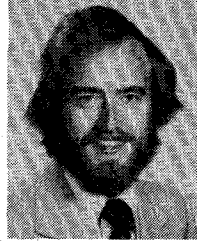


Contributors



Irwin J. Abramovitz was born in Brooklyn, NY, on November 5, 1947. He received the B.S. and M.S. degrees in electrical engineering from the University of Colorado, Boulder, in 1969 and 1974, respectively.

From 1969 to 1979 he served in the U.S. Army Signal Corps in Germany, Vietnam, and several U.S. posts. Since 1979, he has worked for the U.S. Army Harry Diamond Laboratories, Adelphi, MD, and engaged in research on surface-wave acoustooptic signal-processing devices and systems. He has received several military awards and commendations including the Crozier Award for Technical Achievement at Aberdeen Proving Ground, MD, in 1977 and has co-authored several papers in professional journals and conferences on SAW acoustooptic signal processing.



John E. Bowers (S'77) was born in St. Paul, MN, in 1954. He received the B. Phys. degree from the University of Minnesota, Minneapolis, in 1976, and the M.S. degree from Stanford University, Stanford, CA, in 1978.

In June 1978 he joined the Honeywell Corporate Technology Center, Bloomington, MN, where he was engaged in research on the growth and characterization of $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$ LPE layers. Since 1979 he has been working toward the Ph.D. degree in applied physics at Stanford as an NSF

fellow. He is currently engaged in research on monolithic SAW signal processing devices.

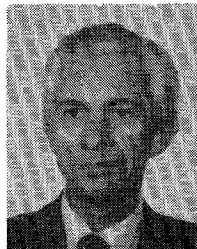
Mr. Bowers is a member of the American Physical Society and Sigma Xi.



David Behar was born on May 18, 1943. He received the B.S. degree in 1967, and the M.S. degree in 1975, both from the Technion—Israel Institute of Technology, Haifa, Israel.

Since 1967, he has been working for the Israeli Ministry of Defense, as an Electronic Engineer. He led many research and development projects in the field of communications and radar systems. In the academic year 1978–1979, he joined the staff of the Ginzton Laboratory, Stanford University, Stanford, CA, where he worked, as a

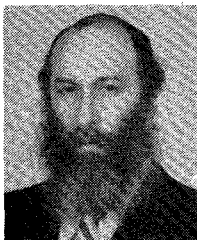
Visiting Scientist, on the applications of SAW devices in adaptive filtering. His main interest resides in designing special radar systems and in signal processing.



Pierre C. Brossard was born in Vendée, France, on June 18, 1929. He received the degree in radio electrical engineering from the Ecole Nationale Supérieure d'Electronique et de Radioelectricite de Bordeaux, Bordeaux, France, in 1955.

From 1955 to 1960 he was with the Thomson-CSF Company, working on microwave radio relay systems. In 1960 he joined the Centre National d'Etudes des Telecommunications where he was engaged in research in FM demodulator with improved threshold. Since 1970, his research

interests have been in digital communications for satellite links.

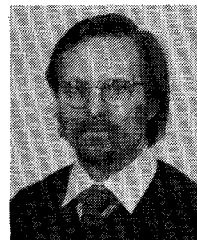


Norman J. Berg (S'66–M'70) received the B.S.E.E. and M.S.E.E. degrees from the Illinois Institute of Technology, Chicago, in 1965 and 1966, respectively, and the Ph.D. degrees from the University of Maryland, College Park, in 1975.

He has been employed at The Harry Diamond Laboratories, Adelphi, MD, since 1966. He is currently an R&D Supervisor in charge of acoustooptic signal processing activities. He has authored more than 40 technical papers and has

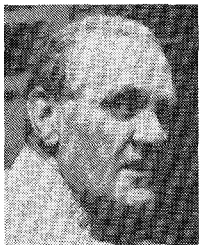
numerous patents.

Dr. Berg is a member of Tau Beta Pi and Sigma Xi



Michael W. Casseday received the B.S. degree in physics from the Massachusetts Institute of Technology, Cambridge, in 1966.

