

# Contributors



**Ezio M. Bastida** (M'77) was born in Foligno, Perugia, Italy, in 1943. He received his degree in nuclear engineering from Politecnico di Milano, Milano, Italy, in 1968.

In 1967 he joined Centro Informazioni Studi Esperienze (CISE) research center, where he was first engaged in high-speed logic circuits development and is now working on GaAs microwave devices and subsystems. From 1976 he has been responsible for the CISE Microwave Group. His present interest is in the development of microwave monolithic integrated circuits as well as in microwave measuring instrumentation.

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**Everette C. Burdette** (M'73) was born in Charleston, WV, on June 26, 1950. He received the B.S. degree in physics in 1973 and the M.S. degree in electrical engineering in 1976, both from the Georgia Institute of Technology, Atlanta. He is presently working toward the Ph.D. degree at Emory University, Atlanta, GA.

He has worked at the Georgia Institute of Technology Engineering Experiment Station since 1970, beginning as a student assistant. From 1972 to 1973, he worked in industry in analog/digital circuit design and process controller design. In 1973, he rejoined Georgia Tech. as an Assistant Research Scientist, became a Research Scientist in 1976, and Research Scientist II in 1979. His experience includes work in microwave antenna design and measurements, near-zone radar cross section studies, development of near-zone wavenumber bandpass filtering techniques, and high-power transmitter design. Recently, he has been engaged in research on the effects of electromagnetic energy on fundamental biological processes and in medical applications including *in vivo* dielectric property measurements, organ and tissue cryopreservation and EM thawing, design of applicators for EM hyperthermia in cancer treatment, development of thermometry systems, and development of EM dosimetry analysis techniques.

Mr. Burdette is a member of the MTT, AP, and EMB societies of the IEEE, New York Academy of Sciences, Society for Cryobiology, Bioelectromagnetics Society, and Sigma Xi.

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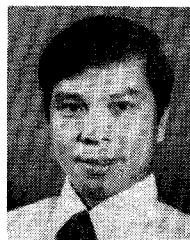
**Fred L. Cain** (S'63-M'66) was born in Power, WV, on August 26, 1934. After serving as a communications consultant for the U.S. Eighth Army Signal Corps in Korea from 1957 to 1959, he received the B.S. and M.S. degrees in electrical engineering from the Georgia Institute of Technology, Atlanta, in 1963 and 1964, respectively.

Since 1964, he has been with the Engineering Experiment Station at Georgia Tech. where he has been involved with various aspects of applied research endeavors in the realm of electromagnetics. His major areas of research include antenna analysis and design, effects of environment on antenna performance, design of microwave components, near-field measurement techniques, electromagnetic compatibility, and beneficial applications of electromagnetic energy in medicine and biology. He is currently a Principal Research Engineer and Associate Director of the Electronics Technology Laboratory at Georgia Tech.

Mr. Cain's services within IEEE include the following: the various offices within the Atlanta Chapter of the MTT-S/AP-S including Presi-

dent; member of COMAR (Committee on Man and Radiation); AP-S representative to COMAR; member of the 1974 IEEE International AP-S Symposium Publications Committee; and member of IEEE sponsored ANSI (American National Standards Institute) C95 Subcommittee on Radiation Hazards with Respect to Personnel. He is a member of the MTT, AP, EMB, and EMC societies, and is a member of Sigma Xi.

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**Kai Chang** (S'75-M'76) was born in Canton, China, on April 27, 1948. He received the B. S. E. E. degree from National Taiwan University, Taipei, Taiwan, the M. S. degree from State University of New York at Stony Brook, Stony Brook, and the Ph. D. degree from the University of Michigan, Ann Arbor, in 1970, 1972, and 1976, respectively.

From 1972 to 1976, he worked for the Microwave Solid-State Circuits Group at Cooley Electronics Laboratory of the University of Michigan, Ann Arbor, as a Research Assistant. From 1976 to 1978, he was employed by Shared Applications, Inc. at Ann Arbor where he worked on research and development in microwave circuits, electron optics, and electron gun design. In June 1978, he joined Electron Dynamics Division, Hughes Aircraft Company, Torrance, CA. Since then he has been engaged in the research and development of millimeter-wave solid-state devices and circuits.

