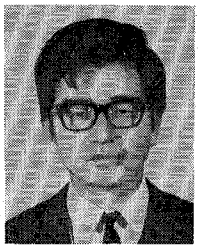
Contributors



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

He joined the Nippon Electric Company Ltd., Kawasaki, Japan, in 1968, where he has been engaged in the research and development of microwave integrated circuits.

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

❖

Sever Anghel (M'70) was born in Brasov, Roumania, on January 21, 1944. He received the B.E.E. degree from the City College of New York, N. Y., in 1967, and the M.S.E.E. degree from Rutgers University, New Brunswick, N. J., in 1969.

In 1967 he joined the RCA Astro-Electronics Division, Heightstown, N. Y., and worked on solid-state VHF and UHF circuits. In 1969 he joined Wheeler Laboratories, Smithtown, N. Y., where he worked on microwave integrated circuits. He is currently working in the Advanced Development Group, ITT Defense Communication Division, Nutley, N. J., on microwave integrated circuits.

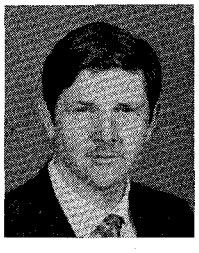
❖

Tohru Araki was born in Japan, on October 18, 1941. He received the B.S. and M.S. degrees in electrical engineering from Shizuoka University, Japan, in 1965 and 1967, respectively.

Since 1969 he has been with the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan, where he has worked on microwave diodes and integrated circuits.

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

❖



Edward E. Bliss (A'54) was born in Logansport, Ind., on December 19, 1930. He received the B.S. degree in physics from St. Lawrence University, Canton, N. Y., in 1952, and has completed a year of graduate work in physics at Columbia University, New York, N. Y.

He joined the RCA Electronic Components Division, Harrison, N. J., in 1953 where he was concerned with various aspects of TWT development, including helix design and periodic-permanent magnet focusing structure design. In 1963 he became Senior Design Engineer for the design of a frequency source for an experimental satellite and later for the radar transmitters used in the LM Apollo Project. His recent experience has been with wide-band voltage-tuned transistor oscillators and wide-band frequency multipliers. Currently he is engaged in the development of MIC amplifiers and in developing methods of computer-aided design. Mr. Bliss has written many papers and holds a fundamental patent for his work on temperature compensation of TWT focusing structures.

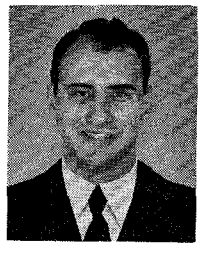
Mr. Bliss received the Engineering Recognition Award presented by his fellow RCA engineers in 1970.

Donald M. Bolle (S'56–M'57–SM'66) was born in Amsterdam, The Netherlands, on March 30, 1933. He received the B.Sc. degree with honors in electrical engineering from Kings College, Durham University, England, in 1954 and the Ph.D. degree in electrical engineering from Purdue University, West Lafayette, Ind., in 1961.

From 1954 to 1955 he was a Research Engineer with the Electrical Musical Industries, Mddx., England. He taught at Purdue University from 1956 to 1962, first as an Instructor, then as an Assistant Professor in Electrical Engineering. He spent the academic year 1962 to 1963 in the Department of Applied Mathematics and Theoretical Physics, Cambridge University, England, as an N.S.F. Postdoctoral Fellow. In 1963 he joined Brown University, Providence, R. I., where he is presently Professor of Engineering. He was a Visiting Professor at the Institute for High Frequency Techniques of the Technical University of Braunschweig, W. Germany, for the spring semester of 1967. His research interests lie in electromagnetic propagation, radiation, and scattering.

Dr. Bolle is a member of Eta Kappa Nu, Tau Beta Pi, Sigma Xi, The American Society for Engineering Education, and the American Association of University Professors.

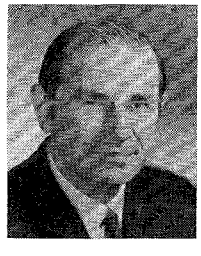
❖



Raymond L. Camisa (M'68) received the B.S.E.E. degree from the City College of New York, N. Y., in 1965, and the M.E.E. degree from the City University of New York in 1969. He is currently studying for the Ph.D. degree in engineering at the City University of New York.

