam by M. Bertolotti, B. Daino, F. Gori, and D. Sette (Istituto Superiore P. T. Fondazione U. Bordoni, Roma, Italy); *Il Nuovo Cimento*, vol. 38, no. 4, pp. 1505–1514, August 16, 1965.

The degree of coherence of a laser beam can be found by examining the interference pattern produced by the beam traversing two holes; theory, discussion, and experimental results. (In English.)