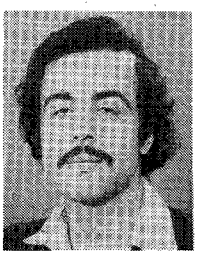
Contributors



Sina Akhtarzad was born in Tehran, Iran, on October 21, 1950. He received the B.Sc. (honors) degree in electrical and electronic engineering from Nottingham University, Nottingham, England, in 1972.

He was employed at the British Post Office Research Center at Castleton, Cardiff, South Wales, U. K., in the summer of 1972 where the work for this paper was performed. In October 1972 he commenced research studies for the Ph.D. degree at the University of Nottingham, Nottingham, England, under a contract with the United Kingdom Ministry of Defense. His research interest is in the development of the TLM method of numerical analysis of fields.

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Yu-Wen Chang (M'74) was born on December 1, 1938. He received the B.A. degree in political science from the National Taiwan University, Taipei, in 1959, the B.S. degree in engineering (with honors) from the University of California, Los Angeles, in 1966, the M.S.E.E. degree from the California Institute of Technology, Pasadena, in 1967, and the Ph.D. degree in solid-state electronics from the University of California, Los Angeles, in 1971, where he has also worked as a Postdoctoral Scholar.

From 1972 to 1973 he was with the Westinghouse Research Laboratory, Pittsburgh, Pa., as a Senior Engineer, where he was engaged in the research and development of superconductors. In 1973 he joined the Hughes Aircraft Company, Torrance, Calif., as a member of the Technical Staff, where he is currently supervising advanced millimeter-wave circuit development programs. His work with Hughes involves the development of IMPATT oscillators, amplifiers, p-i-n-diode modulators, ferrite-junction devices, and dielectric image-guide integrated circuits.

Dr. Chang is a member of the American Physical Society.

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D. R. Conn (S'68–M'70) received the B.Sc. degree in 1959, the M.Sc. (E.E.) degree in the field of microwaves in 1961, and the Ph.D. degree in the field of matrix methods of microwave circuit design and analysis in 1970, all from Queen's University, Kingston, Ont., Canada.

In 1961 he was appointed a member of the scientific staff at Bell Northern Research, Ottawa, Ont., where he applied his training in the area of parametric amplifiers and coherent radar systems. In 1965 he joined the staff of Microwave Associates, Burlington, Mass., where he designed microwave solid-state power sources and circuits. In 1967 he returned to Queen's University, where he was a Lecturer in the Department of Electrical Engineering and worked part time towards his Ph.D. From 1970 to 1971 he was a Guest Scientist at the Microwave Institute of Stockholm, Sweden, where he developed IMPATT diode and Gunn oscillators. In 1971 he was appointed Associate Professor of Electrical Engineering at Carleton University, Ottawa, Ont., Canada, where he is conducting applied research in the area of active microwave circuits. He is the Vice President of Rideau Microwave Ltd.

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Ashley F. Emery received the Ph.D. degree in mechanical engineering, heat transfer, and fluid mechanics, from the University of California, Berkeley, in 1961.

Since then he has been teaching at the University of Washington, Seattle, where he is currently a Professor of Mechanical Engineering.

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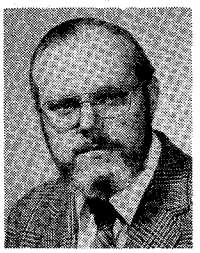

David L. English (A'58) was born in Chillicothe, Ohio, on July 28, 1930. He received the B.S. degree in electrical engineering from the University of Southern California, Los Angeles, in 1967.

From 1948 to 1952 he served in the U. S. Navy as an Electronics Technician. From 1952 to 1954 he was a Research Associate at the Ohio State University Research Foundation. In 1954 he joined the Semiconductor Division, Hughes Aircraft Company, Los Angeles, Calif., where he worked on techniques and instrumentation for characterizing semiconductor devices. He is currently a member of the Technical Staff of the Torrance Research Center, Hughes Research Laboratories, Microwave Semiconductor Department, Torrance, Calif., where he has been involved in the development of millimeter-wave semiconductor devices and circuits.

