Contributors

Masami Akaike (M'76) was born in Kamakurashi, Kanagawa-ken, Japan, on October 15, 1940. He received the B.S., M.S., and Ph.D. degrees from the University of Tokyo, Tokyo, Japan, in 1964, 1966, and 1969, respectively.

Since joining the Musashino Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan, in 1969, he has been engaged in the research of millimeter-wave solid-state circuits and the development and design of repeaters and measuring equipments for a guided millimeter-wave transmission system. He is currently a Staff Engineer of the Millimeter-Wave Transmission Section, Trunk Transmission System Development Division, Yokosuka Electrical Communication Laboratory, NTT.

Dr. Akaike is a member of the Institute of Electronics and Communications Engineers of Japan, and was a recipient of the 1971 IECEJ Yonezawa Memorial Scholarship.

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Yoshihiko Akaiwa was born in Nagasaki, Japan, on October 14, 1945. He received the B.S. degree in electronics engineering from Kyushu University, Fukuoka, Japan, in 1968.

In 1968 he joined the Central Research Laboratories, Nippon Electric Company Ltd., Kawasaki, Japan. He has been engaged in the research and development of microwave circuits such as filters, mixers, ferrite devices, and a 60-GHz transmitter–receiver.

Mr. Akaiwa is a member of the Institute of Electronics and Communication Engineers of Japan.

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Apostle G. Cardiasmenos (M'76) was born in Oakland, CA, on October 15, 1948. He received the B.S.E.E. degree from the University of California, Berkeley, in 1970 and the M.S. degree in electrical engineering from the University of Massachusetts, Amherst, in 1976. He is presently completing work for the Ph.D. degree in the Department of Physics and Astronomy at the University of Massachusetts, Amherst.

From 1970 up to the present time he has been involved in the development of low-noise traveling-wave maser amplifiers at K band and at 3 mm, as well as millimeter-wave receiver technology in general, for the Five College Radio Astronomy Observatory, Amherst, MA, where he is currently employed as a Research Engineer. From 1973 to 1975 he served as Consultant to Baytron Microwave Company, Inc., in the area of passive microwave component design. He has also contributed to the design of low-noise cryogenic waveguide systems. His current interests include low-noise receiver development and radio astronomy.

Alfredo A. Castro (M'56) was born in Buenos Aires, Argentina, and received the Electromechanical and Telecommunication Engineer degrees in 1956 and 1958 from La Plata National University, La Plata, Argentina, and the M.S. and E.E degrees from Columbia University, New York, NY, in 1962 and 1966, respectively.

Since 1956 he has held engineering positions with Transradio International, RCA, Litton Industries, GTE Sylvania, and GTE Laboratories. In 1969 he joined the Raytheon Company, Equipment Division, where he is a Principal Engineer in the Communication Systems Laboratory. Recently, his area of responsibility has been in millimeter-wave satellite communications as Program Manager of several related development projects.

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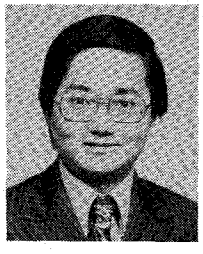

Albert C. Cheung received the B.S. and M.A. degrees in physics from Stanford University, Stanford, CA, and the University of California, Berkeley, respectively.

Since 1967 he has been associated with the Radio Astronomy Laboratory and the Space Sciences Laboratory at Berkeley working on molecular radio astronomy and low-noise microwave receivers for radio astronomical applications. He is at present Assistant Professor of Physics at the University of California, Berkeley.

Mr. Cheung is a member of Sigma Xi.

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Metro M. Chrepta was born in Watervliet, NY, on November 2, 1924. He received the B.S. degree in physics from Siena College, Loudonville, NY, in 1950, and later did graduate and postgraduate studies at Massachusetts Institute of Technology, Cambridge, and the University of California.

From 1952 to the present, he has worked in the U.S. Army Electronics Command, Fort Monmouth, NJ, in the Electronics Components Laboratory. He has worked in the high-power gas and vacuum-tube modulator group primarily on research in the physical electronics of modulator devices. During the past four years, he has worked on bulk semiconductor devices for millimeter wave applications in the Advanced Semiconductor Devices Team.

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Michael F. Chui is a native of China and received the B.Sc. degree (physics/mathematics) from the University of Hong Kong, from which he graduated in 1963 with honors.

After working in the Physics Department of the Chinese University of Hong Kong, he entered Graduate School at U.C. Berkeley. He is a Ph.D. candidate in astrophysics, specializing in the development of microwave maser amplifiers and their use in astronomical observations of interstellar molecular clouds.

John R. Cogdell (M'59) was born in Quanah, TX, on May 24, 1936. He received the B.S.E.E. and M.S.E.E. degrees at the University of Texas, Austin, in 1958 and 1959, respectively, and the Ph.D. degree from the Massachusetts Institute of Technology, Cambridge, in 1963.

From 1959 to 1965 he was employed by the Electrical Engineering Research Laboratory, University of Texas, Austin, and by the M.I.T. Lincoln Laboratory, Lexington, MA. From 1966 to the present he has been associate Professor of Electrical Engineering at the University of Texas, Austin, and a Staff Member at the Electrical Engineering Research Laboratory. His interest lies in radio astronomy, microwave antennas and receivers, and microwave propagation.

Dr. Cogdell is a member of Eta Kappa Nu, Tau Beta Pi, and Sigma Xi.

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Eugene Constant was born in Lille, France, on January 4, 1936. He received the Doctorat ès Sciences Physiques degree from the University of Lille, Lille, France, in 1962.

In 1964 he created the Centre Hyperfréquences et Semiconducteurs, University of Lille I, Villeneuve D'Ascq, France. Currently, he is Professor at this University, Director of this center (E.R.A. C.N.R.S. 454) where he is working on microwave devices and on microwave properties of semiconductors and liquids.

