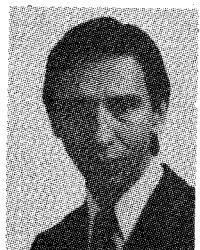


Contributors



Ali E. Atia (S'67-M'69) received the B.S. degree with honors from Ain Shams University, Cairo, Egypt, in 1962, and the M.S. and Ph.D. degrees from the University of California, Berkeley, in 1966 and 1969, respectively, all in electrical engineering.

From 1962 to 1966, he was a Lecturer in the Department of Electrical Engineering, Ain Shams University. From 1965 to 1969, he held the positions of Research Assistant, Teaching Fellow, and Assistant Professor in the Department of Electrical Engineering and Computer Sciences, University of California, Berkeley. He joined COMSAT Laboratories, Clarksburg, MD, in 1969, where he worked on the research and development of various microwave components and subsystems for satellite communications. Presently, he is Senior Scientist of the Microwave Laboratory at COMSAT Laboratories.



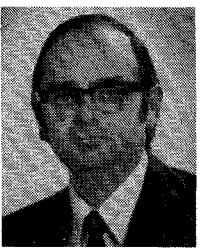
René R. Bonetti received the B.S. degree in electrical engineering from Escola de Engenharia Mauá, IMT, São Paulo, Brazil, in 1971, the M.Sc. degree from the Institute of Space Research (INPE) in 1974, and the Ph.D. degree in microwave circuits from the Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil, in 1978.

From 1972 to 1978, he was involved in the development of new and improved ferrite devices and the design of passive and active microwave integrated circuits in the Microwave Laboratory of INPE. In 1979, he joined the Microwave Circuits Department of COMSAT Laboratories, Clarksburg, MD, where he is presently engaged in the study of dielectric resonators and their application to MIC devices.



Harry M. Cronson (S'58-M'64-SM'72) received the Sc.B. (summa cum laude), Sc.M., and Ph.D. degrees in electrical engineering from Brown University, Providence, RI. He also held a Keen Post-Doctoral Fellowship at Oxford University in England.

In 1964 he joined the Polytechnic Institute of Brooklyn, Farmingdale, NY, as Assistant Professor of Electrophysics. After employment with the Avco Space System Division, Wilmington, MA, and IKOR, Inc., Burlington, MA, he joined the Sperry Research Center, Sudbury, MA, in 1971 as a Member of the Technical Staff. His present research interests include microwave and millimeter wave metrology and applications of short pulse radar systems.

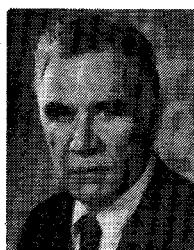


Robert H. Frater was born in Sydney, Australia on August 13, 1937. He received the B.Sc., B.E., and Ph.D. degrees from the University of Sydney, Australia, in 1958, 1960, and 1967, respectively.

During 1960 and 1961 he worked with the Overseas Telecommunication Commission and Ducon Industries in Sydney and then returned to the Electrical Engineering Department at Sydney University to work as a Research Assistant on the development of instrumentation for the Mills

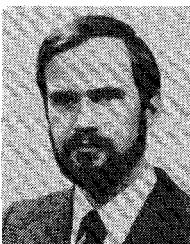
Cross Radiotelescope. He was appointed to a Nuffield Fellowship in 1962 and became a lecturer in Electrical Engineering in 1968. From 1967 he was responsible for the Receiver design for the Fleurs Synthesis Telescope which was being constructed by the Electrical Engineering Department. He became an Associate Professor in 1974 and Director of the Fleurs Radio Observatory in 1980. He left Sydney University to join the Radio-physics Division of CSIRO as Chief-Designate in November 1980 and will become Chief of this Division in September 1981.

Dr. Frater is Chairman of the Australian Committee for Radio Science of the Academy of Science and the Australian Council Member and Commission D Representative for the International Union of Radio Science. He is a Fellow of the Institution of Engineers (Australia) and the Institution of Radio and Electronics Engineers (Australia).



Marion E. Hines (S'46-A'47-M'50-SM'60-F'68) was born in Bellingham, WA, on November 30, 1918. He received the B.S. degree in applied physics and the M.S. degree in electrical engineering from the California Institute of Technology, Pasadena, in 1940 and 1946, respectively.

From 1940 to 1945 he served as a Weather Officer with the U.S. Air Force. From 1946 to 1960 he was with the Bell Telephone Laboratories, where he worked in research and development of microwave transmission systems, storage tubes, parametric amplifiers, pulse and tunnel diode amplifiers and oscillators. Currently, he is Vice-President and Chief Scientist at Microwave Associates, Inc., Burlington, MA, where he has been active in the development of harmonic-generator-type microwave sources, higher power microwave signal-control devices using diode switch elements, and solid-state microwave oscillators and amplifiers.



