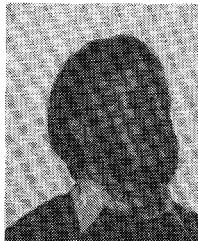


# Contributors



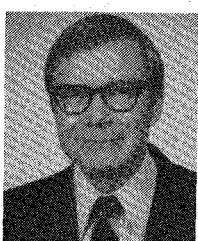
**John W. Archer** was born in Sydney, Australia, in 1950. He received the B.Sc., B.E. (Hons 1), and Ph.D. degrees from Sydney University in 1971, 1973, and 1978, respectively.

From 1974 to 1977, he was employed with CSIRO, Radiophysics Division, developing receiver and antenna systems for a radio interferometer operating at 100 GHz for high resolution solar radio astronomy. From 1977 to 1979, he was with NRAO's VLA program as a systems development and evaluation engineer. Since September 1979, he has worked in the NRAO Electronics Research and Development group in Charlottesville, VA. His current research interests are the development of low cost, efficient power sources at short millimeter lengths and the design of low-noise mixers to operate near 230 GHz.



**Bernd Aumiller** received the B.E.E. degree from the Oskar V. Miller Polytechnikum, Munich, Federal Republic of Germany, in 1949.

He was engaged with government agencies and primarily involved in the design and development work of high power transmitting equipment. In 1968 he joined the Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V. (DFVLR) at Oberpfaffenhofen, Federal Republic of Germany. His contributions are in the microwave and millimeter-wavelength hardware area, especially with regard to airborne remote sensing activities.

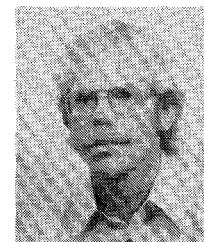


**Carl H. Durney** (S'60-M'64) was born in Blackfoot, ID, on April 22, 1931. He received the B.S. degree in electrical engineering from Utah State University, Logan, in 1958, and the M.S. and Ph.D. degrees in electrical engineering from the University of Utah, Salt Lake City, in 1961 and 1964, respectively.

From 1958 to 1959 he was employed as an Associate Research Engineer with the Boeing Airplane Company, Seattle, WA, where he studied the use of delay lines in control systems.

He has been with the University of Utah since 1963, when he was appointed to be Assistant Research Professor in electrical engineering. From 1965 to 1966 he was employed at the Bell Telephone Laboratories, Holmdel, NJ, while on leave from the University of Utah. During this time he worked in the area of microwave avalanche diode oscillators. In 1971, he was engaged in study and research involving microwave biological effects at the University of Washington while on leave from the University of Utah. He is presently Professor and Chairman of Electrical Engineering at the University of Utah, where he is engaged in teaching and research in electromagnetics, engineering pedagogy, and microwave biological effects.

**Dr. Durney** is a charter member and Vice President of the Bioelectromagnetics Society, and a member of Commission B of URSI (International Union of Radio Science), Sigma Tau, Phi Kappa Phi, Sigma Pi Sigma, Eta Kappa Nu, and the American Society for Engineering Education.



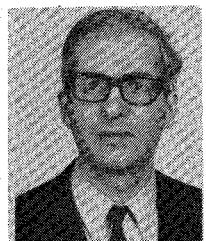
**Neal R. Erickson** was born in Peoria, IL, on January 3, 1949. He received the B.S. degree from the California Institute of Technology, Pasadena in 1970, and the Ph.D. degree from the University of California, Berkeley in 1979.

Since 1979, he has been working as a Post Doctoral Associate at the Five College Radio Astronomy Observatory, University of Massachusetts, Amherst. He is involved in development of receivers, quasi-optical devices, and frequency multipliers for the near millimeter and submillimeter regions, and is also active in the field of millimeter and submillimeter radio astronomy.



**Konrad Grüner** was born in Munich, Germany, on July 9, 1939. He received the Diplom-Ingenieur degree in electrical engineering and the Doktor-Ingenieur degree, both from the Technical University of Munich, Munich, Germany in 1964 and 1970, respectively.