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Jochen Edrich (M'68) was born in Munich, Germany, in 1937. He received the Dipl. Ing. and Dr. Ing. degrees in electrical engineering from the Technical University of Munich, Munich, Germany, in 1962 and 1966, respectively.

From 1962 to 1967 he was employed by the Central Communications Research Laboratory of Siemens AG in Munich where he was engaged in research on time division multiplex devices and low-noise receivers for the first satellite communications link. From 1967 to 1971 he led the low-noise and millimeter-wave groups at the National Radio Astronomy Observatory in Charlottesville, VA, in the development of paramp and mixer receivers between 1 and 85 GHz. He was also Lecturer in Electrical Engineering at the University of Virginia. Since 1971 he has been with the University of Denver, Denver, CO, as Associate Professor in the Electrical Engineering Department and Senior Research Engineer in the Denver Research Institute where his research has concentrated on ferrites, millimeter-wave paramps, Josephson effect mixers, and biomedical application of millimeter waves. He is also an Adjoint Associate Professor of Electrical Engineering at the University of Colorado, Boulder.

Dr. Edrich is a member of the German Communications Society NTG and has been serving in various program functions of the European Microwave Conference.

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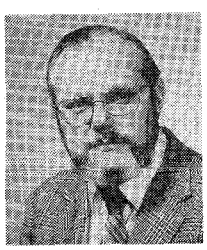

David L. English (A'58) was born in Chillicothe, OH, on July 28, 1930. He received the B.S. degree in electrical engineering from the University of Southern California, Los Angeles, in 1967.

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, CA, where he worked on techniques and instrumentation for characterizing semiconductor devices. He is currently a member of the technical staff of the Hughes Research Laboratories, Microwave Semiconductor Department, Torrance, CA, where he has been involved in the development of millimeter-wave semiconductor devices and circuits.

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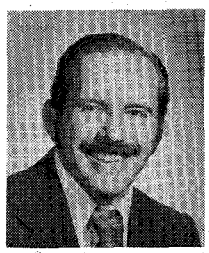

Robert D. Fairman (M'75) received the B.S. degree in chemistry from San Francisco State University, San Francisco, CA, in 1959.

In 1960 he joined Varian Associates as a staff member of the Central Research Laboratory where he was engaged in CVD and epitaxial growth of semiconductor materials. He joined the Fairchild Research and Development Laboratories in 1966 as a staff member of the Physics Department involved with the development of epitaxial GaAs by the $AsCl_3$, Ga, H_2 process. He is presently engaged in research and development of GaAs and InP materials by VPE for the Solid State West Division of Varian Associates.

Mr. Fairman is a member of the Electrochemical Society and the American Chemical Society.

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F. Beringer Fank received the B.S. degree in 1950, the M.S. degree in 1951, and the Ph.D. degree in 1958, all in electrical engineering, from Stanford University, Stanford, CA.

From 1951 to 1965 he was a Development Engineer and an Engineering Manager for the General Electric Company, working in areas of VHF–UHF television tuners and low-noise low-power traveling-wave tubes. In 1965 he joined Varian Associates and worked on tunnel diode amplifiers and GaAs materials and oscillators. In 1968 he was named Manager of the GaAs Gunn-effect operation which was responsible for research, development, and production of Gunn diodes and oscillators. He presently has the development and manufacturing responsibility for all semiconductor and microwave device activities for the Solid State West Division.

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T. T. Fong (S'67–M'69) received the B.S.E.E. degree from Cheng Kung University, Taiwan, China, in 1961 and the M.S. and Ph.D. degrees in engineering, both from the University of California, Los Angeles, in 1966 and 1969, respectively.

From 1964 to 1967 he was a Teaching Assistant at the University of California, Los Angeles, and became Acting Instructor in 1968, teaching solid-state electronics. In 1969 he joined Hughes Research Laboratories, Torrance, CA, as a member of the Technical Staff working on microwave solid-state devices and circuits. Currently, he heads a section and is responsible for microwave solid-state components development in the Electronic Dynamics Division, Industrial Electronics Group, Hughes Aircraft Company.

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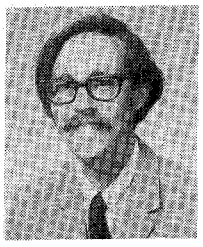
Yukio Fukukawa was born in Tokyo, Japan, on November 19, 1930. He received the B.S. degree from the Tokyo Institute of Technology, Tokyo, Japan, in 1953.

Since 1953 he has been with Fujitsu Laboratories Ltd., where he has been engaged in research and development on semiconductor devices. His major interest is in the field of microwave and millimeter-wave devices. He is a Research Fellow of Fujitsu Laboratories Ltd.

Mr. Fukukawa is a member of the Institute of Electronics and Communication Engineers of Japan, Physical Society of Japan, and the Japan Society of Applied Physics.



Robert J. Hamilton, Jr. (M'72) was born in Oakland, CA, on June 5, 1947. He received the B.S. degree in electrical engineering from the University of California, Berkeley, in 1969, and has done graduate work at the University of Southern California, Los Angeles, in materials science and engineering mathematics.

From July 1969 through September 1973 he was employed by Hughes Aircraft Company, Culver City, CA, in the Receiver Section of the Radar Microwave Laboratory. During that time he did developmental work on *X*-, *K*-, and *Ka*-band silicon IMPATT and GaAs Gunn diode oscillator and amplifier circuits for numerous avionics and space applications, including *Ka*-band paramp pumps for airborne radar systems. He has also done developmental circuit work on *L*- and *S*-band silicon bipolar transistor amplifiers and *C*- and *X*-band GaAs FET amplifiers. He joined Varian Associates in October 1973. His activity in the Materials and Devices Engineering Group of the Solid State West Division is primarily concerned with millimeter-wave Gunn-effect amplifier and oscillator circuit development.