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Arthur W. Guy (S'54–M'57–SM'74) was born in Helena, Mont., on December 10, 1928. He received the B.S. degree in electrical engineering in 1955, and the M.S. and Ph.D. degrees in 1957 and 1966, respectively, all from the University of Washington, Seattle.

From 1947 to 1950 and from 1951 to 1952 he served in the U.S. Air Force as an Electronics Technician. Between 1957 and 1964 he was a Research Engineer in the Antenna Research Group, Boeing Company, Seattle, engaged in Research on broad-band and microwave devices, surface-wave antennas, propagation through anisotropic dielectrics, and antennas buried in lossy media. Between 1964 and 1966 he was employed by the Department of Electrical Engineering, University of Washington, conducting research on VLF antennas buried in polar ice caps, and also a Consultant to the Department of Rehabilitation Medicine, working on problems associated with the effect of electromagnetic (EM) fields on living tissue. In 1966 he joined the Medical

School faculty and accepted his current position as Research Director in the Department of Rehabilitation Medicine. He is now a Professor in that Department, an Adjunct Professor in the Department of Electrical Engineering, and a member of the Core Faculty, Center for Bioengineering, University of Washington, Seattle, and is involved in teaching and research in the area of biological effects and medical applications of EM energy.

Dr. Guy holds membership in Phi Beta Kappa, Tau Beta Pi, Sigma Xi, the American Association for the Advancement of Science, the IEEE G-IM Technical Committee on RF Radiation Hazards, the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES AdCom, the IEEE Technical Activities Board on the Soci-Technological Activity Committee on Man and Radiation (COMAR). He is also a member of the American National Standards Institute (ANSI) C95 Committee, and Chairman of the ANSI C95 Subcommittee IV; member of the National Council on Radiation Protection; the Armed Forces National Research Council Committee on Vision, Working Group 35; Commission I, Radio Measurement Methods and Standards, International Scientific Radio Union (URSI), and Publicity Chairman; member of the Technical Electronic Product Radiation Standards Committee (TEPRSSC), FDA; Consultant to the National Institute of Environmental Health Sciences on the USSR–US Health Cooperative Program; and member of the editorial boards of the *Biophysical Journal* and the *Journal of Microwave Power*.

H. J. Kuno (S'61–M'63) received the B.S., M.S., and Ph.D. degrees in engineering from the University of California, Los Angeles, in 1961, 1963, and 1966 respectively.

From June 1961 to September 1966 he was with the NCR, Electronics Division, Hawthorne, Calif. His work concerned various projects, including the development of digital and analog circuits, the characterization and application of semiconductor devices and integrated circuits, and the development of high-speed thin-magnetic-film memories. From September 1965 to September 1966 he was a NASA Postgraduate Research Engineer at the University of California, Los Angeles, investigating microwave and millimeter-wave propagation in solid-state plasmas. From October 1966 to July 1969 he was with the RCA David Sarnoff Research Center, Princeton, N. J., where he was engaged in the research and development of solid-state microwave devices and high-power semiconductor devices. In July 1969 he joined the Hughes Aircraft Company, Torrance, Calif., where he is currently Manager of the Solid-State Circuits Department, Electron Dynamics Division, in charge of the development of solid-state millimeter-wave devices, circuits, and subsystems.

Dr. Kuno is a member of the American Physical Society, Tau Beta Pi, and Sigma Xi.

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Peter B. Johns was born in Newport, Wales, on August 26, 1938. He received the B.Sc. (Eng.) degree in electrical engineering and the M.Sc. degree in physics from London University, London, England, and the Ph.D. degree from Nottingham University, Nottingham, England, in 1964, 1966, and 1973, respectively.

From 1964 to 1967 he was with the British Post Office Research Department, London, England, where he worked on modulation methods and interference problems associated with communication-satellite systems. In 1967 he was appointed Lecturer in the Department of Electrical and Electronic Engineering, University of Nottingham, Nottingham, England, where his research interest has been in the development of the TLM method for the solution of field problems.

Dr. Johns is a member of the Institution of Electrical Engineers, London, England.

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Charles A. Liechti (M'70–SM'75) received the M.S. degree in physics and the Ph.D. degree in electrical engineering, both from the Swiss Federal Institute of Technology, Zurich, Switzerland, in 1962 and 1967, respectively.