From 1965 to 1968 he was a Member of the Technical Staff of the RCA Advanced Communications Laboratory, N. Y. While with RCA he was involved in the design and development of microwave integrated circuit solid-state devices. From 1968 to 1970 he was employed at Wheeler Laboratories, Inc., where he worked on microwave integrated circuit low-noise transistor amplifiers and receivers for IFF applications. Presently he is a Research Assistant and Adjunct Lecturer at the City University of New York.

❖



Martin Caulton (M'61–SM'65) received the Bachelor's, M.A., and Ph.D. degrees, all in physics, from Rensselaer Polytechnic Institute, Troy, N. Y., in 1950, 1952, and 1954, respectively. He completed his doctoral research in high-energy nuclear physics at the Brookhaven National Laboratories. From 1954 to 1955 he was a Fulbright Scholar at the Imperial College of Science and Technology, London, England.

He has worked at Bell Telephone Laboratories on low-noise traveling-wave tubes and has served as Assistant Professor of Physics at Union College, Schenectady, N. Y. Since joining RCA Laboratories, Princeton, N. J., in 1960, he has been engaged in research on microwave electronics (electron beams and plasmas) and microwave solid-state devices. He has been involved in microwave integrated circuits since 1966 and has authored numerous papers in this field. He has coauthored a textbook, *Physical Electronics*, and has also taught courses in microwaves and modern physics as Adjunct Professor of Electrical Engineering at Drexel University, Philadelphia, Pa.

Robert E. DeBrecht (M'69) was born in Orange County, Calif., on April 11, 1944. He received the Bachelor's degree in engineering physics and the Master's degree in electrical engineering, both from the University of California, Berkeley, in 1966 and 1968, respectively.

In 1968 he joined RCA Laboratories, Princeton, N. J., where he worked on the design and fabrication of integrated circuits. Since 1969 he has been working on the measurement of microwave integrated circuit lumped elements.

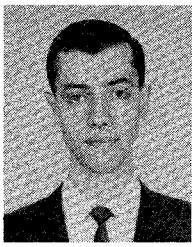
❖

Edmund Denison was born in Co. Durham, England, on May 21, 1925. He received the B.Sc. degree in electrical engineering from Durham University, Durham, England, in 1949 and the London University external degree B.Sc. in special mathematics after part time study at Portsmouth Municipal College, Portsmouth, England, in 1954.

He served in the Merchant Navy as a Radio Officer from 1941 to 1946. He is currently a Principal Scientific Officer at the Admiralty Surface Weapons Establishment, Portsmouth, England, where he is involved in the research and development of microwave components, measurement of antenna noise temperature at sea, and microwave integrated circuit techniques.

Mr. Denison is a member of the Institute of Electrical Engineers of London.

❖



Richard J. Giannini (S'58–M'62) was born in Brooklyn, N. Y., on January 19, 1940. He received the B.E.E. and M.S.E.E. degrees from the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., in 1961 and 1965, respectively.

He has been employed at Wheeler Laboratories, Smithtown, N. Y., since June 1961, where he has been engaged in work on phased array antennas and microwave components. Most recently he has been involved in studies and design of cylindrical arrays and microwave integrated circuit components.

Mr. Giannini is a member of Eta Kappa Nu, Tau Beta Pi, and Sigma Xi.

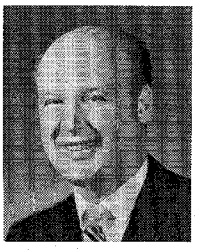
❖

Gordon R. Harrison (M'62–SM'67) was born in Wister, Okla., on December 14, 1931. He received the B.S. degree in physics in 1952 from the State College of Arkansas, Jonesboro, and the M.S. degree in 1954 and the Ph.D. degree in physics in 1958, both from Vanderbilt University, Nashville, Tenn.