He has been with The Harry Diamond Laboratories, Adelphi, MD, since then, where he has worked on a variety of projects including the development of acoustooptic signal processors.



Jeffrey H. Collins (SM'73-F'80) was born in Luton, England, on April 22, 1930. He received the B.Sc. degree in physics and the M.Sc. degree in mathematics from the University of London, London, England, in 1951 and 1954, respectively.

From 1951 to 1956 his experience in microwave tubes and ferrite parametric amplifiers was obtained during employment at the GEC Hirst Research Centre, England, and at Ferranti, Ltd., Edinburgh, Scotland. From 1957 to 1967 he was with the Electrical Engineering Department, University of Glasgow, Glasgow, Scotland, where he taught in the fields of network theory and materials science and did research in microwave ferrites and microwave acoustics. During the scholastic years 1966-1968, he was a Research Engineer in the W. W. Hansen Laboratories of Physics, Stanford University, Stanford, CA, engaged in research on surface acoustic waves, magnetic garnet delay lines, optoacoustic interactions, and pulse compression applications. From 1968 to 1970 he was Director of Physical Sciences at the Electronics Division of Rockwell International, CA. In 1970 he returned to Scotland, where he is Professor of Electrical Engineering at the University of Edinburgh. During the academic year 1976-1977 he took sabbatical leave at the University of Texas at Arlington. He is currently Head of the Electrical Engineering Department at the University of Edinburgh, Chairman of the associated Wolfson Microelectronics Institute Board, and the Technical Director of Racal-MESL Ltd., Scotland.

Prof. Collins is a Fellow of the Institution of Electrical Engineers (London), and the Institution of Electronics and Radio Engineers (London), and the British Institute of Physics. He is a member of Eta Kappa Nu, Tau Beta Pi, and Sigma Xi. In 1979 he was a corecipient of the Hewlett-Packard Europhysics Prize.



Barry J. Darby was born in Birmingham, England, on August 28, 1947. He received the B.Sc. degree in applied physics from Bath University of Technology, Bath, England, in 1969. In 1974, he received the Ph.D. degree in electrical engineering for work on applications and design of SAW matched filters for spread spectrum communications from the University of Edinburgh, Edinburgh, Scotland.

He joined the Royal Signals and Radar Establishment (then RRE), Malvern, England, in 1974 where he is now engaged as a Principle Scientific Officer researching signal-processing techniques with emphasis on the applications of SAW devices.



Philip G. Dragonetti (S'67-M'68) is a Professional Engineer licensed in Florida. He received the Bachelors and Masters degrees in electrical engineering from New York University, in 1967 and 1968, respectively.

Having since worked with companies such as ITT and NCR, he is presently with Sperry Microwave Electronics, Clearwater, FL.

He has worked in areas such as baseband signal processing, point-to-point satellite systems and frequency synthesizer design for communication, radar and EC(C)M systems. Work on frequency synthesizers has been diversified among incoherent and coherent, indirect and fast switching direct type synthesizers within millimeter wave and lower frequencies.



Hervé Gautier was born in 1949 in Aix-en-Provence, France. He received the "Ingenieur Civil" degree from E.N.S. Télécommunications in 1971, then the M.S. and Ph.D. degrees in electrical engineering from Stanford University, Stanford, CA, in 1972 and 1975, respectively. His doctoral work concerned the acoustoelectric effects and the light sensitivity of semiconductor acoustic convolvers.

In 1975 he joined the Surface Acoustic Wave group of the Underwater Sound Division of Thomson-CSF first as a military officer, then as a research engineer. His major interests have been nonlinear acoustic devices such as semiconductor airgap convolvers and memory correlators, piezoelectric convolvers, and, more recently, the coupling of SAW and digital components for fast signal-processing applications.



Jeffrey H. Goll (M'77) was born in Elizabeth, NJ, on November 23, 1947. He received the A.B. degree in physics in 1969 from Princeton University, Princeton, NJ, and the M.S. and Ph.D. degrees in applied physics from Stanford University, Stanford, CA, in 1971 and 1974, respectively.

