Microwave Abstracts

Based on technical merit and timeliness, microwave papers in journals published outside the United States have been selected and compiled below, generally with brief abstracts. Reprints of the papers may be obtained by writing directly to the author or to the source quoted.

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Papers from Journals Published in the Scandinavian Countries

Compiled by M. Michael Brady, Norconsult A.S., 1322 Hovik, Norway. Journals from Denmark, Finland, Norway, and Sweden were scanned. Articles are in one of the four Scandinavian languages, English, or German, as noted.

55
Methods of Measuring Cyclotron Resonance at Microwave Frequencies, by P. Alatalo (Oulu University, Oulu, Finland); *Sähkö*, vol. 42, pp. 218–221, July–August 1969.

The sensitivities of the various microwave methods of measuring cyclotron resonance are compared. A new selective-sweeping method is described which utilizes the capabilities of modern microwave sweep generators; it is especially suited to samples having long reaction times. (In English.)

56
Holography—Light of the Future, by P. Karttunen, N. Valtonen, and T. Välimoa (Tamperen Teknillinen Korkeakoulu, Tampere, Finland); *Sahko*, vol. 43, pp. 37–44, February 1970.

A general introduction to holography with emphasis on three-dimensional reconstruction. (In Finnish.)

57
Design and Manufacture of Microstrip Directional Couplers, by O. Aho (Radio Lab., Technical University of Helsinki, Finland) and S. Leppävuori (Semiconductor Lab., State Institute for Technical Research, Helsinki, Finland); *Sähko*, vol. 43, pp. 87–90, March 1970.

A branch-line 1.8-GHz 3-dB microstrip coupler on an alumina substrate is described. Tolerances were studied by computer simulation to allow series production of reproducable units. (In English.)

58
Nonlinear Optics, by H. C. Jensen (Physics Lab., H. C. Örsteds Institutet, Copenhagen, Denmark); *Fysisk Tidsskrift*, vol. 67, pp. 97–130, 4th Quarter 1969.

The availability of lasers has made it possible to observe experimentally a number of nonlinear optical phenomena previously only predicted theoretically. A tutorial discussion of nonlinear optical theory is given followed by empirical confirmation. In particular plane electromagnetic waves in infinite nonlinear dielectrics, Manley–Rowe relationships, stimulated Raman effects, and stimulated Brillouin effects are discussed. A classical description of nonlinear susceptiblities is given. (In Danish.)

59
Instabilities in Semiconductors, by K. Blötekjaer (Institute for Theoretical Electronics, Norwegian Institute of Technology, 7034 Trondheim, Norway); *Elektronik* (Oslo), vol. 3, pp. 10–24, August 1969.

A tutorial presentation of instabilities in semiconductors with discussions of the physical mechanisms held to be responsible. Four materials, CdS, GaS, InSb, and Ge are discussed in detail with special attention being given those instabilities that result in in microwave emissions. (In Norwegian.)

60
UHF- and SHF-Microcircuits, by R. Ekholdt (Division for Electronics, Norwegian Defence Research Establishment, 2007 Kjeller, Norway); *Elektroteknisk Tidsskrift*, vol. 82, pp. 306–310, August 1969.

A general review of the state of the art in microcircuits based on the philosophy that the traditional disparities in microwave and circuit techniques are diminishing with the introduction and acceptance of microcircuits. Transmission-line aspects of circuit design for microwave frequencies are discussed. (In Norwegian.)

61
Microwave Heating in Industry: Selected Applications, by M. M. Brady (Norconsult A.S., Box 9, 1322 Hövik, Norway); *Elektroteknisk Tidsskrift*, vol. 82, pp. 521–524, December 1969.

Industrial microwave applications of particular interest to areas such as Scandinavia with cheap electric power and expensive fossil fuels are discussed. In particular it is shown that paper leveling with microwave energy can compete both economically and technically with conventional methods. (In Norwegian.)

62
Sub-Nanosecond Logic Elements Based on the Gunn Effect, by K. Blötekjaer (Institute for Theoretical Electronics, Norwegian Institute of Technology, 7034 Trondheim, Norway); *Elektroteknisk Tidsskrift*, vol. 83, pp. 19–21 and 38, April 1970.

Well known for its microwave applications, the Gunn effect is also useful for high-speed logic elements. The basic Gunn mechanisms of interest are discussed and circuits are described. GaS elements are discussed; their potential as logic elements is felt to outweigh the problems in circuitry involved. (In Norwegian.)