He has been employed in the Oak Ridge National Laboratory where he was engaged in the research and studies of radiation safety, health physics, nuclear detectors and associated instrumentation. He has also been employed by the Convair Division of General Dynamics where he assisted in research studies associated with the nuclear powered aircraft program. He joined the Sperry Microwave Electronics Division, Sperry Rand Corporation, Clearwater, Fla., in 1957 and was initially engaged in research and development on the fabrication and application of ferrimagnetic materials to microwave devices. This research has led to the development of many new and improved hybrid garnet materials for microwave applications and it has also produced temperature stable compositions in addition to other valuable materials for use at high microwave signal levels. He is presently responsible for the microwave integrated circuits and the semiconductor device and ferrimagnetic material activities. He has published many technical papers in the area of microwave solid-state materials and their applications including the new field of microwave integrated circuits.

Dr. Harrison is a member of Sigma Pi Sigma, Sigma Xi, Alpha Chi, and the American Physical Society; he is presently a member and past chairman of the G-MTT Technical Committee MTT-6 on Microwave Integrated Circuits.

❖

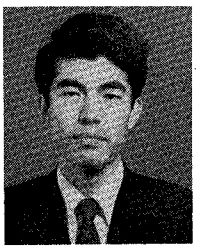


Bernard Hershenov (S'57–M'59–SM'64) received the B.S. degree in physics, the M.S. degree in mathematics, and the Ph.D. degree in electrical engineering, all from the University of Michigan, Ann Arbor, in 1950, 1952, and 1959, respectively.

From 1951 to 1952 he worked for the University of Michigan Dental Materials Laboratory studying the physical properties of dentin. From 1952 to 1959 he was employed as a Research Assistant, Research Associate, and finally as an Associate Research Engineer with the University of Michigan Research Institute. During this period he worked on domain wall resonance in ferrites, high-power traveling-wave tubes, and crossed-field devices. From 1959 to 1960 he worked on high-power unimoded magnetrons for the G.E. Company. He joined the Microwave Research Laboratory, RCA Laboratories, Princeton, N. J., in March, 1960, and in January, 1968, he became Head of the Microwave Integrated Circuits Group. Since joining RCA, he has worked on space-charge waves in electron beams, crossed-field amplifiers, ferrite devices, magnetic semiconductors, microwave circuits, and microwave integrated circuits. From 1964 to 1966 he was Coadjutant in the Mathematics Department, University College, Rutgers University, New Brunswick, N. J.

Dr. Hershenov is a member of Phi Kappa Phi, the American Physical Society, and Sigma Xi.

❖



Masahiro Hirayama was born in Obihiro, Japan, on September 4, 1942. He received the B.S. and M.S. degrees in electrical engineering from Hokkaido University, Sapporo, Japan, in 1966 and 1968, respectively.

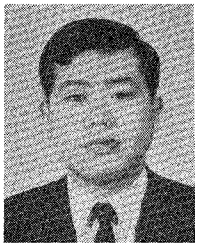
Since 1968 he has been a member of the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan, where he has been engaged in research and development in the area of microwave integrated circuits.

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

❖

Tor Dag Iveland was born in Kristiansand, Norway, on July 1, 1940. He received the Electrical Engineering degree and the Licentiate degree from the Norwegian Institute of Technology, University of Trondheim, Trondheim, Norway, in 1964 and 1967, respectively.

From 1964 to 1969 he was a Research Engineer with the Division of Physical Electronics, Norwegian Institute of Technology, working with waveguide discontinuity problems, dielectric resonators, and microwave computer-aided design. In 1970 he became Chief Engineer with the Electronics Research Laboratory, a research organization working in cooperation with the Norwegian Institute of Technology.



Motonobu Katoh was born in Sapporo, Japan, on August 29, 1941. He received the B.S. degree in electronics engineering from the University of Hokkaido, Hokkaido, Japan, in 1964.

In 1964 he joined Nippon Electronic Company, Ltd., Kawasaki, Japan, where he is now a member of the Electron Device Laboratory, Central Research Laboratories. He has been engaged in the research and development of a plasma tube and microwave integrated circuits.

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

❖

Stanley P. Knight (S'60–M'69) was born in Bradford, Pa., on May 26, 1939. He received the B.S.E.E. degree from the University of Kentucky, Lexington, in 1961, and the M.S.E.E. degree from Newark College of Engineering, Newark, N. J., in 1969.