From 1974 to 1976 he worked on photon correlation spectroscopy as a postdoctoral fellow at Johns Hopkins University, Baltimore, MD. Since July 1976, he has been a Member of the Technical Staff at Texas Instruments Inc., Dallas, TX, in the wave electronics branch. His work at Texas Instruments has been primarily on the development of high BT product surface acoustic wave convolvers and convolver-based system applications.

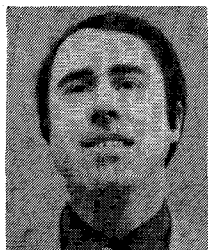


Peter M. Grant (M'77) was born in St. Andrews, Scotland, on June 20, 1944. He received the B.Sc. degree in electronic engineering from the Heriot-Watt University, Edinburgh, Scotland, in 1966, and the Ph.D. degree from the University of Edinburgh, Edinburgh, in 1975.

From 1966 to 1970 he worked as a Development Engineer with Plessey Company Ltd., England, at both the Allen Clark Research Centre and Havant, designing frequency synthesizers and standards for mobile military communications.

Following a year as Senior MOS Applications Engineer with Emihus Microcomponents, Glenrothes, Scotland, he was appointed to a Research Fellowship at the University of Edinburgh, Edinburgh, to study the applications of surface acoustic wave and charge-coupled devices in communication systems. In 1976 he was appointed to a lectureship teaching electronic circuits, communications and systems. During the academic year 1977-1978 he was the recipient of a James Caird Traveling Scholarship and as a Visiting Assistant Professor he researched in acoustic imaging at the Ginzton Laboratory, Stanford University, Stanford, CA.

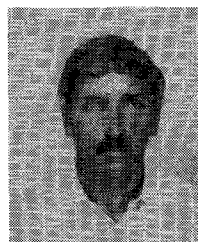
Dr. Grant is a member of the Institution of Electrical Engineers (London).



John M. Hannah received the B.Sc. degree in electrical engineering from the University of Strathclyde, Glasgow, Scotland, in 1970, and the Ph.D. degree from the University of Edinburgh, Edinburgh, Scotland, in 1975. His doctoral dissertation was on integrated circuit testing using the scanning electron microscope.

From 1973 to 1976 he was a Research Fellow at Edinburgh University where he worked on surface acoustic wave convolvers and their systems applications. Since 1976 he has been a Lecturer in the Department of Electrical Engineering, University of Edinburgh. He has carried out research into the applications of SAW devices to fast frequency hopping and his current research interests include both signal processing and integrated circuit testing.

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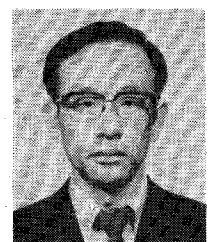


William H. Haydl (M'69) received the B. S. degree in electrical engineering from Illinois Institute of Technology, Chicago, in 1962, and the M. S. and Ph. D. degrees in electrical engineering from Stanford University, Stanford, CA, in 1964 and 1967, respectively.

He was employed as a Research Assistant at the Microwave Laboratory of Stanford University from 1962 to 1966, performing research on microwave acoustics, delay lines, acoustic amplification, acoustic instabilities, and oscillations in semiconductors. From 1966 to 1970 he was at the Fairchild Research Laboratory and the Science Center of Rockwell International, engaged in work on Gunn-effect devices and gallium arsenide epitaxy. Since 1970 he has been with the Institute for Applied Solid State Physics in Freiburg, West Germany, where he is in charge of the microwave physics group, doing work on molecular beam epitaxy and millimeter-wave microwave solid-state devices.

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

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Katashi Hazama (M'79) received the B.S. degree in 1966, the M.S. degree in 1968, and the Ph.D. degree in 1971, all from Osaka University, Osaka, Japan.

Since 1971, he has been with Hitachi Ltd. and now he is a Senior Researcher of SAW device development section, Consumer Products Research Center. He has published 3 papers in IEEE TRANSACTIONS ON CONSUMER ELECTRONICS and IEEE TRANSACTIONS ON SONICS AND ULTRASONICS.

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

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Jeannine Henaff was born in Paris, France, on August 7, 1936. She is graduate of the Ecole Supérieure d'Electricité (the Radioelectricity and Electronics section) and she received the Ph.D. degree from the Paris University.

