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.

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PAPERS FROM JOURNALS PUBLISHED
IN ITALY

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33
Efficiency and Power of Varactor Converters, by M. Vadnjal (Istituto di Elettronica, Università di Padua, Italy) and R. Tani (Soc. Italiana Telecomunicazioni Siemens, Milan, Italy); *Alta Frequenza*, vol. 34, pp. 392–398, June 1965.

The behavior of three frequency varactor converters is analyzed with regard to the output power as functions of available signal and pump powers. A general expression for the efficiency is derived by using a suitable approximation of the varactor nonlinear characteristic. The case of upper sideband up-converters is discussed in detail for the case of a signal frequency much lower than the pump frequency. The analysis is confirmed by experimental results. (In Italian.)

34
Measurement of Dielectric Constant at Microwave Frequency, by G. P. Bava and L. E. Zeglio (Instituto di Elettronica Politecnico di Torino, Turin, Italy); *Alta Frequenza*, vol. 34, pp. 399–405, June 1965.

A method of measuring the dielectric constant of low-loss materials based on the tangent relation is described. Diagrams and experimental results are reported. (In Italian.)

35
Analysis of the Radiation of Reflector Antennas, by G. Borgiotti (SELENIA, Rome, Italy); *Alta Frequenza*, vol. 34, pp. 644–648, September 1965.

By using the reciprocity theorem and the optical physics approximation, the radiation pattern of a reflector antenna can be calculated by an integral extended to the reflector surface. The calculations needed for the application of the method have been developed in detail, obtaining analytic expressions suitable for numerical evaluation by means of an electronic computer. (In Italian.)

36
Gap Voltage Measurement of Resonant Cavities, by D. Fabiani and M. Puglisi (Laboratori Nazionali di Frascati, Rome,

Italy); *Alta Frequenza*, vol 34, pp. 775–784, November 1965; English Issue no. 4, pp. 179E–188E.

The main purpose of this work is the indirect measurement of the maximum energy that certain resonators can give to a charged particle beam. An electrostatic system for the measurement of the gap voltage of a resonator is described. The method which has been used for the first time on cavity resonators can produce very precise measurements. (In English.)

37
High Frequency Backscattering from a Coated Sphere, by P. L. E. Uslenghi (Radiation Laboratory, The University of Michigan, Ann Arbor, Mich., U.S.A.); *Alta Frequenza*, vol. 34, pp. 785–788, November 1965; English Issue no. 4, pp. 189E–192E.

The backscattered field produced by a plane EM wave incident on an imperfectly conducting sphere, covered with two concentric layers of different materials, is considered. The material of the inner layer has a complex refractive index, whose value is greater than unity, while the refractive index of the material of the outer layer is very close to unity. The geometric and creeping wave contributions to the far backscattered field are obtained for short wavelengths. (In English.)

38
Reduced Profile Waveguide Components for Microwave Radio Links, by A. Pistilli (Società Italiana Telecomunicazioni Siemens, Milan, Italy); *Alta Frequenza*, vol. 34, pp. 847–858, December 1965.

Guides of reduced profile are compared with those of normal profile, considering attenuation, maximum carrying power, characteristic impedance, and mechanical clearance. The comparison is also made for many components of a typical radio link. The analysis leads to the conclusion that waveguides of reduced profile allow more compact construction and, in most cases, better electrical performance. (In Italian.)

39
The Behaviour of Thin Conductive Sheets at Microwaves, by G. Franceschetti and A. Langella (Centro di Elettronica del

C.N.R., Naples, Italy); *Alta Frequenza*, vol. 34, pp. 859–868, December 1965.

Derivation of the equivalent circuit for thin conductive sheet, and analysis of measurement techniques of the equivalent circuit parameters. (In Italian.)

40
Optical Resonators, by G. Toraldo di Francia (Istituto di Fisica Superiore, Università di Firenze, Florence, Italy); *Alta Frequenza*, vol. 35, pp. 20–27, January 1966.

Review paper containing the main results of the theory of optical resonators. (In Italian.)

41
Scattering of Electromagnetic Waves by a Semi-Infinite Plate in Anisotropic Plasma, by P. DeSantis (Istituto di Fisica, Università di Roma, Rome, Italy); *Alta Frequenza*, vol. 35, pp. 112–119, February 1966; English Issue, uo. 1, pp. 2E–9E.

Analysis of the integrals involved in the solution of a diffraction problem by application of mathematical technique similar to the one used by Karp and Karal. Numerical results are compared with those obtained via Wiener-Hopf techniques. (In English.)

42
Response of Travelling Wave Slot Arrays to Nonmonochromatic Signals, by G. Borgiotti (SELENIA S.p.a., Rome, Italy); *Alta Frequenza*, vol. 35, pp. 120–129, February 1966; English Issue no. 1, pp. 10E–19E.

Analysis for signal of limited but otherwise arbitrary frequency spectrum. The response to a radio frequency step in the case of uniform illumination is analyzed in detail. (In English.)

43
On the Generalization of the Contribution of the Electromagnetic Field to the Internal Energy of Nonlinear Systems, by F. Barocchi (Centro Microonde, Florence, Italy) and M. Mancini (Istituto di Fiscia Superiore, Università di Firenze, Florence, Italy); *Alta Frequenza*, vol. 35, pp. 221–222, March 1966.

The analysis is limted to non-absorbing thermally isolated media. (In Italian.)