From 1961 to 1970 he was employed at RCA Astro-Electronics Division, Hightstown, N. J., where he worked on various spacecraft communication subsystems. During the years 1966 to 1970 he worked at the RCA Laboratories on the development of microwave integrated circuits. In July, 1970, he joined Zenith Radio Corporation, Chicago, Ill., where he is group leader, responsible for integration of UHF circuits for consumer product applications.

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

❖

Richard P. Lorentzen was born in Peekskill, N. Y., on March 30, 1938. He received the B.S. degree in mechanical engineering from Fairleigh Dickinson University, Teaneck, N. J., in 1965.

He joined the RCA Electronic Components Division at Harrison, N. J., in 1958, where he had extensive experience in developing complex mechanical devices and tooling. In 1965 he was assigned to the Microwave Solid-State Group where he engineered the mechanical design of a frequency multiplier subassembly for space use. He was involved in the successful completion of mechanical interface negotiations for a solid-state local oscillator subassembly. In 1969 he was assigned the mechanical design responsibility for a high-power MIC module which required converting a brass-board MIC electrical design into a unit capable of being produced in production quantities. In 1970 he became responsible for the mechanical design of a developmental ultra reliable radar (URR) transmitter. At present he has the technical responsibility for the production phase of the URR transmitter.

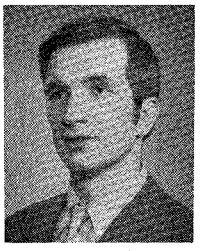
❖

Paul J. Meier (S'55–M'59–SM'69) was born in New York, N. Y., on April 10, 1936. He received the B.E.E. degree from Manhattan College, New York, N. Y., in 1958, and the M.S. degree from Long Island University, Brookville, N. Y., in 1969.

During the summers of 1955–1957, he held engineering positions at the Navy's Bureau of Aeronautics, Washington, D. C., and the Arma Corporation, Garden City, N. Y. From 1958 to 1965 he was a Development Engineer, and later a Senior Development Engineer, at Wheeler Laboratories, Great Neck, N. Y., where he developed microwave components for the Thor-Delta missile and the SPG-55A antenna. He was also responsible for the development of a fenestrated metal radome and the application of waveguide simulation techniques to the design of the antenna elements for several phased-array systems. His work included the study of dielectric-lined and periodically loaded circular waveguides and their application to radiators and polarization converters. In 1966, he joined the Airborne Instruments Laboratory, Division of Cutler-Hammer, Melville, N. Y., where as a Project Engineer in the Radar Techniques Department he was responsible for the investigation of advanced antenna-element configurations suitable for conformal multifunction arrays. He also developed several types of ferrite phase shifters in microstrip and waveguide, including a unique latching Faraday rotator. He has served as a Project Engineer in the Applied Electronics Division on programs directed toward the development of a high-power solid-state switch and an integrated sweeping receiver. He is currently developing microstrip circulators and wide-band low-noise amplifiers.

Mr. Meier is a member of Eta Kappa Nu.

❖

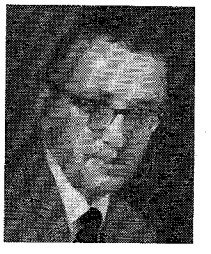


James C. Minor was born in Batavia, N. Y., on June 25, 1943. He received the B.S. degree in electrical engineering from the University of Rochester, Rochester, N. Y., in 1965, and the M.S. and Ph.D. degrees from Brown University, Providence, R. I., in 1968 and 1971, respectively.

He was a Graduate Teaching Assistant and National Science Foundation Trainee in the Division of Engineering, Brown University, where he did research in electromagnetic scattering as well as studies of ferrite-loaded waveguides. In 1970 he joined the Communications Sciences Division of the Naval Research Laboratory, Washington, D. C., where he is presently working on antenna arraying and antenna-circuit problems.