Holger Hofmann was born in Germany in October 1944. He received the Dipl.-Ing. and Dr.-Ing. degrees in electrical engineering from the University of Aachen, Aachen, Germany, in 1972 and 1975, respectively.

He joined the AEG-Telefunken Company, Radio and Radar Systems Group at Ulm, Germany, in 1976 and worked in the Basic R & D Division, with an emphasis on millimeter-wave transmission line theory, components and CAD/CAM. Presently he is the Systems Department Manager in the Microwave Application System Division at Flensburg, Germany.



Takashi Ishii was born in Osaka, Japan on July 8, 1941. He received B.S. degree in material science and Ph.D. degrees in electrical engineering from Tohoku University in 1964 and 1979, respectively.

He joined the Mitsubishi Electric Company, Ltd., in 1964 and has been working on development and production of solid state microwave devices. From 1975 to 1976 he was with the Microwave Institute Foundation, Stockholm, Sweden as a Research Associate.

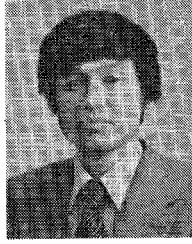
Dr. Ishii is a member of the Electrochemical Society and the Japan Society of Applied Physics.



Tatsuo Itoh (S'69-M'69-SM'74) received the Ph.D. degree in electrical engineering from the University of Illinois, Urbana, in 1969.

From September 1966 to April 1976 he was with the Electrical Engineering Department, University of Illinois. From April 1976 to August 1977 he was a Senior Research Engineer in the Radio Physics Laboratory, SRI International, Menlo Park, CA. From August 1977 to June 1978 he was an Associate Professor at the University of Kentucky, Lexington. In July 1978 he joined the faculty at The University of Texas at Austin, Austin, where he is now an Associate Professor of Electrical Engineering.

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



Katsumi Morishita (S'74-M'77) was born in Fukui, Japan, on February 24, 1949. He received the B.E., M.E., and Ph.D. degrees in electrical communication engineering from Osaka University, Osaka, Japan, in 1972, 1974, and 1977, respectively.

From 1977 to 1978 he was a Post-Doctoral Fellow of the Japan Society for the Promotion of Science. Presently, he is a Post-Doctoral Fellow in the Faculty of Engineering, Osaka University, engaged in research work in the area of electro-

magnetic field problems.

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

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Michihiro Kobiki was born in Wakayama, Japan on November 3, 1953. He graduated from Wakayama Industrial Engineering High School in 1972.

In the same year, he joined the Mitsubishi Electric Corporation, Hyogo, Japan, and has been engaged in the development of microwave semiconductor devices including Si IMPATT and GaAs FET's.

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

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Mutsuyuki Otsubu was born in Totri, Japan, on August 21, 1941. He received the M.S. and Ph.D. degrees in electronic and electrical engineering, both from Tohoku University, Sendai, Japan, in 1969 and 1976, respectively.

He joined the Mitsubishi Electric Corporation in 1969 and had been working on the epitaxial growth of GaAs layers for microwave devices. From 1975 to 1979 he had been engaged in the development of GaAs MESFET's. He has been engaged in GaAs digital IC's from 1980.

Dr. Otsubu is a member of the Japan Society of Applied Physics.

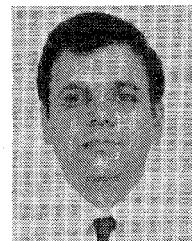
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Robert H. MacPhie (S'57-M'63-SM'79) was born in Weston, Ont., Canada, on September 20, 1934. He received the B.A.Sc. degree in electrical engineering from the University of Toronto, Toronto, Ont., Canada, in 1957, and the M.S. and Ph.D. degrees from 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.

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Riccardo Pratesi was born in Florence, Italy, in 1936. He received his Doctor Degree in Physics from the University of Florence, in 1961, and his Professor Degree in Quantum Electronics in 1969.

He has held the following positions: Assistant at the Institute of Advanced Physics at the University of Florence from 1961 to 1980; Director of the Quantum Electronics Institute of the National Council of Research (C.N.R.) in Florence, 1970 up to date; Director of a Special Project of C.N.R. on Medical Applications of Lasers, 1978 to present; Chair of Structure of Matter on the Department of Physics of the University of Florence. His scientific activity has been devoted mainly to classical electromagnetism, optics, and quantum electronics. His research interests currently are in laser spectroscopy and biological effect of optical radiation.