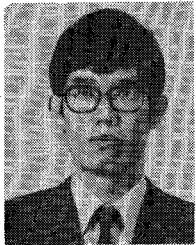
Since 1964 he has been with the Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt (DFVLR) at Oberpfaffenhofen, Germany, where he is presently responsible for the activities in the field of microwave radiometry.



**Joseph Helszajn** (M'64) was born in Brussels, Belgium, in 1934. He received the Full Technological Certificate of the City and Guilds of London Institute from Northern Polytechnic, London, England, in 1955, the M.S.E.E. degree from the University of Santa Clara, Santa Clara, Calif., in 1964, and the Ph.D. degree from the University of Leeds, Leeds, England, in 1969, and the D.Sc. degree from Heriot-Watt University, Edinburgh, Scotland, in 1976.

He has held a number of positions in the microwave industry. From 1964 to 1966 he was Product Line Manager at Microwave Associates, Inc., Burlington, MA. Currently, he is working as a consultant. He is also a Reader at Heriot-Watt University. He is the author of the books *Principles of Microwave Ferrite Engineering* (NY: Wiley) and *Nonreciprocal Microwave Junctions and Circulators* (NY: Wiley, 1975), and *Passive and Active Microwave Circuits* (New York: Wiley, 1978).

Dr. Helszajn is a Fellow of the Institution of Electronic and Radio Engineers (England). In 1968 he was awarded the Insignia Award of the City and Guilds of London Institute. He is an Honorary Editor of *Microwaves, Optics, and Acoustics* (I.E.E. Proceedings).



**Kazuhiko Honjo** was born in Saitama, Japan, on October 28, 1951. He received the B.E. degree from the University of Electrocommunications, Tokyo, Japan, and the M.E. degree from the Tokyo Institute of Technology, Tokyo, Japan, both in electrical engineering, in 1974 and 1976, respectively.

He joined the Central Research laboratories, Nippon Electric Company, Ltd., Kawasaki, Japan, in 1976. He has been engaged in the research and development of TRAPATT oscillators, high-power GaAs FET amplifiers and ultrabroad-band GaAs FET amplifiers, and is presently concerned with GaAs monolithic IC's.

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



**Nobuaki Kumagai** (M'59-SM'71) was born in Ryojun, Japan, on May 19, 1929. He received the B. Eng. and D. Eng. degrees from Osaka University, Osaka, Japan, in 1953 and 1959, respectively.

From 1958 to 1960, he was a Visiting Senior Research Fellow at the Electronics Research Laboratory of the University of California, Berkeley, where he was engaged in research on electromagnetic wave scattering and parametric amplifiers. From 1960 to 1970, he was an Associate Professor of Communication Engineering at Osaka University. In 1966, he was invited to the 11th G-MTT International Symposium as an invited speaker. Since 1971, he has been a Professor of Communication Engineering at Osaka University, Osaka, Japan, where he is engaged in research and education in electromagnetic theory, microwave and millimeter-wave engineering, optical waveguides and devices, and lasers and their applications. He is president of the Microwave Theory and Techniques Society of the Institute of Electronics and Communication Engineers of Japan. He is the co-author of *Microwave Circuits* (OHM-sha, Tokyo, 1963) and *Introduction to Relativistic Electromagnetic Field theory* (Corona Publishing Co., Tokyo, 1971).

Dr. Kumagai is a member of the Institute of Electronics and Communication Engineers of Japan, the Institute of Electrical Engineers of Japan, the Japan Society of Applied Physics, and the Physical Society of Japan.



**Mitsuru Igarashi** (S'74-M'75) was born in Tokyo, Japan, on October 8, 1932. He received the B.S. degree in electrical engineering from Yokohama National University, Yokohama, Japan, in 1969, and the M.S. and Dr. Eng. degrees in electronic engineering from Tokyo Institute of Technology, Tokyo, Japan, in 1972 and 1975, respectively.