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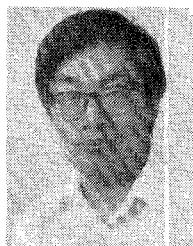
**Ming Hui Chen** (M'68) was born in Chechiang, China, on September 3, 1937. He received the B.S. degree in electrical engineering from the Cheng Kung University, Taiwan, in 1960, the M.S. degree in electronics from Chiao Tung University, Taiwan, in 1962, the M.S.E.E. degree from Utah State University, Logan, in 1964, and the Ph.D. degree in electrophysics from Polytechnic Institute of Brooklyn, Farmingdale, NY, in 1969.

He was a Chief Microwave Engineer at Mirotech Company, a Principal Engineer at Radiation Systems, Inc., and a Member of the Technical Staff at M.I.T. Lincoln Laboratory and COMSAT Laboratories. In 1970, he was appointed as an Assistant Professor at George Washington University, Washington, DC. In August 1977, he joined TRW Systems Group at Redondo Beach, CA, as a Senior Technical Staff in the Antenna and Communication Laboratory, responsible for Microwave Filter Development. His major interests are microwave devices and antennas.

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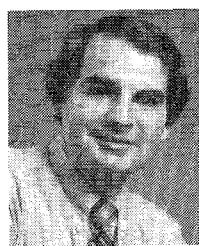


**Vladimir V. Cherny** was born in Shadrinsk, Curganskaya region, U.S.S.R., on October 16, 1944. He received the Doctor of Physics degree All-Union Correspondence Engineering Institute, Moscow, U.S.S.R. He has since been a member of the Department of General Physics, All-Union Correspondence Engineering Institute, working on problems of radiophysics and quantum radiophysics with special emphasis on optical waveguiding. During the academic year 1978-1979 he was a Visiting Scholar at the Department of Electrical Engineering and Computer Science, University of California, Berkeley, continuing work on dielectric waveguides.



**Y. Leonard Chow** (S'60-M'65) was born in Fukien, China, on December 29, 1936. He received the B. Eng. degree in engineering physics from McGill University, Montreal, P.Q. Canada in 1960, the M.A.Sc. and Ph.D. degrees in electrical engineering from the University of Toronto, Toronto, Ont., Canada, in 1961 and 1965, respectively.

In 1964 he joined the National Radio Astronomy Observatory, Green Bank, WV, as a Research Associate in the "Very Large Array" group. In 1966 he joined the Electrical Engineering Department of the University of Waterloo, Waterloo, Ont., Canada, where he is presently Associate Professor.



**Roy L. Ebert** was born in Los Angeles, CA, on February 24, 1943. He received the B. S. and M. S. degrees from West Coast University, Los Angeles, CA, in 1977 and 1979, respectively.

In 1973 he joined Electron Dynamics Division, Hughes Aircraft Company, Torrance, CA., where he was involved in the development of microwave and millimeter-wave Gunn oscillators, Gunn VCO's, and temperature compensated millimeter wave thermistor mounts. Since 1978 he has been working on millimeter wave power combiners using IMPATT diodes. He is now with TRW Defense and Space Systems Group, Rodondo Beach, CA.



**Kwo Ray Chu** was born in China on October 10, 1942. He received the B. S. degree in physics from National Taiwan University, Taipei, Taiwan, in 1965, the M. S. degree in physics from the University of Massachusetts, Amherst, in 1968, and the Ph. D. degree in applied physics from Cornell University, Ithaca, NY, in 1972.

From 1973 to 1977, he was a Research Physicist with Science Applications, Incorporated, specializing in microwave theory, relativistic electron beam physics, plasma waves and instabilities, and anomalous heat transport in controlled fusion devices. In September 1977, he joined the Plasma Physics Division at Naval Research Laboratory (NRL), Washington, DC. He is currently a principal investigator for the NRL cyclotron maser (gyrotron) program.



**Achintya K. Ganguly** received the Ph. D. degree in physics at New York University, New York, in 1965.

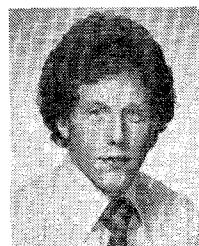
At New York University (1965-1967) he worked on the theory of light scattering from quasi-particles in solids. From 1967 to 1972 he was a Staff Member at GTE Laboratories and worked on electron-phonon interactions in solids and surface acoustic wave propagation in piezoelectric materials. He joined Naval Research Laboratory, Washington, DC, in 1972 as a Research Physicist. He is now working on magnetostatic and magneto-elastic surface wave propagation, electromagnetic wave propagation in waveguides.