She began working in the Centre National d'Etudes des Télécommunications in February, 1958, in the "microwave tube" group, where she dealt with electron-optics studies until 1962. She then took part in studies of laser applications to telecommunications and to information process-

ing before becoming head of the corresponding research group (ALTI) as of 1968. Since June, 1971, she has been directing the MAA group (Applied Microwave Acoustics) and engaged in particular signal processing via elastic surface waves (filters, oscillators, long delay lines with acoustoelectric amplifiers, encoders and decoders, etc.). In addition, since 1976 her interests have included signal processing using charge-transfer devices. She is now in charge of the Micro Acoustics and Electronics department in the Signal Processing Division. She was awarded the Médaille Blondel in Radioelectricity and Electronics in 1978 and she is Chevalier de l'Ordre National du Mérite.

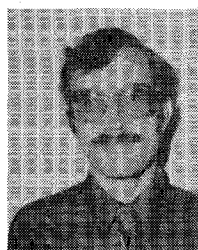
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Charles J. Huber, deceased, received the B.S. degree in electrical engineering from Newark College of Engineering, Newark, NJ, in 1962 and the M.S.E.E. degree from Stevens Institute of Technology, Hoboken, NJ, in 1965.

He was employed by I.T.T. Federal Labs, Nutley, NJ, from 1962 until 1966 where he carried out various communications equipment projects. Since 1966 he had been employed by Westinghouse Advanced Technology Laboratory in Baltimore, MD, where he had contributed to various logic and processor techniques. His work has emphasized high speed logic systems. Most recently he had been in charge of systems applications of SAW technology.

Mr. Huber was a member of the IEEE, Eta Kappa Nu, and Tau Beta Pi. He was a Registered Professional Engineer in the state of Maryland.

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Norman G. Jones (M'65) was born in Harrisburg, PA. He received the B.S. and M.S. degrees in electrical engineering from Drexel University, Philadelphia, PA, in 1969 and 1971, respectively.

He was employed with Philco-Ford Corporation, Willowgrove, PA, from 1971 through 1976, where he designed microwave LOS and satellite radios and high rate digital modems. From 1976 and 1977, he was employed with Aydin Vector Corporation where he designed CVSD multiplexers and digital troposcatter modems. In 1977

he joined the Defense Communications Engineering Center of the Defense Communications Agency (DCA), Reston, VA, where he is presently responsible for specifications and development of signal-processing equipment for the Defense Satellite Communications System and for system engineering in satellite system frequency management. He is the author of several papers on the subject of digital transmissions.

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Gordon S. Kino (S'52-A'54-SM'63-F'66) was born in Melbourne, Australia, on June 15, 1928. He received the B.Sc. and M.Sc. degree in mathematics from London University, London, England, and the Ph.D. degree in electrical engineering from Stanford University, Stanford, CA.

He has worked on microwave tubes, electron guns, plasmas, and the Gunn effect. He is now Professor of Electrical Engineering and Professor by Courtesy of Applied Physics at Stanford Uni-

versity. His current interests are in microwave acoustics and acoustic techniques for medical instrumentation and nondestructive testing. He has published over 250 papers in these fields.

Dr. Kino was a Guggenheim Fellow in 1967 and is a Fellow of American Physical Society, a member of the National Academy of Engineering, and a member of the Materials Research Council, DARPA.

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Toshikazu Kodama was born in Oita, Japan, in 1947. He received the B.S.E.E. degree in 1971 and the M.S.E.E. degree in 1973, both from Tokyo Institute of Technology, Tokyo, Japan.

In 1973, he joined the Research and Development Center, Toshiba Corporation, Kawasaki, Japan, where he has been engaged in the research of surface acoustic wave devices.

Mr. Kodama is a member of the Institute of Electronics and Communications Engineers of Japan.

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Edward G. Kosco received the B.S.E.E. degree from the University of South Florida, Tampa, FL, in 1976.

Since then he has been with Sperry Microwave Electronics, Clearwater, FL, where he has been engaged in a broad range of circuit design responsibilities. Included among them are the design of fault detection circuits, UHF amplifiers, frequency multipliers, and oscillators. His present activities include work on an MTI radar target simulator.