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Yasuo Mitsui was born in Kobe, Japan, on April 29, 1949. He received the B.S. degree in applied physics from Tokyo University, Tokyo, Japan, in 1972.

He joined the Mitsubishi Electric Corporation, Hyogo, Japan, in 1972, and has been engaged in the development of microwave semiconductor devices including Si TRAPATT diodes and GaAs FET's. He is now a member of the Technical Staff of the LSI Research and Development Laboratory, Mitsubishi Electric Corporation.

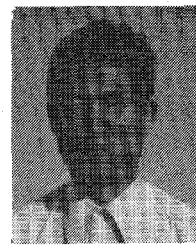
Mr. Mitsui is a member of the Institute of Electronics and Communication Engineers of Japan.

Christen Rauscher (S'73-M'75) was born in Boston, MA, on November 4, 1944. He received the diploma in electrical engineering and the Ph.D. degree in 1969 and 1975, respectively, both from the Swiss Federal Institute of Technology, Zurich, Switzerland.

From 1969 to 1976 he was employed as an Assistant and Research Associate at the Microwave Laboratory of the Swiss Federal Institute of Technology where he conducted research on computer-aided tolerance optimization of microwave active circuits and on IMPATT power amplifiers. He held a Postdoctoral Fellowship from the Swiss National Science Foundation from 1976 to 1978. He spent this time at Cornell University, Ithaca, NY and the Naval Research Laboratory, Washington, DC investigating the nonlinear behavior of GaAs MESFET's. Since 1978 he has been employed at the Naval Research Laboratory, Washington, DC engaged in research on microwave and millimeter-wave nonlinear circuits.



Laura Ronchi Abbozzo was born in Florence, Italy, on May 7, 1929. She received the Ph.D. degree in physics and electromagnetic waves from the University of Florence, Italy 1958. Since 1958, she has been with the Istituto di Ricerca sulle Onde Elettromagnetiche of the Consiglio Nazionale delle Ricerche (C.N.R.) in Florence, Italy. Since 1962, she has taught optics and recently quantum electronics at the University of Florence. She has served as Director of Research at the Istituto di Ricerca sulle Onde Elettromagnetiche of C.N.R. since 1968.



Kazuaki Segawa was born in Nara, Japan, on June 20, 1947. He received the B.S. degree in chemistry from Osaka University, Osaka, Japan, in 1970.

He joined the Mitsubishi Electric Corporation, Hyogo, Japan, in 1970, and has been engaged in the development of III-V compound semiconductors.

He is a member of the Japan Society of Applied Physics.



Ersch Rotholz was born in Sofia, Bulgaria, on June 3, 1933. He graduated from the Polytechnica, Sofia, as Diplom Ingenieur in electrical engineering in 1958 and received the M.Sc. degree from Columbia University, New York, NY, in 1964.

His experience includes Anzac Electronics, RCA Ltd. (Montreal, Canada), the European Space Agency (Noordwijk, The Netherlands). He is currently with the MITRE Corp., Bedford, MA.



Richard V. Snyder (S'58-M'63) was born on December 14, 1939. He graduated from Loyola University, Los Angeles, CA, in 1961, and received the M.S.E.E. degree from the University of Southern California, Los Angeles, in 1962.

From 1970 to 1973 he was Chief Engineer at Lorch Electronics; from 1973 to 1978 he was Vice President at Frequency Engineering Labs; from 1978 to 1981 he was Chief Engineer at the Premier Microwave Corporation. He is now with R S Microwave Company, and is a Ph.D. student at the Polytechnic Institute of New York. He has published numerous papers and holds six patents in the microwave component field.

Reza Safavi-Naini was born in Baba-Mohammad, Iran, on November 23, 1946. He received the M.S. degree in electrical engineering from the University of Tehran in 1970 and the Ph.D. degree in Electrical Engineering from the University of Waterloo, Canada, in 1979. At the University of Waterloo, his doctoral research was focused on the problem of scattering at waveguide junctions (1976-1979).

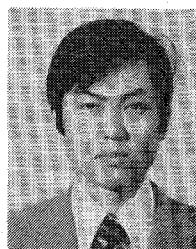
In 1979, he returned to Iran where he is currently working on electromagnetic problems in a VHF laboratory in Tehran.



Adel A. M. Saleh (M'70-SM'76) was born in Alexandria, Egypt, on July 8, 1942. He received the B.Sc. degree in electrical engineering from the University of Alexandria, Alexandria, Egypt, in 1963, and the M.S. and Ph.D. degrees in electrical engineering from the Massachusetts Institute of Technology, Cambridge, in 1967 and 1970, respectively.