**B. N. Das** received the M. Sc. (Tech.) degree from the Institute of Radio Physics and Electronics, University of Calcutta, Calcutta, India, in 1956, and the Ph. D. degree from the Indian Institute of Technology, Kharagpur, India, in 1967.

He joined the Department of Electronics and Electrical Communication Engineering of the Indian Institute of Technology in 1958. At present he holds the position of Professor in the same department.

Dr. Das is a member of the Institute of Electrical Engineers, U.K. and he is a fellow of the Institution of Engineers, India.



**Richard B. Gold** (S'70-M'79) was born in Pittsburgh, PA, on August 26, 1954. He received the B.S. degree in applied physics from Cornell University, Ithaca, NY, in 1974, and the M.S. degree in electrical engineering from Stanford University, Stanford, CA, in 1977. He is a Ph.D. candidate at Stanford where his thesis research has dealt with the use of laser irradiation to fabricate alloyed contacts and heterostructures on GaAs.

From 1974 to 1976 he worked for the Microwave Semiconductor Division of Hewlett-Packard Company, Palo Alto, CA, on the development of GaAs FET process technology. In 1976 he joined Watkins-Johnson Company, Palo Alto, CA where his initial work involved the development of low-noise and power GaAs FET's. He is presently a Staff Scientist in the Solid-State Devices Division; his current work is focussed on ion implantation in GaAs and on the design of monolithic microwave GaAs IC's.

Mr. Gold is a member of Phi Kappa Phi, Tau Beta Pi, the American Physical Society, and the Electrochemical Society.



**Adam T. Drobot** was born in Zakopane, Poland, on May 13, 1947. He received the B.S. degree in engineering physics from Cornell University, Ithaca, NY, in 1968, and the Ph.D. degree in physics from the University of Texas, Austin, in 1974.

He has been working at Science Applications, Inc., as a Research Physicist specializing in numerical simulations of relativistic plasmas. He has worked on problems of generating electromagnetic radiation from intense relativistic elec-

tron beams, the electron cyclotron maser, collective ion acceleration, and is currently involved in research on electron and ion flow in high-power diodes.



**Yoshio Hayashi** was born in Tokyo, Japan, on October 28, 1937. He received the B.E. degree in electrical engineering from Chiba University, Chiba, Japan, in 1961, and the M.D. and D.E. degrees in electronics engineering from Hokkaido University, Sapporo, Japan, in 1965 and 1972, respectively.

He served in the Japan Self-Defense Air Force from 1961 to 1969. Presently, he is an Assistant Professor of Electronic Engineering at the Kitami Institute of Technology, Kitami,

Japan.

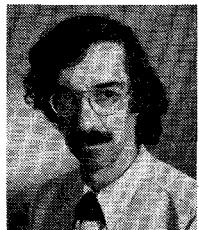
Dr. Hayashi is a member of the Institute of Electronics and Communication Engineers of Japan.



**David A. Hill** (SM'78) was born in Cleveland, OH, on April 21, 1942. He received the B.S.E.E. and M.S.E.E. degrees from Ohio University, Athens, in 1964 and 1966, respectively, and the Ph.D. degree in electrical engineering from Ohio State University, Columbus, in 1970.

From 1970 to 1971, he was a Visiting Fellow with the Cooperative Institute for Research in Environmental Sciences. Since 1971 he has been with the Institute for Telecommunication Sciences in the National Telecommunications and Information Administration of the U.S. Department of Commerce, Boulder, CO. His research activities have been in pulse propagation, guided waves, and antenna and scattering problems.

Dr. Hill is a member of Eta Kappa Nu, Tau Beta Pi, Sigma Xi, and URSA Commissions B and F.

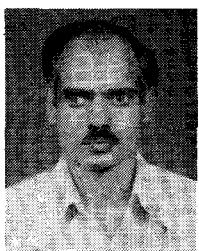


**William R. Hitchens** received the B.S. degree in physics from Washington University, St. Louis, MO, in 1968, and the M.S. and Ph.D. degrees in physics from the University of Illinois, Urbana-Champaign, in 1971 and 1975, respectively.