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John N. Lee (M'74) received the B.S. degree in 1966 from Union College, Schenectady, NY, and the M.S. and Ph.D. degrees in physics, from The Johns Hopkins University, Baltimore, MD, in 1968 and 1971, respectively.

His thesis work was on the spectroscopy of magnetic and crystal-field interactions in rare earth compounds. He was with Harry Diamond Laboratories, Adelphi, MD, from 1971 to 1980, where he worked on radiation effects on passive optical components and systems and the develop-

ment of acoustooptic processing techniques. He is now employed at the Naval Research Laboratory, Washington, DC.

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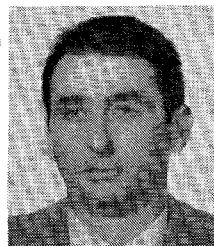


Donald C. Malocha (S'76-M'77) was born in Chicago, IL, on October 17, 1950. He received the B.S. degree in electrical engineering/computer science in 1972 and the M.S. and Ph.D. degrees in electrical engineering from the University of Illinois, Urbana, in 1974 and 1977, respectively.

In 1977 he worked for one year as a Research Associate in the SAW group of the Coordinated Sciences Laboratory at the University of Illinois. While engaged in graduate studies, he worked in

the theory and implementation of new transducer structures and tap weighting techniques. From 1978 to 1980, he was a member of the Wave Electronics Branch in the Corporate Research Laboratory of Texas Instruments Inc., Dallas, TX. He was involved in the development of various bandpass filters and SAW air-gap and beam width compression convolver modules. In 1980, he joined Sawtek Inc., Orlando, FL, in charge of advanced product development. He is presently engaged in bandpass filter design, SAW low-loss filters, and beam width compression convolver development.

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Gianfranco F. Manes was born in Florence, Italy, on November 16, 1944. He received the Dr. degree in electrical engineering from The University of Pisa, Pisa, Italy.

Soon after graduation he joined the Electrical Engineering Department of the University of Florence, where he is currently an Associate Professor of Electronic Devices. Since 1973 he has been engaged in the research and development on surface acoustic wave devices and related signal processing techniques for application to

Radar and ECM systems, and, more recently, to ultrasound imaging ecographic systems for Medical Diagnostics.

Dr. Manes is a Member of the Italian Acoustical Society.

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Shigeo Matsu-ura received the B.S. degree from Hokkaido University, Sapporo, Japan, in 1968.

Since 1968, he has worked for Consumer Products Research Center, Hitachi Ltd., where he has been engaged in the development of the tuner circuits and the advanced tuning system for color television receivers. He has published 2 papers in the IEEE TRANSACTIONS ON CONSUMER ELECTRONICS.

Mr. Matsu-ura is a member of the Institute of Television Engineers of Japan.

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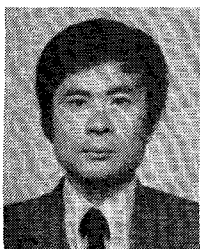


Robert Avery Moore (S'54-M'58-SM'67) was born in Cullman, AL, on August 12, 1932. He received the B.S. degree in electrical engineering from the University of Alabama, University, in 1954, and the M.S. and Ph.D. degrees in electrical engineering from Northwestern University, Evanston, IL, in 1956 and 1960, respectively.

Except for six months since active Army duty at which time he was assigned to the Switching Devices Group, Fort Monmouth, NJ, where he conducted research on ferrite devices, he has

been employed by the Defense and Electronics Systems Center, Westinghouse Electric Corporation, Baltimore, MD. During this period he has conducted studies on microwave propagation and radar systems. More recently, he has been concerned with ferrimagnetic techniques and devices. He is at the Solid State Microwaves Group, where he is concerned with the development of microwave integrated circuit devices. He is currently in charge of acoustic technology for the Center.

Dr. Moore is a member of the American Institute of Physics. He is a past Chairman of the Baltimore Chapter of IEEE Societies on Antennas and Propagation and Microwave and Techniques, on the Adcom for SU and organized and is first President of the Washington SU chapter.