From 1975 to 1979 he was an Associate Professor with National Oyama Technical College, Oyama, Japan. Since 1979 he has been an Associate Professor with the Faculty of Marine Science and Technology, Tokai University, Japan. His research has been concerned with microwave nonreciprocal circuits, tensor permeability of partially magnetized magnetic materials, propagation waves of magnetized ferrites, and active microwave sensors.

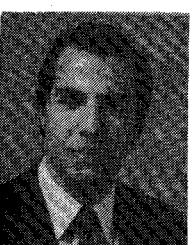
Dr. Igarashi is a member of the Institute of Electronics and Communication Engineers of Japan.



**Sadao Kurazono** was born in Miyazaki, Japan, on September 15, 1933. He graduated from the National Defense Academy and received the M. E. and D. E. degrees from Osaka University, Osaka, Japan, in 1963 and 1968, respectively, both in electrical communication engineering.

Since 1964 he has been with the Faculty of Engineering, Osaka University, where he is now an Associate Professor, engaged in research and education in microwave engineering, optical waveguide and devices.

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

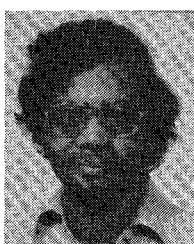


**Magdy F. Iskander** (S'72-M'76) was born in Alexandria, Egypt, on August 6, 1946. He received the B.Sc. degree in electrical engineering, University of Alexandria, Egypt, in 1969. He entered the Faculty of Graduate Studies at the University of Manitoba, Winnipeg, Man., Canada, in September 1971, and received the M.Sc. and Ph.D. degrees in 1972 and 1976, respectively, both in microwaves.

From 1969 to 1971, he was employed as a Teaching Assistant in the Department of Electrical Engineering at the University of Alexandria, and at that time he worked on the design and development of ion sources. In 1976, Dr. Iskander was awarded a National Research Council of Canada Post-Doctoral Fellowship at the University of Manitoba. Since March 1977, he has been with the Department of Electrical Engineering and the Department of Bioengineering at the University of Utah, Salt Lake City, where he is currently an Assistant Professor of Electrical Engineering. His present fields of interest include the scattering and diffraction of electromagnetic waves, antenna design, and the biological effects as well as the medical applications of electromagnetic waves.

Dr. Iskander is a member of Sigma Xi and the American Society of Engineering Education.

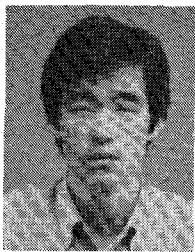
**P. E. Lagasse**, photograph and biography not available at the time of publication.



**Akhlesh Lakhtakia** was born in Lucknow, India, on July 1, 1957. He received the B. Tech. degree in electronics engineering from the Banaras Hindu University, Varanasi, India, in 1979. In September 1979 he joined the Graduate School at the University of Utah, Salt Lake City, and obtained his M.S. degree in electrical engineering in 1980.

Currently, he is working toward his Ph.D. degree in the Department of Electrical Engineering, University of Utah, where he is also employed as a Research Assistant. His areas of interest include electromagnetics and microwave biological effects.

**N. Mabaya**, photograph and biography not available at the time of publication.

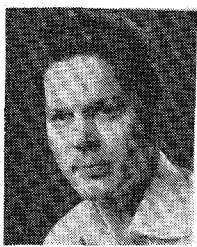


**Yoshihiko Masaoka** was born in Ehime, Japan, on March 5, 1954. He received the B.E. and M.E. degrees in communication engineering from Osaka University, Osaka, Japan, in 1977 and 1980, respectively.

In 1980, he joined Nagoya Aircraft Works, Mitsubishi Heavy Industries, Ltd., Nagoya, Aichi, Japan, where he has been engaged in development of airborne equipments.

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

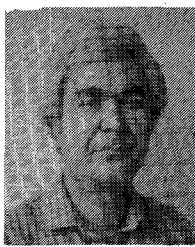
Japan.