While at the University of Illinois, he did research on epitaxial growth of InGaAsP heterojunction laser diodes and on fabrication and characterization of silicon MOS devices. In 1975 he joined the Watkins-Johnson Company, Palo Alto, CA where he has been responsible for

research into and development of growth processes for epitaxial GaAs for microwave device applications. He also is responsible for research into and growth of single crystal YIG and other ferrites for microwave tuned devices.

Dr. Hitchens is a member of Tau Beta Pi, Sigma Xi, and the West Coast and American Associations of Crystal Growers.



**K. K. Joshi** was born in Dhad, Maharashtra, India, on March 20, 1941. He received the B.E.Sc. degree in communication engineering and M.E. degree in microwave techniques from the University of Jabalpur, India, in 1966 and 1969, respectively.

He joined the Department of Electrical Engineering, V.R. College of Engineering, Nagpur, India, in 1969 and is presently sponsored for the research work towards the doctorate degree at the Indian Institute of Technology, Kharagpur, India.

**Gennadii A. Juravlev**, photograph and biography not available at the time of publication.



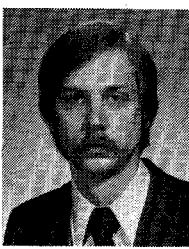
**Magdy H. Keriakos** (S'77-M'78) was born in Cairo, Egypt, on September 2, 1946. He received the B.Sc. and M.Sc. degrees in electrical engineering from Cairo University, Cairo, Egypt, in 1968 and 1975, respectively. He received the Ph.D. degree in electronics in 1978 from the University of Kent at Canterbury, Kent, England.

In 1968, he joined the Egyptian Broadcasting Federation where he participated in various domains of the broadcasting engineering: wave propagation, antenna coverage and circuit design. He was the head of the propagation department until January 1976 when he left for his study towards the Ph.D. degree in England. Upon submitting his Ph.D. dissertation in January 1978, he joined General Instrument Microelectronics Ltd. in Scotland as a principal CAD engineer of LSI where he has been concerned with problems of logic design

automation: logic simulation, automatic test generation, MOS modeling and automatic layout. He joined Bell-Northern Research Ltd., Ottawa, Ont., Canada, in June 1979, where he is now working with the advanced development systems department. He is currently engaged with the silicon design aids group in the development of a functional simulation version of the BNR-F/LOGIC gate simulation.

Dr. Keriakos is an associate member IEE (London).

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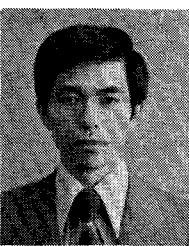


**Richard A. Kiehl** (M'75) was born in Akron, OH on February 14, 1948. He received both the B.S.E.E. (Hon.) and M.S.E.E. degrees in 1970, and the Ph.D. degree from Purdue University, West Lafayette, IN, in 1974.

From 1971 to 1974 he was employed as a Research Assistant and Teaching Assistant in the School of Electrical Engineering, Purdue University. During that time he was engaged in research on transferred electron devices. In 1974 he joined Sandia Laboratories, Albuquerque, NM, as a member of the Technical Staff in the Solid-State Device Physics Division. His present research is primarily in the areas microwave and optical solid-state devices.

Dr. Kiehl is a member of Sigma Xi. He is presently serving as Chairman of the Albuquerque Section of the IEEE.

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**Toshihide Kitazawa** was born in Sapporo, Japan on December 1, 1949. He received the B.E., M.E., and D.E. degrees in electronics engineering from Hokkaido University, Sapporo, Japan, in 1972, 1974, and 1977, respectively.

He is presently a Postdoctoral Fellow of the Japan Society for the Promotion of Science.

Dr. Kitazawa is a member of the Institute of Electronics and Communication Engineers of Japan.

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**Ralph Levy** (SM'64-F'73) was born in London, England, on April 12, 1932. He received the M.A. degree in physics from St. Catharine's College, Cambridge University, England, in 1953, and the Ph.D. degree in electrical engineering from the University of London, London, England, in 1966.