Toshinori Murata received the B.S. degree from University of Tokyo, Tokyo, Japan, in 1974, and the M.S. degree from State University of New York at Stony Brook, Stony Brook, NY in 1980.

Since 1974 he has been working for Consumer Products Research Center, Hitachi Ltd., where he is engaged in the development of the advanced tuning systems for color television receivers. He has published two papers in the IEEE TRANSACTIONS ON CONSUMER ELECTRONICS.

Mr. Murata is a member of the Institute of Television Engineers of Japan.



Kouji Sato was born in Iwate, Japan, in 1955. He received the B.S. degree in electrical engineering from Science University of Tokyo, Tokyo, Japan, in 1980.

In 1974, he joined the Research and Development Center, Toshiba Corporation, Kawasaki, Japan, where he has been engaged in the research of surface acoustic wave devices.

Mr. Sato is a member of the Institute of Electronics and Communications Engineers of Japan.

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Hermund Olaisen was born in Nordreisa, Norway, on November 30, 1942. He received the B.S. degree in electronics from the State Technical College, Trondheim, Norway, in 1966.

Since 1967 he has been employed at the Division for Electronics of the Norwegian Defence Research Establishment as a Research Engineer. In 1978 he received a scholarship for studies in the United States from the Norwegian Research Council and he spent one year at the Edward L. Ginzton Laboratory, Stanford University, Stanford, CA. His field of interests is analog and digital signal processing, and he is currently working with spread spectrum synchronization systems.

Dr. Solie is a member of Phi Beta Kappa, Tau Beta Pi, and Sigma Xi. He is a past chairman of the Boston Chapter of the Sonics and Ultrasonics Group and is on the Symposium Committee for the 1980 Ultrasonics Symposium.



Leland P. Solie (M'73) was born in Barron, WI. After two years at North Park College, Chicago, IL, he transferred to Stanford University, Stanford, CA, where he received the B.S. degree in electrical engineering in 1964. After a year of seminary, he returned to Stanford where he received the M.S. and Ph.D. degrees in applied physics in 1967 and 1971, respectively.

The next two years were spent working at the Norwegian Technical Institute in Trondheim, Norway. Since 1973, he has been at the Sperry

Research Center, Sudbury, MA, where he has invented and developed an acoustoelectric convolver with integrated bidirectional amplification, the offset MSC multiplexer, the fanned MSC filter, and the reflective dot array technique for bandpass and dispersive filters.

Dr. Solie is a member of Phi Beta Kappa, Tau Beta Pi, and Sigma Xi. He is a past chairman of the Boston Chapter of the Sonics and Ultrasonics Group and is on the Symposium Committee for the 1980 Ultrasonics Symposium.

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Stanley A. Reible (S'68-M'75) was born in Fond du Lac, WI, on November 8, 1940. He received the B.S. degree in physics and the M.S. and Ph.D. degrees in electrical and computer engineering from the University of Wisconsin, Madison, in 1970, 1971, and 1975, respectively. His graduate studies included research on thin film transistors, energy transduction in mitochondria and nonlinear superconductive transmission lines.

In 1975 he joined Lincoln Laboratory, Massachusetts Institute of Technology, Cambridge, where he has been engaged in the development of acoustoelectric convolvers and a burst waveform processor. More recently, he has been developing Josephson device technology for analog signal processing and conditioning applications.



Raymond A. St. Cyr (M'75) was born in Lynn, MA, and received the Certificate in industrial electronics from Northeast Technical Institute, Boston, MA. He received the A.G.S. degree in liberal arts from North Shore Community College, Beverly, MA, in 1973, and the B.G.S. degree in general studies from Salem State College, Salem, MA, in 1980.

He has been with the Sperry Research Center in Sudbury, MA, since 1966 and was recently appointed to the Technical Staff. His work has

been primarily on the development of processing operations necessary to produce SAW resonators and filters. His recent efforts include work in the area of submicron line width photolithography (hard contact printing), ion beam and RF sputter etching, thin film deposition, and the development of bonding and packaging techniques.

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Wilhelm Sander received the Dipl.-Ing. degree in electrical engineering from the Technical University of Aachen, Aachen, West Germany, in 1967. There he worked particularly on the control of phased array antennas, as research associate in the Institute for Technical Electronics.