From 1963 to 1965 he worked as an Instructor at the University of Alexandria. In 1970, he joined Bell Laboratories, Holmdel, NJ, where he is engaged in research on microwave circuits, components, and systems.

Dr. Saleh is a member of Sigma Xi.



Jun'ichi Sone was born in Kanagawa, Japan, in 1951. He received the B.S. degree in physics from Kyoto University, Kyoto, Japan, in 1973, and the M.S. degree in physics from Tokyo University, Tokyo, Japan, in 1975, where he did research on superconducting fluctuations.

He joined Nippon Electric Company, Ltd., Kawasaki, Japan, in 1975, and is now a Research Member of Electron Device Research Laboratory, Basic Technology Research Laboratories. From 1975 to 1979, he did work on model analysis for GaAs FET operation, and the development of power GaAs FET oscillators and amplifiers. Since 1980, he has been working on Josephson Junction Integrated Circuits.

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



Leon Susman (S'57-M'58-SM'75) was born in Brooklyn, NY, on October 10, 1936. He received the B.E.E. and M.E.E. degrees from the City College of the City University of New York, NY, in 1958 and 1962, respectively. In 1969 he received the Ph.D. degree in electrical engineering from the Polytechnic Institute of Brooklyn, NY.

In 1958 he joined the Applied Electronics Department Airborne Instrument Laboratories, Melville, NY, where he was engaged in research and development of tunnel diode and parametric amplifiers. In 1961 he joined the Advanced Studies Department at the Sperry Gyroscope Company, Great Neck, NY, where his activities in-

cluded wideband radar and antenna techniques. Since 1968, he has been a Member of the Technical Staff at the Sperry Research Center, Sudbury, MA, where he has been engaged in various research activities including time-domain techniques, wide-band antenna techniques, and microwave metrology. He is currently Manager, Electromagnetics Department, the Sperry Research Center.



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, Basic Technology Research Laboratories. He has been engaged in the research and development of microwave solid-state oscillators, amplifiers, modulators, and sensors, and is presently concerned with microwave GaAs FET's, GaAs IC's and GaAs FET applications.

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



Sachihiro Toyoda (M'75) was born in Osaka, Japan, on March 18, 1933. He received the B.S. degree in electrical engineering from Osaka Institute of Technology, Osaka, Japan, in 1955, the M.S. degree in electrical engineering from Ritsumeikan University, Kyoto, Japan, in 1959, and the Ph.D. degree in electrical engineering from Osaka University, Osaka, Japan, in 1971.

Since 1978, he has been a Professor of electrical engineering at Osaka Institute of Technology, Osaka, Japan. From 1961 to 1970, he was engaged in the research on rectangular waveguide type Esaki-diode amplifiers at Osaka University. From 1972 to 1977, he worked on the development of IMPATT amplifiers, varactor tuned Gunn and IMPATT diodes oscillators at Osaka Institute of Technology. He is presently involved in the development of variable bandpass filters.

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



Jean Van Bladel (M'54-SM'56-F'75) was born in Antwerp, Belgium, on July 24, 1922. He received the E.E. degree in electrical engineering from Brussels University in 1947, and the Ph.D. degree in electrical engineering from the University of Wisconsin in 1950.

From 1950 to 1954, he was Head of the Radar Laboratory of the MBLE factories, Brussels, Belgium, and from 1954 to 1964, he taught at Washington University, St. Louis, MO, and at the University of Wisconsin. He is now Professor of Electrical Engineering at the University of Ghent, Belgium, and Director of the Laboratory for Electromagnetism and Acoustics there.

Professor Van Bladel was chairman of URSI Commission B (Fields and Waves) from 1975 to 1978, and is now Secretary General of URSI, the International Union of Radio Science.



Manabu Wataze was born in Kumamoto, Japan, on September 13, 1950. He graduated from Yatsushiro Technical High School in 1969.

In the same year, he joined Mitsubishi Electric Corporation, where he has been engaged in the research of microwave diodes and avalanche photo diodes. Since 1978, he has been working on development of GaAs FET.

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



David R. Williams (M'62) was born in England. He received the Ph.D. degree from the University of Manchester, Manchester, England, in 1955. He studied radio astronomy at the Jodrell Bank Research Laboratories of the University of Manchester.

In 1960 he joined the research staff of the Radio Astronomy Laboratory of the University of California, Berkeley, where he is currently a Research Scientist. His research interests include the development of low-noise microwave receivers for radio-astronomy applications.

Dr. Williams is a member of the American Astronomical Society and the Royal Astronomical Society.