Mr. Hamilton is a member of Eta Kappa Nu.

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Yasutake Hirachi (M'75) was born in Tokyo, Japan, on December 24, 1944. He received the B.S. and M.S. degrees in electrical engineering from Tokyo University of Agriculture and Technology, Tokyo, Japan, in 1968 and 1970, respectively.

From 1970 to 1971 he was a Research Assistant with the Tokyo Institute of Technology, where he worked in the areas of machine controls using laser diodes. He then joined Fujitsu Laboratories Ltd., Kawasaki, Japan, where he has been engaged in the research and development of microwave and millimeter-wave IMPATT diodes.

Mr. Hirachi is a member of the Institute of Electronics and Communication Engineers of Japan.

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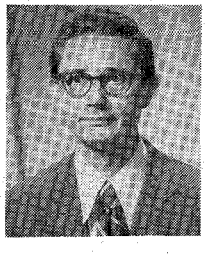

James P. Hollinger was born in Elyria, OH, on October 1, 1933. He received the B.S. degree in physics from the New Mexico Institute of Mining and Technology, Socorro, in 1956, and the M.S. degree in physics from the University of Virginia, Charlottesville, in 1958. After attending Cambridge University, England on a Fulbright scholarship for one year, he returned to the University of Virginia and received the Ph.D. degree in physics in 1961.

After teaching physics at the George Washington University, Washington, DC, for one year, he joined the Radio Astronomy Branch at the Naval Research Laboratory, Washington, DC. Until 1969, he was principally concerned with research on the polarization and variability of radio sources and on pulsars. For the past seven years, he has worked on the remote sensing of ocean surface conditions using microwave radiometers. He is currently head of the Oceanographic Sensing Section at NRL.

Tatsuo Itoh (M'69–SM'74) was born in Tokyo, Japan, on May 5, 1940. He received the B.S. and M.S. degrees in electrical engineering from the Yokohama National University, Yokohama, Japan, in 1964 and 1966, respectively, and the Ph.D. degree in electrical engineering from the University of Illinois, Urbana, 1969.

From September 1966 to April 1976 he was with the Electromagnetics Laboratory, University of Illinois. He was associated with the Coordinated Science Laboratory of the same university from August 1974 to April 1976. He joined the Stanford Research Institute, Menlo Park, CA, in April 1976.

Dr. Itoh is a member of the Institute of Electronics and Communication Engineers of Japan, Sigma Xi, and Commissions B and C of URSI.

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Harold Jacobs (SM'59–F'68) was born in Port Chester, NY, on November 21, 1917. He received the B.A. degree from the Johns Hopkins University, Baltimore, MD and the M.S. and Ph.D. degrees from New York University, New York, NY.

He joined the U.S. Army Signal Corps Laboratory at Fort Monmouth, NJ, in 1949, with previous experience at RCA Mgn. Co., Lancaster, PA, and Sylvania Electric Products, Kew Gardens, NY. He has worked in the areas of electron tubes, solid-state devices, lasers, and microwave and millimeter-wave devices.

He received the IEEE Fellow Award in 1967 for his semiconductor devices contributions and the Army's Decoration for Exceptional Civilian Service in 1969 for millimeter-wave imaging investigations. In 1973 he was the recipient of the IEEE's Harry Diamond Award for identification of bulk semiconductor effects at millimeter-waves with applications to imaging and surveillance.

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Noboru Kanmuri (S'67–M'68) was born in Tokyo, Japan, on February 10, 1940. He received the B.S. and M.S. degrees in electrical engineering from Waseda University, Tokyo, Japan, in 1962 and 1968, respectively.

Since joining the Electrical Communication Laboratories, Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan, in 1968, he has been engaged in the research of millimeter-wave solid-state circuits and the development of repeaters and measuring equipments for a guided millimeter-wave transmission system. He is currently a Staff Engineer of Yokosuka Electrical Communication Laboratory, NTT.

Mr. Kanmuri is a member of the Institute of Electronics and Communication Engineers of Japan.

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Haruhiko Kato was born in Ise-shi, Mie-ken, Japan, on January 7, 1946. He received the B.S. degree from Kanazawa University, Kanazawa-shi, Japan.

In 1968 he joined the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan, and has been engaged in analyses, designs, and experiments on millimeter-wave IMPATT oscillators, IMPATT amplifiers, and varactor multipliers for the millimeter-wave communication system. He is currently an Engineer in the Millimeter-Wave Transmission Section, Trunk Transmission System Development Division, Yokosuka Electrical Communication Laboratory, NTT,

where he is engaged in the development of millimeter-wave measuring equipments and IMPATT stable amplifiers for a guided millimeter-wave transmission system.

Mr. Kato is a member of the Institute of Electronics and Communication Engineers of Japan.

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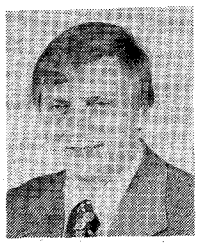

Allan R. Kaurs (S'69–M'72) was born in Chicago, IL, on January 12, 1948. He received the B.S.E.E. degree from Michigan Technological University, Houghton, MI, in 1971, and the M.S.E.E. degree from Illinois Institute of Technology, Chicago, IL, in 1972. At present, he is attending the Graduate School of Business of the University of Chicago, Chicago, IL.

Since 1972 he has been on the staff of IIT Research Institute working in the microwave and EMP areas. He has been involved in the design of microwave active and passive devices for various microwave communication systems using computer-aided design and traditional techniques. He has worked in the development of a 60-GHz communication system and microwave data bus communication link.

Mr. Kaurs is a member of Eta Kappa Nu.

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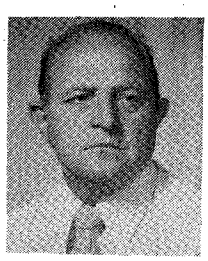

James E. Kenney was born in Washington, DC, on June 24, 1934.