In 1969 he joined the FFM research institute in Wachtberg-Werthhoven, West Germany, where he has been engaged in the phased array radar project ELRA, especially in target parameter estimation, receiving modules, and digital beamforming.



William J. Tanski (M'74) was born in Morristown, NJ, and received the B.S. degree in electrical engineering from The Pennsylvania State University, he received the M.S. and Ph.D. degrees in physics from Georgetown University, in 1970 and 1971, respectively.

Since completion of his military service as a naval nuclear reactor engineer and his doctoral studies, he has conducted research in aural acoustic signal processing and surface acoustic wave devices. He has been with the Sperry Research Center in Sudbury, MA, since 1974 and is currently engaged in

research on UHF and L-band SAW resonators.

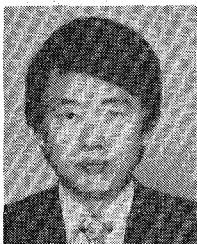


P. Tournois (M'70) was born in Paris, France, on March 23, 1936. He received the "Ingenieur" degree from Ecole Supérieure d'Optique in 1959.

In 1959, he joined the Central Research Laboratory of C.S.F. Compagnie Générale de Télégraphie Sans Fil where he worked on underwater sound transducers, antennas, and signal processing. In 1964, he moved to the Acoustic Division of the same Company where he conducted signal-processing studies and research in microwave acoustics and optics. In 1972, he has

been appointed Technical Director and in 1978, Associate Director of the ASM Division of Thomson-CSF. He received the Blondel Medal award in 1971 and the Grand Prix de l'Electronique-Général Ferrié in 1973 for his research work.

Mr. Tournois is a member of Société Française de Physique, Société des Electriciens et Electroniciens, IEE, and the Acoustical Society of America.



Yoshiaki Uemura was born in Fukuoka, Japan, in 1949. He received the B.S. degree in electronics and communications engineering from Osaka University, Osaka, Japan, in 1973.

In 1973, he joined Electronics Equipment Division, Toshiba Corporation, Kawasaki, Japan, where he has been engaged in the development of television broadcasting transmitter.

Mr. Uemura is a member of the Institute of Electronics and Communications Engineers of Japan.



Christopher R. Vale (M'67) was born in Plymouth, England, on May 7, 1939. He came with his family when he was 9 years of age to the United States and settled in Baltimore, MD, where he attended the Baltimore Polytechnic Institute. He received the B.S. degree in electrical engineering from the Johns Hopkins University, Baltimore, in 1961.

He has worked for Westinghouse electric Corporation for 24 years and has held engineering positions in the field of frequency control in its

various forms. Presently, as Fellow Engineer, he is promoting SAW devices for radar systems.

Mr. Vale is a vice-chairman of the Baltimore, Washington, and Northern Virginia Chapter of S.U. He is a Registered Professional Engineer in the State of Maryland and a member of the Acoustical Society of America.



Wulf-D. Wirth was born in Berlin, Germany, on August 21, 1934. He received the Dipl.-Ing. degree, in 1959, and the Dr.-Ing. degree, in 1962, both from the Technical University of Berlin, Berlin.

In 1959 he joined the Heinrich-Hertz Institut in Berlin for research work on digital plot extraction for surveillance radars in air-traffic control. Since 1963 he has worked for the Forschungsinstitut für Funk und Mathematik (Research Institute for Electronics and Mathematics) as the

Head of the Electronics Department. His main interests are radar systems and signal processing, especially detection and estimation of radar targets, clutter suppression, adaptive techniques, and phased-array systems.



Merton D. Wohlers was born in Crawford, NE, on January 4, 1932. He received the B.E.E. degree from the University of Florida, Gainesville, in 1959.

He has spent his career with Sperry Corporation having worked with the design and development of microwave tubes, microwave test equipment, millimeter-wave radiometers, and millimeter-wave radar systems. He is currently employed at Sperry Microwave Electronics, Clearwater, FL, where he is Engineering Manager for a milli-

meter-wave terminal guidance seeker program.