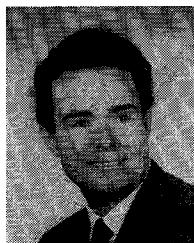


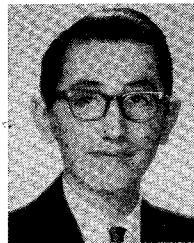
# Contributors



**James J. Campbell** was born in Philadelphia, Pa., on November 20, 1936. He received the B.S. degree in physics from St. Joseph's College, Philadelphia, Pa., in 1958, and the M.S. degree in physics from the University of Pennsylvania, Philadelphia, in 1960.

From 1958 to 1961 he was a Teaching and Research Assistant in the Department of Physics, University of Pennsylvania. From 1961 to 1962 he was an Instructor in the Department of Mathematics, LaSalle College, Philadelphia, Pa. From 1962 to 1964 he was a Research Engineer at North American Aviation, Downey, Calif. From 1964 to 1966 he was a member of the Electromagnetic Radiation Section of the Electro-Countermeasures Systems Department, Philco Corporation (Aeronutronic Division), Newport Beach, Calif. From 1966 to 1970 he was first with the System Techniques Department and later the Research Staff of the Electromagnetics Laboratory, Hughes Aircraft Company, Fullerton, Calif. He is presently with the Missile and Surface Radar Division, RCA, Moorestown, N. J. where he is actively engaged in theoretical and waveguide simulator investigations of broad-band wide-angle scan matching techniques for large phased array antennas.

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**Zoltan J. Csendes** (S'67) was born in Fiffernitz, Austria, on May 16, 1946. He received the B.S.E. degree from the University of Michigan, Ann Arbor, in 1968 and the M.Eng. degree from McGill University, Montreal, P. Q., Canada, in 1970.

From 1968 to 1969 he was with the Nuclear Physics Group in the Foster Radiation Laboratory, McGill University, and joined the Department of Electrical Engineering at McGill in 1969. He is currently working toward the Ph.D. degree in electrical engineering, concentrating in the field of numerical-solution methods for electromagnetic problems.

Mr. Csendes is a member of Tau Beta Pi.

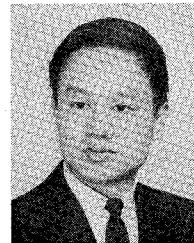
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**William R. Jones** (SM'69) was born in Globe, Ariz., on November 8, 1932. He received the B.A. degree in mathematics from the University of California, Riverside, in 1957, and the M.S. and Ph.D. degrees in mathematics from Stanford University, Stanford, Calif., in 1958 and 1967, respectively.

From 1952 to 1954 he served in the U. S. Navy as a Training Devices Technician. From 1954 to 1957, while at the University of California, he was employed at the U. S. Naval Ordnance Laboratory, Corona, Calif., as a Microwave Technician. From 1958 to 1960 he was employed at the IBM Watson Laboratory, Yorktown Heights, N. Y., as a member of a microwave computer group investigating the application of microwave techniques to the development of high-speed logical circuits. In June 1960, he joined Hughes Aircraft Company, Fullerton, Calif., where he concentrated primarily on the study of electromagnetic surface-wave excitation and diffraction problems. From 1962 to 1966 he returned to full-time academic study at Stanford University with the aid of a Hughes Fellowship. At present Dr. Jones is a Senior Scientist at Hughes Ground Systems Group, where he is involved primarily with research in the areas of electromagnetic and acoustic wave propagation and diffraction problems.

Dr. Jones is a member of Sigma Xi.



**Shung-Wu Lee** was born in Kiangsi, China, on December 15, 1940. He received the M.S. and Ph.D. degrees in electrical engineering from the University of Illinois, Urbana, in 1964 and 1966, respectively.

From 1961 to 1962, he was in the Chinese Navy Military Police for Reserve Officer Training. He has worked alternately at Hughes Aircraft Company, Fullerton, Calif., and the University of Illinois since 1963. At present, he is an Associate Professor at the

University of Illinois.