He has been at the Naval Research Laboratory since February 1957. He was involved in the early development of millimeter-wave automatic navigators for fighter-plane applications. Since 1960 he has been active in the development of microwave radiometers for radio astronomy and remote-sensing applications.

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James E. Kietzer was born in Chicago, IL, on December 4, 1931. He received the B.S.E.E. degree from Illinois Institute of Technology, Chicago, IL, in 1953.

He joined the Electronics Division of IIT Research Institute in 1953, where he is currently a Senior Electrical Engineer working on the design of radar, missile-guidance, special-purpose communication, and ECM systems.

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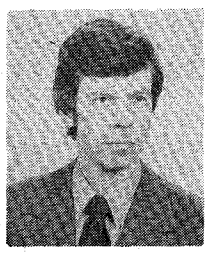
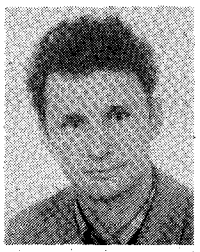


Robert M. Knox (S'66–M'69) was born in Minneapolis, MN, on January 30, 1935. He received the B.E.E. degree from the University of Minnesota, Minneapolis, in 1956 and the M.E.E. degree from the University of Southern California, Los Angeles, in 1961.

He was employed by the Semiconductor Division of Hughes Aircraft Company, Newport Beach, CA, from 1959 to 1962. He performed characterization of microwave semiconductors while continuing his education under the Hughes Fellowship Program. Collins Radio Company of Cedar Rapids, IA, was his employer from 1962 to 1964. He performed stripline circuit design for various microwave system applications. From 1965 to 1974 he was with the IIT Research Institute, Chicago, IL, performing research on various microwave devices and applications. His major effort during this period was development of the dielectric waveguide millimeter integrated circuit concept. In 1974 he was co-founder of Epsilon Lambda Electronics Corporation, Batavia, IL, and has served this company as President since 1974.



Erik L. Kollberg was born in Stockholm, Sweden, in 1937. He received the civilingenjör (M.Sc.) degree in electrical engineering in 1961, the licentiate degree in 1966, and the Ph.D. degree in 1970 from Chalmers University of Technology, Göteborg, Sweden.

Since 1961 he has been a member of the research and technical staff of the Research Laboratory of Electronics and of the Onsala Space Observatory, Göteborg, Sweden. He was appointed Assistant Professor in 1971. His research interests are primarily in the area of low-noise microwave and millimeter-wave amplifiers and receivers.

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N. B. Kramer (M'66) was born in Kansas City, MO, on Sept. 21, 1936. He received the B.S. degree from Oklahoma State University, Stillwater, in 1958, the M.S. degree from the California Institute of Technology, Pasadena, in 1959, and the Ph.D. degree from the University of California, Los Angeles, in 1966.

He has been with Hughes Aircraft Company since 1958, and has worked on solid-state microwave and millimeter devices for the last ten years. He is Assistant Manager of the Solid State Microwave Product Line of Hughes Electron Dynamics Division, Torrance, CA.

Dr. Kramer is a member of Sigma Xi, Phi Kappa Phi, Sigma Tau, and Eta Kappa Nu.

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H. J. Kuno (S'61–M'63–SM'75), for a photograph and biography please see page 684 of this issue.

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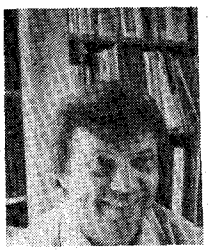

Don H. Lee (S'66–M'69) received the B.S., M.S., and Ph.D. degrees in electrical engineering from the California Institute of Technology, Pasadena, CA, in 1963, 1964, and 1969, respectively.

In 1969 he joined the Hughes Research Laboratories, Malibu, CA, where he has been engaged in ion-implantation studies for semiconductor device application. He is presently working on ion-implanted microwave devices for the Hughes Torrance Research Center, Torrance, CA.

Dr. Lee is a member of the American Physical Society, the Electrochemical Society, and Sigma Xi.

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Burton J. Levin (S'65–M'69) was born in Philadelphia, PA, on June 23, 1942. He received the B.S.E.E. degree from Drexel University, Philadelphia, PA, in 1964, the M.S.E.E. degree from the Massachusetts Institute of Technology, Cambridge, in 1965, and the Ph.D. degree from the Moore School of Electrical Engineering of the University of Pennsylvania, Philadelphia, in 1969.

From 1969 to 1974 he was a Senior Member of the engineering staff of the Advanced Technology Laboratories of RCA in Camden, NJ, where he worked on the development of various millimeter-wave components. These included a quasi-optical image converter, an electronically controlled low-loss phase shifter, and high-efficiency GaAs IMPATT diode oscillators. During 1975 he was a Research Engineer at the Illinois Institute of Technology Research Institute, Chicago, IL, where he was concerned with the analysis and design of various integrated-circuit millimeter-wave components. He was responsible for the development

of a 60-GHz image-guide FM receiver–transmitter. Currently, he is on the engineering staff of Northrop, DSD, in Rolling Meadows, IL, where he is concerned with the advanced development of MIC's for EW systems. He has been concerned with the development of P-I-N diode modulators and transistor VCO's.

Dr. Levin is a member of Sigma Xi, Tau Beta Pi, Eta Kappa Nu, and Phi Kappa Phi.

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P. Thomas Lewin was born in Uppsala, Sweden, in 1947. He received the civilingenjör (M.Sc.) degree in electrical engineering in 1972 from Chalmers University of Technology, Göteborg, Sweden.

Since 1972 he has been a member of the research staff of the Research Laboratory of Electronics and of the Onsala Space Observatory. He has been working on the development of low-noise receiver systems for the Onsala Space Observatory, Göteborg, Sweden.

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Charles M. LoCascio was born in Messine, Italy, in 1907.