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

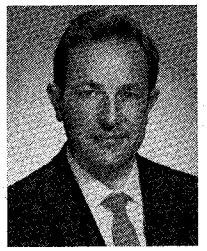
❖



Herman C. Okean (S'55–M'57–SM'66) was born in New York, N. Y., on September 28, 1933. He received the B.A. and B.S. degrees in electrical engineering from Columbia University, New York, N. Y., in 1955 and 1956, respectively, the M.E.E. degree from New York University, New York, in 1960, and the Eng.Sc.D. degree from Columbia University in 1965.

He joined Bell Telephone Laboratories, Inc., New York, N. Y., in 1955, as a summer employee and worked as a Technical Assistant in the Electronic Power Development Department. He returned to Bell Laboratories, Whippany, N. J., in 1956, as a Member of the Technical Staff. From 1956 to 1960 he worked in the Military Systems Development Department and was engaged in the design and development of radar and missile guidance circuits. From 1961 to 1966 he was at the Murray Hill Laboratory where he was involved in research in the field of microwave solid-state device applications with particular emphasis on the exploratory development of tunnel-diode amplifiers and varactor harmonic generators. In 1966 he joined Airborne Instruments Laboratory, Division of Cutler-Hammer as a Departmental Consultant in the Applied Electronics Division. In this capacity he has explored the application of microwave integrated circuit techniques and flat-gain–linear-phase negative resistance amplifier broad-banding theory to the development of broad-band parametric amplifiers in several frequency bands. In addition, he has investigated the circuit applications of bulk-effect devices and monolithic integrated circuits fabricated in the Central Research Group, Airborne Instruments Laboratory. He is currently is directing programs involving the development of microminiature all-solid-state parametric amplifier systems, swept tunnel-diode receivers, and a comprehensive program for development of wide-band integrated microwave receivers.

Dr. Okean is a member of Phi Beta Kappa, Tau Beta Pi, and Eta Kappa Nu.



J. Martin Osterwalder (M'63) was born in Frauenfeld, Switzerland, on January 3, 1937. He received the M.S.E.E. degree from the Swiss Federal Institute of Technology, Zurich, Switzerland, in 1961.

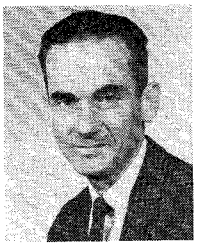
Upon graduation he joined Brown-Boveri Limited in Switzerland and was engaged in microwave work for military applications. In 1962 he joined the Research and Development Laboratories of Northern Electric Company, Ottawa, Canada. He was primarily involved in research and development of microwave solid-state devices for communication equipment. In 1968 he joined the Advanced Research and Development Laboratories, Electro Dynamic Division, General Dynamics, San Diego, Calif. As a Member of the Technical Staff, he has been involved in the development of advanced microwave solid-state devices and systems for aerospace applications.

❖

Gerald H. Robinson (S'61–M'69) was born in Mobile, Ala., on May 9, 1940. He received the B.S.E.E. degree from Georgia Institute of Technology, Atlanta, in 1962.

In 1962 he joined Sperry Microwave Electronics Division, Clearwater, Fla., where he is presently a Senior Engineer. His work has involved microwave component design and development including ferrite devices, YIG filters, microwave acoustic delay lines, and miniature microwave devices.

❖



Eugene W. Sard (A'49–M'55–SM'69) was born in Brooklyn, N. Y., on December 21, 1923. He received the B.S. and M.S. degrees in electrical engineering from the Massachusetts Institute of Technology, Cambridge, in 1944 and 1948, respectively.

From 1944 to 1946 he served in the U. S. Naval Reserve as a Radar Officer. From 1946 to 1948 he was a Research Assistant in the Department of Electrical Engineering, Massachusetts Institute of Technology, working on digital computers. Since 1948 he has been with Airborne Instruments Laboratory, Division of Cutler-Hammer, Inc., Melville, N. Y., at first in the Radar Department, and then in the Applied Electronics Division, where he is presently a Department Consultant. For the past 12 years he has been working on semiconductor devices with special emphasis on the application of varactors and tunnel diodes to various fields including fast switching, harmonic generation, low-noise amplification, frequency conversion, and detection. He is currently working on the development of integrated electronically tuned microwave oscillator circuits.