**Juhani K. Peltonen** was born in Sysmä, Finland, on September 25, 1943. He received the Diploma Engineer (M.Sc.) degree in electrical engineering in 1968 and the Licentiate of Technology degree in 1974 from the Helsinki University of Technology, Helsinki, Finland.

From 1968 to 1974 he worked as a research assistant at Helsinki University of Technology, Radio Laboratory. Since 1974 he has been working as a research fellow of the Academy of Finland on transistor amplifiers and

microwave/millimeter wave oscillators. In 1979 he was with the Radioastronomical Institute of Bonn University working on low-noise GaAs FET amplifiers. His current interest is the development of millimeter-wave components for receivers used in radioastronomy.



**Habib Massoudi** (S'74-M'76) received the B.Sc. degree from Teacher's Training University, Tehran, Iran, in 1964, and the M.S. degree from the University of Tehran, Tehran, Iran, in 1970, both in physics. Continuing his graduate studies at the University of Utah, Salt Lake City, he obtained the Ph.D. degree in electrical engineering in 1976.

He worked as a physics teacher in Iran from 1964 to 1970. Since 1976, he has been with the University of Utah, where he is a Research Assistant Professor of electrical engineering, with research interest in electromagnetic radiation, scattering, and interaction with biological systems.

Dr. Massoudi is a member of Sigma Xi and the Bioelectromagnetics Society.



**Michael E. Powlesland** was born in Plymouth, England, on June 3, 1947. He graduated with honours in electrical engineering from the University of Edinburgh, Scotland in 1970. From 1970 to 1972 he worked as a development engineer on ferrite devices with Microwave and Electronic Systems Limited, Newbridge, Midlothian, Scotland. Since 1972 he has been with Ferranti Ltd., Dundee, Scotland working on ferrite devices and microwave integrated circuits.

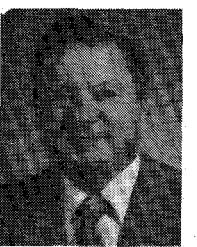
Mr. Powlesland is a chartered engineer and a Member of the Institution of Electrical Engineers (London).



**Yoshiyuki Naito** (M'70-SM'74) was born in Oita, Japan, on November 22, 1936. He received the B.S. degree in electrical engineering and the D. Eng. degree, from the Tokyo Institute of Technology, Tokyo, Japan, in 1959 and 1964, respectively.

Since 1964 he has been with Tokyo Institute of Technology. From September 1965 to October 1966 he was a Postdoctoral Fellow at Polytechnic Institute of Brooklyn, NY. Currently, he is a Professor with the Faculty of Engineering. His research has chiefly been concerned with microwave circuit elements, and properties and applications of magnetic material and antennas.

Dr. Naito received an Inada Award in 1961 and a Treatise Award in 1966 from the Institute of Electronics and Communication Engineers of Japan. He is a member of the Institute of Electronics and Communication Engineers of Japan.

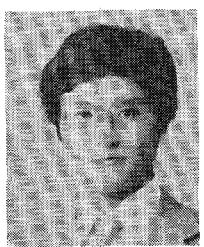


**Robert A. Pucel** (S'48-A'52-M'56-SM'64-F'79) received the B.S. and M.S. degrees in 1951 and the D.Sc. degree in 1955, all in electrical communications, Massachusetts Institute of Technology, Cambridge. From 1948 to 1951 he was a test engineer on the M.I.T. Cooperative Course with the General Electric Company. Following his graduation he joined the Microwave Tube Group at the Research Division of Raytheon Company. A year later he returned to M.I.T. where from 1952 to 1955 he was a Staff Member of the

M.I.T. Research Laboratory of Electronics doing theoretical studies in time domain network synthesis. Both his master's and doctoral dissertations were in the field of network synthesis.

