Editorial

FOLLOWING the increased interest in the development of high-frequency systems, the field of electronics has been in a continual state of evolution, both in circuit design and technology. Practically no other area has experienced such enormous changes as has microwave the millimeter-wave electronics. In recent years, the active devices used in these circuits have shifted from vacuum tubes to one-port solid-state devices to two-port solid-state junctions, and the circuit technology has changed from rectangular, circular, and coaxial waveguides to planar circuits. Planar circuits, along with solid-state devices, allow circuits—called microwave integrated circuits (MIC's)—to be fabricated on a dielectric substrate. Hybrid MIC's (HMIC's) are one subset of such integrated circuits. Over the last decade, however, monolithic MIC's (MMIC's) have reached a very high degree of dominance. In addition, with the extension of the operating frequency band to the higher millimeter and submillimeter waves, special technologies have been developed and adopted. Also, the analytic calculations used in the past have given way to numerical solutions calculated by computers.

These three parallel paths have now evolved to such a degree that oscillators can be designed in very small sizes and weights with excellent electrical performance, and at low cost. The purpose of this special issue of Transactions is to help circuit designers to obtain reliable and cost-effective designs by using the latest solid-state device, circuit, and simulation techniques.

In this TRANSACTIONS, we are pleased to publish eleven papers, eight full-length and three short papers, dealing with the subject of microwave and millimeter-wave oscillator design. These cover many facets of oscillator technology, including modeling, millimeter-wave technology, integration of electromagnetic and circuit design, low-noise voltage-controlled oscillators, and exciting new technologies such as interferometric signal processing for the reduction of phase noise. We are confident that readers will find a great deal of substance and useful new ideas in these papers.

We are especially grateful to the reviewers listed below for their conscientious and thoughtful evaluations of papers. We would also like to thank the people who provided clerical and administrative support, K. Kleinophorst and J. Maas, for their endless assistance in preparing this TRANSACTIONS. Also, our gratitude goes to Dr. J. W. Mink, Editor-in-Chief of this TRANSACTIONS, and to Associate Editor Linda Katehi for their help and support.

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LIST OF REVIEWERS

List of reviewers for the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, vol. 46, no. 10, October 1998 follows.

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Adalbert Beyer (SM'86–F'96) received the diploma degree in 1964, and the Dr.-Ing. (Ph.D.) degree in 1969, both in electrical engineering.

In 1976, he joined Duisburg University, Duisburg, Germany. In 1986, he became a Professor of electrical engineering and millimeter-wave techniques, and Foundation Member of the Sonderforschungsbereich 254. In 1987, he was a Visiting Professor at the University of Ottawa, Ottawa, Ont., Canada. In 1990, he spent a period of time as a Visiting Professor at the University of Texas at Austin. His areas of research interests are in field theory, microwave and millimeter-wave techniques, computer-aided design (CAD) and FET applications, and especially in the theory and measurement of integrated circuits and remote sensing. He has authored and co-authored several books and over 200 technical papers, and holds several patents. He is an editorial board member of several scientific journals.

Prof. Beyer is a member of VDE/ITG, Germany. He also serves as a member of the Technical Program Committee (TPC) of the IEEE MTT-S International Microwave Symposium, MTT-13, MTT-15, Committee on Microwave Ferrites, and Committee of Field Theory.

Stephen Maas (M'74–SM'89–F'93) received the B.S.E.E. and M.S.E.E. degrees from the University of Pennsylvania, Philadelphia, in 1971 and 1972, respectively, and the Ph.D. degree from the University of California at Los Angeles (UCLA), in 1984, all in electrical engineering.

In 1974, he joined the National Radio Astronomy Observatory, where he designed low-noise receivers for the very large array radio telescope. Subsequently, he joined Hughes Aircraft Company and TRW, where he developed low-noise microwave and millimeter-wave systems and components (primarily FET amplifiers and diode and FET mixers) for space communication. He has been with The Aerospace Corporation, where he worked on the optimization of nonlinear microwave circuits and the development of circuit-design software based on harmonic-balance, Volterra-series, and time-domain methods. From 1990 to 1992, he was a member of the UCLA Electrical Engineering Faculty. He is currently the President and Principal Consultant of Nonlinear Technologies, Inc., Long Beach, CA. He has authored *Microwave Mixers* (Norwood, MA: Artech House, 1986 and 1992), *Nonlinear Microwave Circuits* (Norwood, MA: Artech House, 1988) and *The RF and Microwave Circuit Design Cookbook* (Norwood, MA: Artech House, 1998).

Dr. Maas was an editor of the IEEE Transactions on Microwave Theory and Techniques (1990–1992), and an Ad Com member and publications chairman of the IEEE MTT-S (1990–1993). In 1989, he was the recipient of the Microwave Prize for his work on distortion in diode mixers.