He joined the Thermionics Branch of the U.S. Army Electronics Command at Fort Monmouth, NJ, in 1940. He worked with the late Dr. Harold Zahl in areas of microwaves, radar, lasers, and associated circuitry. He was Supervisor of the techniques section when he retired in 1971. Since that time, he has been associated with the Electronic Engineering Department of Monmouth College, West Long Branch, NJ.

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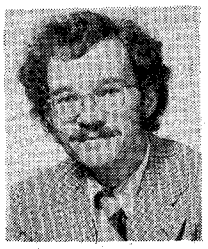

Stephen I. Long (M'73) received the B.S. degree in engineering from the University of California, Berkeley, in 1967, and the M.S. and Ph.D. degrees in electrical engineering from Cornell University, Ithaca, NY, in 1969 and 1974, respectively.

During 1966 and 1967 he worked as a Staff Assistant at the Stanford Linear Accelerator on electron multiplication effects in alkali halides. During 1968 and 1969 he worked as a project engineer at Cayuga Associates, Ithaca, NY, and was resposnible for developing liquid-phase epitaxial growth reactors for transferred-electron-device fabrication. From 1969 to 1973 he served as a Project Engineer at the Rome Air Development Center, Griffis AFB, NY. There, he investigated a steady-state liquid-phase epitaxial growth process for thick uniformly doped layers. He joined Varian Associates in 1974 and has worked on vapor-phase epitaxial growth of GaAs, on development of GaAs high-efficiency IMPATT oscillators, and on devices for low-noise Gunn amplifiers.

Dr. Long is a member of Tau Beta Pi.

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Yoshio Matsuo was born in Mie, Japan, on November 1, 1941. He received the B.S. degree in electronics engineering from Nagoya University, Nagoya, Japan, in 1964.

He joined the Central Research Laboratories, Nippon Electric Company Ltd., Kawasaki, Japan, in 1964. His work has been mainly on millimeter-wave communication systems such as the high-speed PSK modulator–demodulator, integrated microwave circuits, and high-speed digital circuits. Currently, he is engaged in the research of satellite communication systems and mobile radio systems.

Mr. Matsuo is a member of the Institute of Electronics and Communication Engineers of Japan.

Brad D. Moore (S'73) was born in Berkeley, CA, on February 7, 1952. He received the B.S. and M.S. degrees in electrical engineering from the University of Texas, Austin, in 1974 and 1975, respectively.

From January 1974 to December 1975 he served as a Research Assistant with the Electrical Engineering Research Laboratory at the University of Texas where he worked to improve the performance of millimeter-wave radio astronomy receivers. He is presently with the Motorola Government Electronics Division, Scottsdale, AZ, as a Design Engineer.

Mr. Moore is a member of Tau Beta Pi and Eta Kappa Nu.

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Takakiyo Nakagami (M'75) was born in Toyohashi, Japan, on August 11, 1942. He received the B.S.E.E. and M.S.E.E. degrees in 1965 and 1967, respectively, from the Tokyo Institute of Technology.

From 1967 to 1970 he worked as a Research Assistant at the Tokyo Institute of Technology, and was engaged in the study of microwave solid-state circuits, especially multipliers and oscillators. In 1970 he joined the development group of millimeter-wave communication systems in Fujitsu Laboratories Ltd. He has developed various kinds of waveguide components such as filters, circulators, oscillators, and amplifiers for frequencies from 40 to 100 GHz. He is currently supervising the development of millimeter-wave communication equipments at Fujitsu Laboratories.

Mr. Nakagami is a member of IECE of Japan.

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Nobuo Nakajima was born in Kiryu, Japan, on June 18, 1947. He received the B.S. and M.S. degrees in electrical engineering from Tohoku University, Sendai, Japan, in 1970 and 1972, respectively.

In 1972 he joined the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Yokosuka-shi, Japan, and is presently engaged in research work on filters and other passive circuits for millimeter-wave transmission systems.

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Gabriel Novick (S'47–M'49) was born in New York City, NY, on January 19, 1925. He received the B.E.E. degree from the City College of New York, NY, in 1947, the M.E.E. degree from the Polytechnic Institute of Brooklyn, Brooklyn, NY, and the Ph.D. degree from Stanford University, Stanford, CA, in 1961.

During World War II he served briefly in the armed forces. From 1950 to 1955, he worked at the Signal Corps Engineering Laboratory (SCEL), Fort Monmouth, NJ. His primary work was on various cross-field microwave tubes such as magnetrons, carcinotrons (cross-field BWO), and cross-field amplifier tubes. Previously, he had obtained some microwave and antenna experience at the Polytechnic Research and Development Co., Brooklyn, NY, and Channel Master Corp., Ellenville, NY. In 1955, he joined the General Electric Microwave Laboratory, Palo Alto, CA, where he worked on various types of microwave tubes, such as an external-circuit cross-field tube, a megawatt klystron, and a low-noise TWT. Under the G.E. Honors Co-Operative Program, he attended the Stanford University. From 1965 to 1973, he was a member of the Electronic Warfare Laboratory, part of the U.S. Army Electronics Command, Fort Monmouth, NJ. He worked on various electronic and electrooptical counter-

measures systems such as the MULTEW system, the Expandables, and the Protection of Armored Vehicles. At the present time, he is a faculty member of the Electronic Engineering Department of Monmouth College, West Long Branch, NJ, where in addition to teaching, he works in the the laboratory on various projects such as ruby lasers, neodynium glass lasers, CO_2 lasers, thermistor detectors for the infrared spectrum, microwave components, and various microwave subsystems.

Dr. Novick is a licensed Professional Engineer in the state of California, and a member of AAAS, AAUP, AOC, ASHS, DAV, and Sigma Xi.

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Isao Ohtomo (M'69) was born in Sapporo, Japan, on October 30, 1942. He received the B.S. and Ph.D. degrees in electrical engineering from Hokkaido University, Hokkaido, Japan, in 1965 and 1974, respectively.