In 1955 he rejoined the Research Division of Raytheon. From 1965 to 1970 he was Project Manager of the Microwave Semiconductor Devices and Integrated Circuits Program. From 1970 to 1973 he served as a consultant to the Microwave Transistor Group of the Power Tube Division. Presently he is a Consulting Scientist at the Research Division. His work has involved both theoretical and experimental studies of most microwave semiconductor devices, including their signal and noise properties. His activities have also included studies of microstrip propagation on dielectric and magnetic substrates as well as research on miniature dielectric cavities. His most recent work is in the field of FET oscillator noise studies and monolithic GaAs analog circuits. He has published extensively on most of these topics.

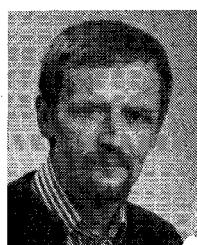
Dr. Pucel is a co-recipient of the 1976 Microwave Prize granted by the MTT Society. He also has been elected the National Lecturer for the Microwave Theory and Technique Society for 1980-1981. He is a Registered Professional Engineer of the Commonwealth of Massachusetts.



**Takashi Ohira** (S'79-M'80) was born in Osaka, Japan, on April 10, 1955. He received the B.E. and M.E. degrees in communication engineering from Osaka University, Osaka, Japan, in 1978 and 1980, respectively. He is presently seeking his Ph.D. degree at the Department of Communication Engineering, Osaka University, where he has been engaged in research on micro- and millimeter-wave integrated antennas and circuits.

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

Japan.



**Werner Reinert** was born in Jena, Germany, on April 25, 1943. He received the Diplom-Physiker degree and the Dr. degree from the University of Bonn, Bonn, Germany in 1969 and 1973, respectively.

Since 1974 he has been a Research Assistant at the Radioastronomisches Institut of the University of Bonn. He has worked on Submillimeter and millimeter-wave heterodyne receiver systems. His primary research interest is in the field of Schottky-barrier diodes and SIS junctions. He is engaged in electron beam lithography for producing submicron structures. At present, he is responsible for the research work on low-noise millimeter-wave receiver for radioastronomical application.

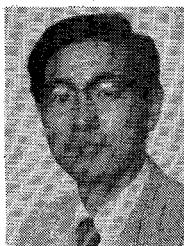


**Yoichiro Takayama** (M'72) was born in Kanagawa, Japan, on January 3, 1942. He received the B.E., M.E., and Dr. Eng. degrees from Osaka University, Osaka, Japan, in 1965, 1967, and 1973, respectively.

He joined the Nippon Electric Company, Ltd., Kawasaki, Japan, in 1967, and is now Research Manager of the Electron Device Research Laboratory, Central Research Laboratories. He has been engaged in the research and development of microwave solid-state oscillators, amplifiers, modulators and sensors. He is now leading GaAs IC research group.

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

**S. R. Seshadri** (SM'61), photograph and biography not available at the time of publication.



**Hiroshi Shigesawa** (S'62-M'63) was born in Hyogo, Japan, on January 5, 1939. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from Doshisha University, Kyoto, Japan, in 1961, 1963, and 1969, respectively.

Since 1963, he has been with Doshisha University. From 1979 to 1980, he was a Visiting Scholar at the Microwave Research Institute, The Polytechnic Institute of New York. Currently, he is a Professor at the Faculty of Engineering. His research activities have been concerned with microwave and submillimeter-wave transmission lines with open structures, fiber optics, and inverse scattering problems.

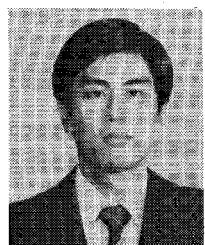
Dr. Shigesawa is a member of the Institute of Electronics and Communication Engineers (IECE) of Japan, the Japan Society of Applied Physics, and the Optical Society of America (OSA).



**Kei Takiyama** (M'58) was born in Osaka, Japan, on October 20, 1920. He received the B.S. and Ph.D. degrees in electrical engineering from Kyoto University, Kyoto, Japan, in 1942 and 1955, respectively.