From 1953 to 1959, he was a member of the Scientific Staff at the Applied Electronics Laboratories of the General Electric Company, Stanmore, Middlesex, England, where he worked on guided missile, radar, and countermeasures systems, and on microwave components. In 1959, he joined Mullard Research Laboratories, Redhill, Surrey, England, and developed some now widely used techniques in ECM, such as instantaneous frequency measurement (digital IFM), and very broad band directional couplers. From 1964 to 1967, he was a member of the faculty at Leeds University, and carried out research in microwave network synthesis, including realizations of distributed elliptic function filters, and exact synthesis techniques for branch guide and multiaperture directional couplers. Since 1967 he has been with Microwave Development Laboratories, Natick, MA, as Research Vice President. He has developed practical techniques for designing very broad band mixed lumped and distributed circuits, and synthesis and field theory techniques to facilitate the design of a variety of microwave components.

Dr. Levy is a member of the Institution of Electrical Engineers (London).



**Wei-gan Lin** was born in Canton, China, October 20, 1919 and graduated from National Tsing Hua University, Kumming, China, in June 1939. He received M.S. and Ph.D. degrees in June 1947 and June 1950 respectively, from the University of California, Berkeley. From September 1947 to June 1948 he was a Teaching Assistant and from September 1948 to June 1951 he was a Lecturer in electrical engineering at the University of California, Berkeley. Since September 1951 he has been a Professor in the People's Republic of China and is now at the Chengdu Institute of Radio Engineering, Chengdu, Sichuan, People's Republic of China. He has published a series of technical papers and is the author of two books, both in Chinese: *Microwave Networks* (1978), and *Microwave Theory and Technique* (1979). His field of teaching interest and research is in electromagnetic theory, microwave theory, microwave networks, optical waveguide theory, and antenna theory.

Dr. Lin is a member of Sigma Xi.

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where he was engaged in the research on optical communications. Since 1978, he has been an Associate Professor at Tohoku University, and his major interests are in optical communications.

Dr. Miyashi is a member of IECE of Japan.



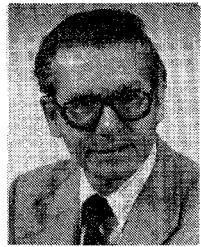
**Karl B. Niclas** (M'63) received the Dipl. -Ing. and Doctor of Engineering degrees from the Technical University of Aachen, Aachen, Germany, in 1956 and 1962, respectively.

From 1956 to 1962 he was with the Microwave Tube Laboratory at the Telefunken G.m.b.H. Tube Division, Ulm-Donau, Germany. He was engaged in research and development on ultralow-noise and medium-power traveling-wave tubes. In 1958 he became Head of the company's Traveling-Wave Tube Section

and Associate Manager of the Microwave Tube Laboratory. From 1962 to 1963 he was associated as a Senior Project Engineer with General Electric Microwave Laboratory, Stanford, CA. His work was mainly concerned with theoretical and experimental investigations of single-reversal focused low-noise traveling-wave tube amplifiers, and resulted in the first lightweight amplifier of this type. In 1963 he joined the Technical Staff of Watkins-Johnson Company, Palo Alto, CA, and is presently Consultant to the Vice President, Devices Group. His present research efforts are primarily focused on advanced GaAs FET amplifiers, broadband power combining techniques, and wide-band GaAs FET oscillator concepts. From 1967 to 1976 he was Manager of the company's Tube Division. Before that, he was Head of the Low-Noise Tube R & D Section, and prior to that he was engaged in a research program on new concepts for achieving high efficiency in traveling-wave tubes. He is the author of numerous papers and holds a number of patents.

Dr. Niclas received the outstanding publications award in 1962 of the German Society of Radio Engineers.

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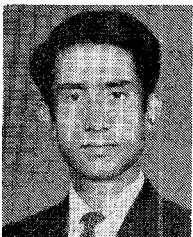
**Robert H. MacPhie** (S'57-M'63-SM'79) was born in Weston, Ont., Canada, on September 20, 1934. He received the B.A.Sc. degree in electrical engineering from the University of Toronto, Toronto, Ont., Canada, in 1957, and the M.S. and Ph.D. degrees from the University of Illinois, Urbana, in 1959 and 1963, respectively. From 1957 to 1963 he was a Research Assistant in the Antenna Laboratory, University of Illinois. In 1963 he joined the Department of Electrical Engineering, University of Waterloo, Waterloo, Ont., Canada, where he is presently Professor of Electrical Engineering. During 1977-1978 he was on sabbatical leave as a Visiting Professor at Stanford University where he collaborated with Prof. R. N. Bracewell on a study of an orbiting infrared interferometer to be used to search for nonsolar planets. His other research interests focus on electromagnetic scattering from spheroids, signal processing arrays, and surface wave antennas.