He joined the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan, in 1965, and has since been engaged in research work on branching filters and other components for guided millimeter-wave transmission systems, 20-GHz-band radio relay PCM transmission systems, and satellite communication systems. At present he is the Assistant Chief of the satellite communication equipment section, integrated transmission system development division, Yokosuka Electrical Communication Laboratory, NTT, Yokosuka-shi, Kanagawa-ken, Japan.

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

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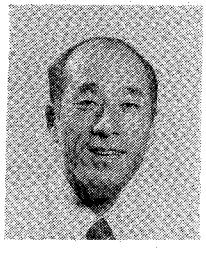

Masahiro Omori received the B.S. degree in electrical engineering from the University of Osaka, Japan, in 1954, the M.S. degree from Yale University, New Haven, CT, in 1959, and the Ph.D. degree from Stanford University, Stanford, CA, in 1964.

He was with the Japan Broadcasting Corporation (NHK) before he came to the United States for advance studies. He joined Bell Laboratories in Allentown, PA, in 1964, where he worked for three years on microwave ferrite devices. Since 1967 he has been with Varian Associates, Palo Alto, CA, where he has been engaged in research and development on microwave semiconductors and circuits. He holds several patents and is a recipient of the IR 100 award. He has written a number of papers on microwave devices and circuits.

Dr. Omori is a member of Sigma Xi.

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C. Read Predmore (M'73) received the B.S. degree in physics from the Virginia Polytechnic Institute and State University, Blacksburg, in 1967, and the Ph.D. degree in physics from Rice University, Houston, TX, in 1971.

From 1971 to 1972 he was an Assistant Professor in the Department of Space Physics and Astronomy at Rice University where he continued his work on radio astronomy and initiated a submillimeter laser project. In 1972 he joined the National Radio Astronomy Observatory where he worked on the development and design of the TE_{01} transmission system for the very-large-array radio telescope. Since 1975 he has been at the University of Massachusetts, Amherst, where he is doing research and development for the millimeter-wave telescope of the Five College Radio Astronomy Observatory.

Dr. Predmore is a member of the American Astronomical Society and Sigma Xi.

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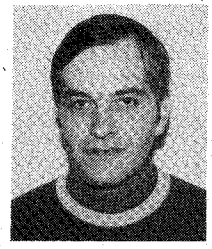

Paul-Alain Rolland was born in Bangui, République Centrafricaine, on June 24, 1947. He received the Diplomed Engineer degree from the Institut Supérieur d'Electronique du Nord, Lille, France, and the third Cycle Doctorat degree from the University of Lille, Lille, France, in 1970 and 1973, respectively.

In 1970 he joined the Centre Hyperfréquences et Semiconducteurs, University of Lille I, Villeneuve D'Ascq, France, where he is concerned with research on the frequency multiplication using avalanche diodes. Currently, he is Assistant Professor in the Engineering School Informatique, Mesure, Automatique (I.M.A.), Lille, France.

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Georges Salmer was born in Besançon, France, on August 7, 1939. He received the Diplomed Engineer degree from the Institut Supérieur d'Electronique du Nord, Lille, France, and the Doctorat ès Sciences Physiques degree from the University of Lille, Lille, France, in 1961 and 1966, respectively.

He joined the Centre Hyperfréquences et Semiconducteurs, University of Lille I, Villeneuve D'Ascq, France, in 1968. Currently, he is Professor at this university and group leader at the center. He is working on microwave solid-state devices specially on IMPATT and BARITT diodes.

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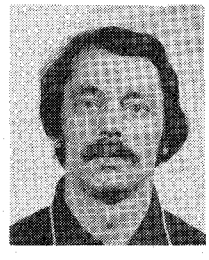

Nikola Samardzija was born in Beograd, Yugoslavia, on April 1, 1950. He received the B.Tech. degree in electrical engineering from the University of Bradford, Bradford, England, in 1974, and the M.Sc. degree in electrical engineering from the University of Illinois, Urbana, in 1976.

From 1973 to 1974 he was working with the Ansafone Ltd. in England. His main interests are in microwave network theory and wave propagation phenomena. At present he is continuing with his doctoral work. He is at the Couren College of Engineering, University of Houston, Houston, TX.

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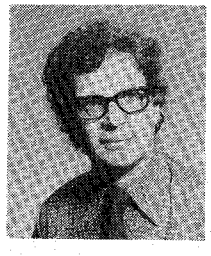

Martin V. Schneider (M'56–SM'71–F'76) was born in Bern, Switzerland, on October 20, 1930. He received the M.S. and Ph.D. degrees in physics from the Swiss Federal Institute of Technology, Zurich, Switzerland, in 1956 and 1959, respectively.

From 1959 to 1961 he was a Research Assistant at the Swiss Federal Institute of Technology, and in 1961 he joined the Radio Research Laboratory at Bell Laboratories, Crawford Hill, in Holmdel, NJ. He has worked on thin-film solid-state devices and circuits, Schottky-barrier photodetectors, and microwave and millimeter-wave integrated circuits. He is currently engaged in advanced work on millimeter-wave devices and circuits for use in communication receivers and transmitters in the 100–300-GHz frequency range.

Dr. Schneider is a member of the American Physical Society. He is also a member of the Editorial Board of MTT, and he has served as the MTT Group Chapter Chairman of the New Jersey Coast Section IEEE.

James F. Shanley (M'76) was born in Warwick, NY, on May 31, 1944. He received the B.S. degree in physics from Clarkson College of Technology, Pottsdam, NY, in 1966 and the M.S. degree in physics from the University of Massachusetts, Amherst, in 1969. He is presently completing the Ph.D. degree in the Department of Electrical and Computer Engineering at the University of Massachusetts, Amherst.