Dr. Lee received the 1968 Everett Award for his undergraduate teaching at the University of Illinois.

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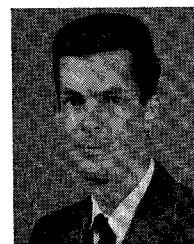
**Leonard Lewin** (A'69) was born in Southend-on-Sea, England, on July 22, 1919. He matriculated from Southend High School in 1935.

During World War II, he was with the British Admiralty, doing research on antenna design, waveguides, and radar. In 1946, he joined Standard Telecommunication Laboratories, Harlow, England, where he became Head of the Microwave Laboratory in 1950 and Assistant Manager of the Transmission Laboratory in 1962. Currently he is Professor

of Electrical Engineering, University of Colorado, Boulder. He is the author of many papers and patents in the field of antennas and waveguides, as well as author of three research books.

Mr. Lewin is a member of the Institution of Electrical Engineers (London) and a fellow of the British Interplanetary Society. He won the Microwave Prize for a paper on singular integral equations applied to waveguides in 1962. In 1967 he was awarded an honorary degree of Doctor of Science from the University of Colorado.

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**William G. May** (S'58-M'65) was born in St. Louis, Mo., on December 30, 1937. He received the S.B. and S.M. degrees in electrical engineering in 1960 and the Ph.D. degree in 1964, all from the Massachusetts Institute of Technology, Cambridge.

From 1957 to 1960 he was in the cooperation program at M.I.T., taking industrial assignments with Bell Telephone Labs, N. J., and Brush E.E. Co., Loughborough, England. From 1964 to 1966 he held a Ford Postdoctoral Fellowship and was an Assistant Professor in electrical engineering at M.I.T. Since 1966 he has been on the electrical engineering faculty of the University of Colorado, Boulder, where he is now an Associate Professor, with research interests in semiconductor devices for use with millimeter waves and far infrared.

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**Bruce McLeod** (S'58-M'68) was born in Greeley, Colo., on January 17, 1939. He received the B.S. degree in electrical engineering from Colorado State University, Ft. Collins, in 1961.

In 1964 he entered the University of Colorado, Boulder, where he received the M.S. and Ph.D. degrees in 1965 and 1968, respectively.

He joined the staff of the Light Military Electronics Division of the General Electric Company in 1961 and did research and design in microwave systems and components. In 1968 he joined the research staff of the Boeing

Company, Seattle, Wash., where his research was concerned with applications of strip transmission lines at frequencies above 20 GHz and the design and development of high-efficiency avalanche diode microwave sources. In 1969 he joined the staff of the Department of Electrical Engineering, Montana State University, Bozeman, and is at present concerned with the use of microwave energy for remote measuring and sensing.



**James P. Montgomery** (S'65-M'67) was born in Dallas, Tex., on December 26, 1944. He received the B.S.E.E. degree from the University of Texas, El Paso, in 1967 and the M.S.E.E. degree from the University of Colorado, Boulder, in 1968.

Since 1968, he has been a member of the Antenna Systems Branch of the Equipment Group Research and Development Laboratory, Texas Instruments, Inc., Dallas, Tex., where he is engaged in the analysis of phased

array antennas.

Mr. Montgomery is a member of Tau Beta Pi.



**Yoshiro Nakanishi** was born in Wakayama, Japan, on January 10, 1926. He received the B.S. and Ph.D. degrees in electrical engineering from Osaka University, Osaka, Japan, in 1952 and 1962, respectively.

From 1957 to 1961 he was an Associate Professor at Kinki University, Osaka, Japan. Since 1961 he has been an Associate Professor of Electrical Communication Engineering at Osaka University, studying parametric amplifiers and oscillators, electromagnetic fields in

systems containing a gyromagnetic material, transmission systems, and resonators in the millimeter region.

Dr. Nakanishi is a member of the Institute of Electronic and Communication Engineers of Japan.