**Shigeo Nishida** (SM'59) was born in Nagoya, Japan, on March 7, 1924. He graduated from Tohoku University, Sendai, Japan, in 1949, and received the Ph.D. degree from the same university in 1959.

He was appointed a Research Associate and an Associate Professor at the Research Institute of Electrical Communication, Tohoku University, in 1949 and 1955, respectively. From 1957 to 1959, on leave of absence from Tohoku University, he joined the Microwave Research Institute of the Polytechnic Institute of Brooklyn, Brooklyn, NY, where he was engaged in the research on microwave waveguides and antennas. Since 1964, he has been a Professor at Tohoku University, and his major interests are in microwave and optical-wave transmissions.

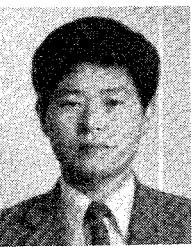
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**S. Mahapatra** received the B.Sc. (Hons) degree in 1950 from Presidency College, Calcutta, India, and M.Sc. in radio physics and electronics from the University of Calcutta, Calcutta, India, in 1953. Recipient of medal and prize from the University, he was awarded the Commonwealth Scholarship to the U.K. in 1960 and received Ph.D. degree of the University of Wales from the Department of Electronic Engineering, U.C.N.W., Bangor, in 1963.

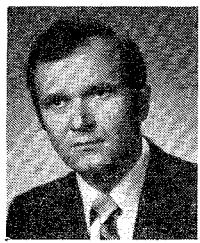
As Research Assistant in the Institute of Nuclear Physics, Calcutta, he was in charge of the RF system of the cyclotron from 1954 to 1958. He joined the faculty of the Department of Electrical Engineering of I.I.T. Bombay in 1958, where he is currently working as a Professor. He has worked mainly in the field of Microwaves and Radar and is primarily interested in MIC's, and microwave semiconductor device applications. He has more than 50 technical papers to his credit.

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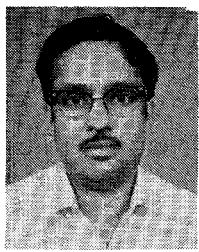
**Mitsunobu Miyagi** was born in Hokkaido, Japan, on December 12, 1942. He graduated from Tohoku University, Sendai, Japan, in 1965, and received the M.E. and Ph.D. degrees from the same university in 1967 and 1970, respectively.

He was appointed a Research Associate at the Research Institute of Electrical Communication, Tohoku University, in 1970. From 1975 to 1977, on leave of absence from Tohoku University, he joined McGill University, Montreal, Canada,



**Andrew S. Podgorski** (S'75) was born in Warsaw, Poland on May 5, 1942. He received the B.S.E.E. (electronics) degree from the Warsaw Technical University, Warsaw, Poland, and the M.A.Sc. (microwaves) degree from the University of Waterloo, Waterloo, Ont. Canada, in 1969 and 1975, respectively, where he is currently working towards the Ph.D. degree in the field of distributed semiconductor devices.

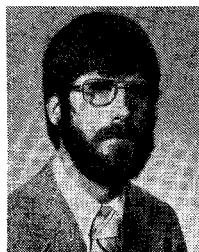
From 1969 to 1973 he was engaged in research and development work in the field of satellite communication (Helios Program) for Siemens Austria, Vienna, Austria. Since 1974 he has been a Teaching Assistant (Electromagnetic Theory) in Electrical Engineering Department at the University of Waterloo.



**K. Rajaiah** received the B.E. degree from the University of Madras, Madras, India, in 1961, the M.E. and Ph.D. degrees in aeronautical engineering from the Indian Institute of Science, Bangalore, India in 1963 and 1972.

Since 1963, he was in the Faculty of the Department of Aeronautical Engineering at the Indian Institute of Science. In 1974 he moved to the Indian Institute of Technology at Bombay, India where he is currently a Professor of Aeronautical Engineering. During 1978-1979 he spent about a year at the School of Engineering, Oakland University, Rochester, MI. His research interests include composite structures, experimental stress analysis, shape optimization, and electrostatic field problems.