From 1966 to 1967 he was employed as a Systems Analyst at United Aircraft Corporate Systems Center, Farmington, CT. He was a Research Assistant in atomic physics in the Department of Physics and Astronomy at the University of Massachusetts, Amherst, from 1967 to 1969. From 1970 to the present he has been involved in studying spin-lattice relaxation in the active materials employed in millimeter-wave masers. His current interests include radio astronomy and the development of low-noise receivers for millimeter wavelengths.

Mr. Shanley is a member of the American Physical Society.

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William W. Snell, Jr., was born in Williamsport, PA, on July 3, 1932. He graduated from the Williamsport Technical Institute in 1951.

He joined Bell Laboratories, Crawford Hill, in Holmdel, NJ, in 1955. He has worked on the design of waveguide components in the 4-, 6-, and 11-GHz common carrier band. He also participated in the early stages of satellite communication and designed several components of the Holmdel Space Communication Receiver. He is currently working on hybrid integrated microwave and millimeter-wave circuits and components for communication receivers at millimeter-wave frequencies.

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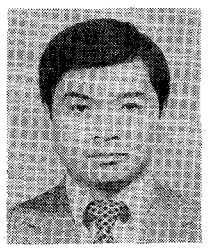

Ichiro Takase was born in Fukuoka, Japan, on August 26, 1947. He graduated from Nippon Electric Engineering College, Tokyo, Japan, in 1968.

He joined the Central Research Laboratories, Nippon Electric Company Ltd., Kawasaki, Japan, in 1969, where he has been engaged in the research and development of microwave integrated circuits and is presently working on the circuit design of a digital circuit.

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Frederick J. Tischer (SM'55–F'62) was born in Plan, Austria, on March 14, 1913. He received the M.S. and Ph.D. degrees in electrical engineering from the University of Prague, Prague, Czechoslovakia, in 1938.

His professional activities include teaching, research, research management, and consulting in Czechoslovakia, Germany, Sweden, and the United States. From 1956 to 1964 he was Associate Professor and Professor at Ohio State University, Columbus, and the University of Alabama, University. Since 1964 he has been Professor of Electrical Engineering at North Carolina State University, Raleigh. His major work and publications have been in the fields of electromagnetics, microwaves, plasma dynamics, and optics. He has written more than 85 technical articles and is the author of *Microwave Measurements* (Springer, 1958) and *Basic Theory of Space Communications* (Van Nostrand, 1965). He also holds numerous patents in the above-mentioned fields.

Dr. Tischer is a member of the Optical Society of America and has held various offices in the IRE and IEEE.

Charles H. Townes (SM'58–F'62) was born in South Carolina in 1915. He received the B.S. and B.A. degrees from Furman University, Greenville, SC, in 1935, and the Ph.D. degree in physics from the California Institute of Technology, Pasadena, in 1939.

From 1939 to 1947 he was a staff member of the Bell Telephone Laboratories where he worked on cold cathode tubes, radar navigation and bombing systems, and microwave spectroscopy. From 1948 to 1961 he was a member of the faculty of Columbia University, primarily working on microwave spectroscopy, masers, and lasers. He served from 1959 to 1961 as Vice President and Director of Research of the Institute for Defense Analyses, and then as Provost of MIT from 1961 to 1966. Following a year as Institute Professor at MIT, he was appointed in 1967 to his present post of University Professor of Physics at the University of California, Berkeley. His principal research is presently concerned with quantum electronics and with microwave and infrared astronomy.

Dr. Townes is an honorary member of the Optical Society of America, past President of the American Physical Society, past member of the Council of the National Academy of Sciences, and a Foreign Member of the Royal Society. His awards include the Morris Liebmann, the David Sarnoff, the Medal of Honor of the IEEE, and the Nobel Prize for Physics. He is a director of the General Motors and Perkin-Elmer Corporations.

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Yoshikazu Tōyama was born on February 9, 1939, in Kanagawa, Japan. He received the B.A. degree in applied physics and the M.A. degree in electronics from the University of Tokyo, Tokyo, Japan, in 1962 and 1964, respectively.

Since 1964 he has been with Fujitsu Laboratories Ltd., Kawasaki, Japan, where he has been engaged in the research and development of the microwave and millimeter-wave semiconductor devices. He is Manager of the Microwave Semiconductor Diode Section, Semiconductor Laboratory.

Mr. Tōyama is a member of The Institute of Electronics and Communication Engineers of Japan and the Physical Society of Japan.

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Ballard E. Troy, Jr., received the B.S. degree in physics from Duke University, Durham, NC, in 1957.

He has been at the Naval Research Laboratory since 1973, where his work has concerned stellar and ionospheric ultraviolet sources. Currently, his field of interest is passive microwave investigations of the earth's surface, in particular, microwave imagery. Prior to joining NRL, he was at NASA-Goddard Space Flight Center, where he conducted research on ionospheric charged particles and on satellite wakes.

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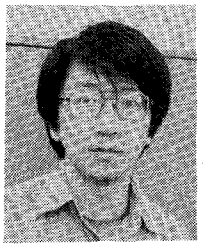
J. L. Vaterkowski was born in Douai, France, in 1946. He joined the Centre Hyperfréquences et Semiconducteurs in 1969. He received the third Cycle Doctorat degree from the University of Lille I, Villeneuve D'Ascq, France, for his works on microstrip microwave system, in 1971.

Since 1971 he has been concerned with research on frequency conversion using avalanche diode. Currently, he is Assistant Professor in the Engineering School Informatique, Mesure, Automatique, Lille, France.



Shih-Yuan Wang (S'72–M'75) was born in Nanking, China, on April 20, 1947. He received the B.S. degree from the University of California, Berkeley, in engineering physics in 1969.