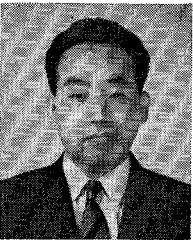
**Ikuo Nishioka** was born in Osaka, Japan, on April 4, 1943. He received the B.S. and M.S. degrees in electrical communication engineering from Osaka University, Osaka, Japan, in 1966 and 1969, respectively.

He is presently associated with the Sharp Corp., Osaka, Japan. His major interest is in theories on computer-aided design of integrated circuits.

Mr. Nishioka is a member of the Institute of Electronic and Communication Engineers



of Japan.

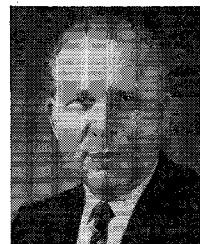


**Nobuo Okamoto** (S'58-M'59) was born in Osaka, Japan, on September 22, 1934. He received the B.S., M.S., and Ph.D. degrees in electrical communication engineering from Osaka University, Osaka, Japan, in 1957, 1959, and 1967, respectively.

Since 1959 he has been with the Department of Electrical Engineering, Kinki University, Osaka, Japan, studying electromagnetic fields in systems containing a gyromagnetic material and resonators in the millimeter re-

gion. He is now a Professor of Electronic Engineering at Kinki University.

Dr. Okamoto is a member of the Institute of Electronic and Communication Engineers of Japan.



**Werner Rueggeberg** (M'50) was born in Muelheim-Ruhr, Germany, on March 29, 1919. He received the B.E. and Dr.Eng. degrees in electrical engineering from the Johns Hopkins University, Baltimore, Md., in 1942 and 1949, respectively.

From 1942 to 1946 he was on active duty as an officer in the Signal Corps, United States Army. Since 1949 he has been a member of the technical staff at the Research and Development Center, Armstrong Cork Co., Lancaster, Pa., with the exception of one year when he was with the Radar Engineering Department of the Westinghouse Electric Corp., Baltimore, Md. His major areas of activity have been in high-frequency power generation and utilization, microwave dielectric tests, artificial dielectrics, and microwave optics.

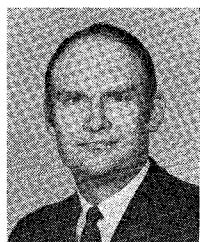
Dr. Rueggeberg is a member of Tau Beta Pi and the Society of the Sigma Xi.



**Liang-Chi Shen** (S'65-M'67) was born in Chekiang, China, on March 17, 1939. He received the B.S.E.E. degree from the National Taiwan University, Taipei, Taiwan, in 1961, and the S.M. and Ph.D. degrees in applied physics from Harvard University, Cambridge, Mass., in 1963 and 1967, respectively.

He served as a Research Assistant and Teaching Fellow at Harvard from 1963 to 1966 and in 1967 became a Research Fellow at Gordon McKay Laboratory, Harvard University. He joined the faculty of the University of Houston, Houston, Tex., in 1967 and is now Associate Professor in electrical engineering. During the summers of 1968 and 1969, he was at Stanford University, Stanford, Calif., studying the problem of remote probing of atmosphere by millimeter waves.

Dr. Shen is a member of the American Association of University Professors and Sigma Xi.



**P. Silvester** (S'60-M'64) was born on January 25, 1935. He received the B.S. degree in electrical engineering from the Carnegie Institute of Technology, Pittsburgh, Pa., in 1956, the M.A.Sc. degree in electrical engineering from the University of Toronto, Toronto, Canada, in 1958, and the Ph.D. degree from McGill University, Montreal, Canada, in 1964.

From 1964 to the present, Dr. Silvester has pursued studies in numerical methods and electromagnetic field theory, and taught these subjects at McGill University where he is currently Associate Professor of Electrical Engineering and a member of the associated faculty of the School of Computer Sciences. His current research interests concern the solution of field problems by a variety of projective methods, as well as numerical quadrature and approximation techniques.

Dr. Silvester is a member of the American Association for the Advancement of Science, Sigma Xi, the Tensor Society of Great Britain, and is a Registered Engineer in the Province of Quebec.