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**Micheal E. Read** received the B. S., the M. S., and Ph. D. degrees, all in electrical engineering, from Cornell University, Ithaca, NY. The Ph. D. was awarded in 1975. His graduate work was in the physics and applications on intense relativistic electron beams, including the problems of beam transport, microwave production, and collective ion acceleration.

He is currently with the Naval Research Laboratory, Washington, DC, where his research is concentrated on the gyrotron.

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**Gisbert Saulich** (A'76-M'80) was born in Mährisch-Rothwasser, Germany, on December 22, 1942. He received the Ing. (grad.) degree in electrical engineering from the Ingenieurschule, Gießen, Germany, the Dipl.-Ing. degree from the Technische Hochschule, Darmstadt, Germany, and the Dr.-Ing. degree from the Universität, Bremen, Germany, in 1964, 1970, and 1977, respectively.

From 1970 to 1976 he was a Research Assistant at the Institut für Allgemeine und Theoretische Elektrotechnik of the Ruhr-Universität, Bochum, Germany, where he has worked in the area of microwave filters and electromagnetic theory. In 1977, he joined the Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt DFVLR in Köln, Germany, as a Project Engineer in a support group, where his main function is to provide project support on all system and circuit aspects of satellite payloads, respectively microwave hardware, amplifiers, filters, and antennas.

Dr. Saulich is a member of the Nachrichtentechnische Gesellschaft and the Verband Deutschen Elektronstechniker.

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**Joseph Seals** (S'78-M'79) received the B.S.E.E. and M.S.E.E. degrees from the Georgia Institute of Technology, Atlanta, in 1975 and 1979, respectively.

He has been on the faculty of the Georgia Institute of Technology (Engineering Experiment Station) since December 1975 and currently holds a position of Research Engineer II. For the past three years, he has primarily been involved in measuring the dielectric properties of various biological tissues. His current interests include dielectric property measurement techniques, thermistor-based thermometry and laboratory applications of small computers.

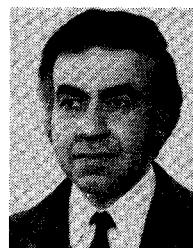
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**T. K. Seshadri** (S'74-M'79) was born on November 25, 1948 in Mannargudi, Tamil Nadu, India. He obtained the M.Sc. degree in physics with wireless and electronics specialization from the Madras

University, Madras, in 1970, and M.Tech. degree in physical engineering from the Indian Institute of Science, Bangalore, in 1972, where he continued as a Research Fellow in the Microwave Section for some time. He also obtained the Ph.D. degree in electrical engineering from the Indian Institute of Technology, Bombay, in 1978.

He is currently working in the Microwave Engineering Group of the Tata Institute of Fundamental Research, Bombay. His current research interests are Microwave Integrated Circuits and Solid State Microwave Devices.

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**Mohamed I. Sobhy** (M'60) received the B.Sc. degree in electrical engineering from the University of Cairo, Cairo, Egypt, in 1956, and the Ph.D. degree from the University of Leeds, Leeds, England, in 1966.

He was a Teaching Assistant at the Department of Electrical Engineering, the University of Cairo, until 1962, when he joined the University of Leeds first as a Research Student and later as a Lecturer working on microwave ferrite devices. In 1966, he joined Microwave Associates Ltd., Luton, England, as a Research Engineer where he worked on the development of microwave solid-state devices. He joined the University of Kent at Canterbury, Kent, England, in 1967, where he is now leading a research group engaged in projects on a solid-state devices and microwave circuits. He is also a Consultant to a number of industrial establishments.

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**Phillip Sprangle** was born in Brooklyn, NY, on September 27, 1944. He received the B.S. degree in electrical engineering from the Polytechnic Institute of New York, Brooklyn, NY in 1967, the M.S. degree in physical chemistry from the University of Puerto Rico, Rio Piedras, in 1969, and the Ph.D. degree in applied physics from Cornell University, Ithaca, NY, in 1972.

After graduation he joined the Plasma Physics Division of the Naval Research Laboratory, Washington, DC. He is currently conducting research in the fields of free electron lasers, electron cyclotron masers, and collective ion acceleration.