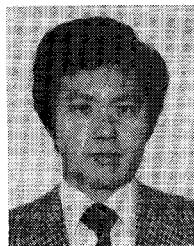
Since 1954, he has been a Professor of Electronic Engineering at Doshisha University, Kyoto, Japan, where he carried out research in the fields of microwave transmission lines and optical engineering. From 1957 to 1958, he was a Fulbright Scholar and a Research Associate at the Microwave Research Institute, The Polytechnic Institute of Brooklyn, New York.

Dr. Takiyama is a member of the Institute of Electronics and Communication Engineers (IECE) of Japan, the Institute of Electrical Engineers of Japan, and the Optical Society of America (OSA).



**Hideyuki Shinonaga** was born in Ehime, Japan, on June 14, 1956. He received the B. E. degree in electrical communication engineering from Osaka University, Osaka, Japan, in 1979. At present, he is working for the M. E. degree at the graduate school of Osaka University, studying in the areas of dielectric waveguides and circuits for millimeter- and submillimeter-wave.

Mr. Shinonaga is an associate member of the Institute of Electronics and Communication Engineers of Japan.

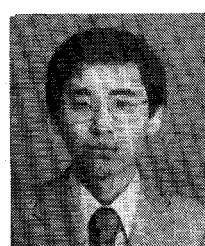


America (OSA).

**Mikio Tsuji** (S'77) was born in Kyoto, Japan, on September 10, 1953. He received the B.S. and M.S. degrees in electrical engineering from Doshisha University, Kyoto, Japan, in 1976 and 1978, respectively. Currently, he is studying towards the Ph.D. degree at Doshisha University.

His research activities have been concerned with submillimeter-wave transmission lines.

Mr. Tsuji is a member of the Institute of Electronics and Communication Engineers (IECE) of Japan and the Optical Society of



**Shigefumi Suhara** was born in Kyoto, Japan, on February 1, 1955. He received the B.S. and M.S. degrees in electrical engineering from Doshisha University, Kyoto, Japan, in 1978 and 1980, respectively.

He is now with Sanyo Electric Company, Osaka, 573 Japan.

Mr. Suhara is a member of the Institute of Electronics and Communication Engineers (IECE) of Japan.



**Makoto Tsutsumi** (M'71) was born in Tokyo, Japan, on February 25, 1937. He received the B.S. degree in electrical engineering from Ritsumeikan University, Kyoto, in 1961, and the M.S. and Ph.D. degrees in communication engineering from Osaka University, Osaka, Japan, in 1963 and 1971, respectively.

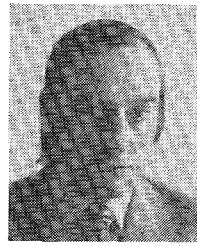
Since 1964, he has been working at the Department of Communication Engineering, Osaka University as a Research Associate. At present, he is a Lecturer in the Department of Communi-

cation Engineering. His current research areas include magnetostatic wave delay lines and millimeter wave ferrite devices.

Dr. Tsutsumi is a member of the Institute of Electronics and Communication Engineers of Japan and Japan Society of Applied Physics.

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**P. Vandenbulcke**, photograph and biography not available at the time of publication.



**Bernd Vowinkel** was born in Alsfeld, Germany, on May 15, 1947. He received the Ing. (grad.) degree in electrical engineering from Fachhochschule Giessen, Giessen, Federal Republic of Germany, in 1968, and the Diplom-Physiker and Dr. degrees from Bonn University, Bonn, Federal Republic of Germany, in 1975 and 1978, respectively.

From 1968 to 1970 he was employed at a satellite tracking station of the European Space Agency. Since 1975 he has been with the Radioastronomisches Institut of Bonn University where he is concerned with the development of low-noise millimeter-wave receiver systems.

Dr. Vowinkel is a member of the Nachrichtentechnische Gesellschaft im VDE, Federal Republic of Germany.