From 1970 to 1973 he was a Research Assistant with the Space Sciences Laboratory participating in the development of a 1.3-cm maser. Since then he has been a Research Assistant with the Electronics Research Laboratory, University of California, Berkeley, working towards his Ph.D. degree. His thesis topic is the investigation of thin-film metal–barrier–metal junctions at optical frequencies. He is a member of the American Physical Society and the Optical Society of America.

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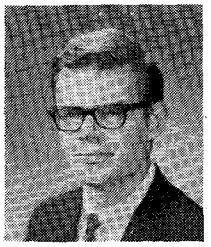

Kenneth P. Weller (S'65–M'69) was born in Paterson, NJ, on October 9, 1942. He received the B.S., M.S., and Ph.D. degrees from the University of California, Berkeley, in 1965, 1966, and 1969, respectively.

Since joining Hughes Aircraft Company, Torrance, CA, in April 1973, he has been concerned with the development of IMPATT parametric amplifiers pump sources, millimeter IMPATT power amplifiers, and tunable oscillators for the 50–170-GHz range. From 1969 to March 1973 he was on the Technical Staff at RCA Laboratories, Princeton, NJ, where he worked on the fabrication and characterization of millimeter-wave solid-state devices.

Dr. Weller is a member of Phi Beta Kappa, Tau Beta Pi, Eta Kappa Nu, and Sigma Xi.

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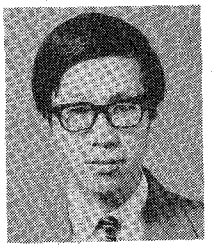
Gerard T. Wrixon (M'75) was born in Limerick, Ireland, on May 25, 1940. He received the B.E. degree with honors from the National University of Ireland, Cork, the M.Sc. degree from the California Institute of Technology, Pasadena, and the Ph.D. degree from the University of California, Berkeley, all in electrical engineering, in 1961, 1964, and 1969, respectively.

From 1961 to 1963 he was with Fokker, the Royal Netherlands Aircraft Factory, Amsterdam, as a Research and Development Engineer, specializing in the field of aircraft navigational systems. From 1964 to 1965 he was an Instructor in the Electrical Engineering Department at Loyola University, Los Angeles, CA. While a graduate student at the University of California, Berkeley, he served as a Research Assistant in the Radio Astronomy Laboratory and Acting Instructor in the Electrical Engineering Department. From 1969 to 1974 he was a Member of the Technical Staff at the Crawford Hill Laboratory, Bell Laboratories, Inc., Holmdel, NJ. He is currently Lecturer in Electrical Engineering at University College, Cork, Ireland, and Director of the European Millimeter Diode Laboratory. He is a Consultant to the European Space Agency and the Engineering Experimental Station, Georgia Institute of Technology, on the design of Schottky-barrier diodes and mixers for millimeter-wave applications.

Dr. Wrixon is a member of Commission V of the International Scientific Radio Union and the International Astronomical Union.



Kazuyuki Yamamoto (M'76) was born in Kyoto, Japan, on July 13, 1946. He received the B.S. M.S. degrees in electrical engineering from Kyoto University, Kyoto, Japan, in 1969 and 1971, respectively.

In 1971 he joined the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Yokosuka, Japan, where he has been engaged in research and development of a guided millimeter-wave transmission system, specifically in the design of spurious interferences.

Mr. Yamamoto is a member of the Institute of Electronics and Communication Engineers of Japan.

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Robert S. Ying (M'67) was born in Shanghai, China, on April 15, 1942. He received the B.S.E.E. degree in 1964 and the M.S. degree in 1966, both from the University of Michigan, Ann Arbor.

He joined Hughes Aircraft Company, Torrance, CA, in 1966 as a member of the Technical Staff in the Research Laboratories, where he has been actively engaged in the research and development of solid-state microwave and millimeter-wave devices such as IMPATT, TRAPATT, and Gunn diodes. Since 1973 he has been Assistant Manager in the Torrance Research Center at Hughes, directing a materials and processing group to develop GaAs and silicon devices.

Mr. Ying is a member of Eta Kappa Nu.

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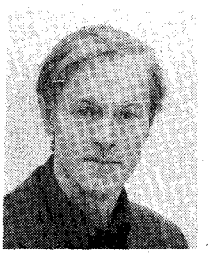

K. Sigfrid Yngvesson (M'62) was born in Lidköping, Sweden, on March 23, 1936. He received the degrees of Civilingenjör, Tekn. Lic., and Tekn. Dr. in 1958, 1965, and 1968, respectively, from the Electrical Engineering Department of Chalmers University of Technology, Gothenburg, Sweden, majoring in electron physics.

He was an Acting Professor at Chalmers University of Technology during 1962–1964 while developing maser amplifiers. He did research on spin-lattice relaxation and its relation to microwave maser amplifiers at the Department of Physics, University of California, Berkeley, from 1964 to 1966, and at Chalmers University from 1966 to 1968. He returned to the Department of Physics, University of California, Berkeley, in 1968–1970 to work on millimeter-wave masers for radio astronomy, and has continued this research in his present position (since 1970) as Associate Professor of Electrical and Computer Engineering at the University of Massachusetts, Amherst.

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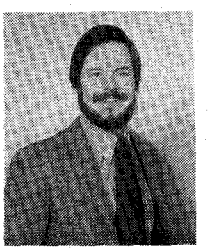

Fred P. Ziolkowski (S'68–M'76) was born in Toledo, Ohio, in 1941. He received the B.S.E.E. degree from the University of Toledo, Toledo, OH, in 1963, the M.S. and Ph.D. degrees from the University of Illinois, Urbana, in 1965 and 1968, respectively.

Since joining the Equipment Division of the Raytheon, Sudbury, MA, in 1968, he has worked in the areas of subsurface antennas for communications and provided supporting analysis for the antenna design of the Lunar Surface Electrical Properties Experiment of Apollo XIV. Beginning in 1972 he has done systems analysis for secure VHF and more recently EHF communication systems with emphasis on design and development.