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**Michio Suzuki** (SM'57) was born in Sapporo, Japan, on November 14, 1923. He received the B.E. degree and the Doctor of Engineering degree, both from Hokkaido University, Sapporo, Japan, in 1946 and 1960, respectively.

From 1948 to 1962 he was an Assistant Professor, and from 1962, Professor of Electronic Engineering at the Hokkaido University, Japan. From 1956 to 1957 he was a Research Associate at the Microwave Research Institute of Polytechnic Institute of Brooklyn, N.Y.

Dr. Suzuki is a member of the Institute of Electronics and Communication Engineers of Japan and the Institute of Electrical Engineers of Japan.

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**Harold Hwaling Szu** received the Ph.D. degree in statistical physics from Rockefeller University, New York, NY, in 1971.

Presently, he is a Research Physicist with the Naval Research Laboratory, Washington, DC.

Dr. Szu is a member of the Institute for Advanced Study (Princeton), Sigma Xi, APS, and OSA.



**James R. Wait** (F'62) received the B.A.Sc., M.A.Sc., and Ph.D degrees from the University of Toronto, Toronto, Ont., Canada, in 1948, 1949, and 1951, respectively.

After spending some time geophysically prospecting in Arizona, he turned seriously to electromagnetics in 1952 at the Radio Physics Laboratory in Ottawa, Canada. In 1955 he accepted an offer from the National Bureau of Standards, and since then has been with the Boulder Laboratories of the U.S. Department of

Commerce, Boulder, CO. His principal affiliation is now with the National Oceanic and Atmospheric Administration, but he is also a Fellow of the Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, as well as a Professor Adjoint in the Electrical Engineering Department of the University. In addition, he acts as Consultant to the Institute of Telecommunication Sciences in Boulder.

Dr. Wait was elected to the U.S. National Academy of Engineering in 1977. Also, in June 1977, he was elected Fellow of the Institution of Electrical Engineers. In July 1978 he received the Balth Van der Pol Gold Medal awarded at the General Assembly of the International Union of Radio Science in Helsinki, Finland.

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where he has been working on the fabrication of GaAs microwave devices including Gunn diodes, varactors, and FET's. He is presently the head of the Semiconductor R & D Section, and is responsible for GaAs FET development and production, as well as Gunn diode and YIG fabrication.

Dr. Wilser is a member of Phi Kappa Phi and the American Physical Society.



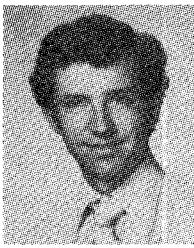
**Walter T. Wilser** (M'79) was born in Poughkeepsie, NY, on February 23, 1947. He received the B.A. degree in physics from Northeastern University, Boston, MA, in 1969, and the M.S. and Ph.D. degrees in physics from Cornell University, Ithaca, NY, in 1972 and 1974, respectively.

While at Cornell University, he did research on laser Raman Spectroscopy of macromolecules. In 1974 he joined the Solid-State Division of Watkins-Johnson Company, Palo Alto, CA,

appointments as Lecturer, Associate Professor, and Professor. From 1952 to 1956 he directed the Electronics Research Laboratory there; from 1956 to 1959 he was Chairman of the Department of Electrical Engineering; from 1959 to 1963 he was Dean of the College of Engineering at Berkeley. On leave from the University, he acted as Head of the Microwave Tube Research Section of the Hughes Aircraft Company from 1951 to 1952. He also engaged in research in quantum electronics at the Bell Laboratories, Murray Hill, NJ, in 1963-1964 and has been Visiting Professor at several universities.

Dr. Whinnery is a member of the National Academy of Engineering and the National Academy of Sciences. He was Secretary of the IEEE in 1971, received that Institute's Education Medal in 1967, and the Microwave Career Award in 1976.

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**John R. Whinnery** (A'41-SM'44-F'52) was born in Read, CO, on July 26, 1916. He received the B.S. degree in electrical engineering in 1937 and the Ph.D. degree in 1948, both from the University of California, Berkeley.

From 1937 to 1946 he was with the General Electric Company, Schenectady, NY, working on problems in waveguide discontinuities, microwave tubes, and applications to radar. He has been on the Faculty of the University of California, Berkeley, since 1946, holding ap-