Mr. Sard is a member of Sigma Xi.

❖

Bruce R. Savage was born in Pittsburgh, Pa., on April 26, 1932. He received the B.E.E.E. degree from Vanderbilt University, Nashville, Tenn., in 1959.

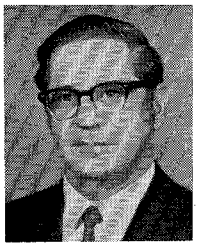
In 1959 he joined Sperry Microwave Electronics Division, Clearwater, Fla., where he has been involved in the design and development of microwave components including parametric amplifiers, delay lines, phase shifters, and avalanche oscillators. In February 1969 he was appointed Engineering Section Head for the Custom Microwave Integrated Modules Department, responsible for the design and development of microwave integrated circuits and modules, avalanche oscillators and amplifiers, and low noise millimeter-wave mixers.

Mr. Savage is a member of Tau Beta Pi.

Donald R. Taft (M'58–SM'69) was born in Mendon, Mass., on October 1, 1928. He received the B.A. degree in physics from the University of New Hampshire, Durham, in 1957, and has done graduate work at the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., and the University of Florida, Gainesville.

In 1957 he joined the Sperry Microwave Electronics Division, Sperry Rand Corporation, Clearwater, Fla., where he has worked on the design and development of microwave ferrite devices. He is presently a Senior Member of the Research Staff.

❖

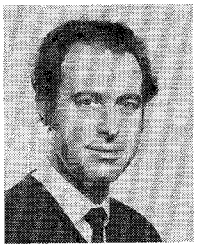


Frank E. Vaccaro (S'47–A'49–M'55–SM'61) was born in Memphis, Tenn., on March 18, 1924. He received the B.E.E. degree from the University of Tennessee, Knoxville, in 1948, and the M.S. degree in electrical engineering from Stevens Institute of Technology, Hoboken, N. J., in 1953.

He joined the RCA Electronic Components Division, Harrison, N. J., in 1949 where he has worked on electron-beam and solid-state devices. Included in this work has been the development of high-power cavity-tunable magnetrons and electrostatically focused traveling-wave tubes. His studies of magnetrons are described in the book *Crossed-Field Microwave Devices*, (Academic Press, 1961). Since 1966 he has been the Engineering Leader responsible for the product design of a solid-state local oscillator subsystem and a high-power MIC module. He is presently working on the development of a circuit for a high-efficiency avalanche oscillator.

Mr. Vaccaro is a member of Etu Kappa Nu and Tau Beta Pi.

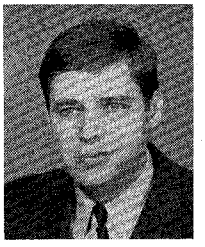
❖



Michael P. Wasse was born in Chesterfield, England, on July 15, 1942. He received the B.A. degree from Cambridge University, Cambridge, England, in 1964.

Since 1964 he has been employed by Standard Telecommunication Laboratories Limited, Harlow, Essex, England, where he has worked mainly on the Gunn effect. His present interests include the study of the frequency dependence on temperature of Gunn diodes and the use of IMPATT diodes as amplifiers.

❖



Dietmar Zieger was born in Gleiwitz, Germany, on October 9, 1940. He received the E.E. degree from Oskar Von Miller Polytechnikum, Munich, Germany, in 1962. He is currently enrolled in the graduate program of Stevens Institute of Technology, Hoboken, N. J., pursuing the M.S. degree.

He joined Philips Zentrallaboratorium, Hamburg, Germany, in 1962 where he was primarily concerned with ferroelectric materials measurements from dc to Q-band frequencies. In 1965 he joined the research laboratories of La Radiotechnique, Suresnes, France, where he was active in working with Gunn diode oscillators and their various application possibilities. In 1968, while with the Northern Electric Company, Montreal, Canada, he became involved with the production of microwave circulators for telecommunication systems. He joined the Microwave Solid-State Engineering Group, RCA Electronic Components Division, Harrison, N. J., in 1969. He has been primarily concerned with the design of a preamplifier/driver component of the high-power MIC module. Currently he is engaged in the product design of various transferred-electron oscillators.