While at the Swiss Institute of Technology, he was engaged in applied research on microwave solid-state circuits with emphasis on varactor-controlled wide-band phase shifters. In 1968 he joined the Hewlett-Packard Company, Palo Alto, Calif., where he has been concerned with the design and development of IMPATT oscillators and frequency converters with Schottky-barrier diodes. Since 1971 he has been in charge of GaAs field-effect transistor devices, microwave amplifiers, and GaAs digital integrated-circuit developments at the Solid State Laboratory.

Dr. Liechti received outstanding contributed paper awards at the International Solid-State Circuits Conference in 1973 and 1974. He also received the Microwave Prize jointly with R. L. Tillman for a paper on GaAs MESFET amplifiers in 1975.

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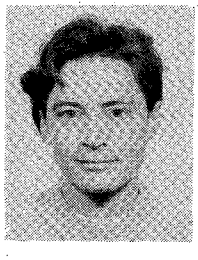

Piroska O. Kramar was born in Budapest, Hungary, on June 9, 1937. She received the B.S. degree in 1959 at Iowa State University of Science and Technology, Ames, and the M.S. (physiology) and M.D. at Creighton University School of Medicine, Omaha, Nebr., in 1963 and 1964, respectively.

After completing the ophthalmology residency program at the University of Oregon Medical School in 1968, she spent one year in general ophthalmology in Kettering, Northants., England. She received her Ophthalmology Board Certification in 1970. Since then she has been Chief of Ophthalmology at the United States Public Health Service Hospital in Seattle, Wash., and is Clinical Assistant Professor in the Department of Ophthalmology at the University of Washington School of Medicine, Seattle. Her primary interests are ophthalmic plastic surgery and the mechanisms of cataract formation.

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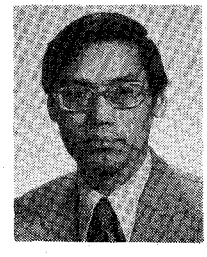


James C. Lin (S'65–M'71) was born on December 29, 1942. He received the B. S. degree in electrical engineering in 1966, and the M. S. and Ph. D. degrees in 1968 and 1971, respectively, all from the University of Washington, Seattle.

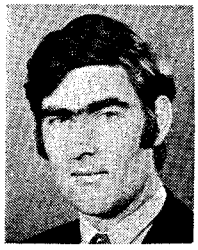
He is currently with the Department of Electrical Engineering, Wayne State University, Detroit, Mich., where he is developing a biomedical engineering program. His principal research interests are biological effects and medical applications of electromagnetic and ultrasonic radiation. Before joining Wayne State University, he was Assistant Professor of Rehabilitation Medicine and Assistant Director of the Bioelectromagnetics Research Laboratory, University of Washington School of Medicine. During the summer of 1973 he was a Resident Consultant to Walter Reed Army Institute of Research, Washington, D. C. Since 1973 he has been a Consultant to Battelle Memorial

Institute, Durham, N. C., and Walter Reed Army Institute of Research, Washington, D. C.

Dr. Lin is a member of the American National Standards Institute subcommittee C95.4 on radiation hazards with respect to personnel.

Pasteur L. Ntake (S'74) was born in Bukoba, Tanzania, on January 4, 1946. He received the B. Eng. and M. Eng. degrees from Carleton University, Ottawa, Ont., Canada, in 1971 and 1973, respectively. He is currently studying for the Ph.D. degree in electrical engineering at the same university.

He is a Captain in the Tanzanian Armed Forces, of which he is an active member.



Thomas R. Rowbotham was born in Ballymena, Northern Ireland, on June 9, 1941. He received the B.Sc. degree in electrical engineering from Queens University of Belfast, Belfast, Ireland, and the M.S. degree from the University of Surrey, Surrey, England, in 1964 and 1967, respectively.

From 1964 to 1967 he was with the Satellite Communications Division of the British Post Office in London, England. In 1968 he took charge of a group at the British Post Office Research Laboratories in South Wales, where his interest lay in designing and developing microwave integrated circuits in short-hop terrestrial radio links. He is now with the Post Office Research Department, Martlesham, Heath, Suffolk, England, involved in studies on high-capacity digital line links and is currently pursuing a collaborative Ph.D. degree at the University of Nottingham, Nottingham, England.