

Authors

John A. Armstrong

Research Division, Yorktown Heights, New York

Dr. Armstrong joined IBM Research in 1963 as a member of a physical sciences department. He has worked on nonlinear optics with lasers, picosecond optical pulse measurements, and atomic spectroscopy with lasers. In 1967 he was manager of a quantum optics group at Research in Zurich, Switzerland. After returning, he became manager of a quantum physics group at Yorktown. He became director of a physical sciences department in 1976. He received an A.B. in physics in 1956 and a Ph.D. in applied physics in 1961, both from Harvard University. Dr. Armstrong is a fellow of the American Physical Society and of the Optical Society of America.

Donald S. Bethune

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Dr. Bethune is currently working on problems in nonlinear optics and molecular physics. He is also collaborating on the development of a technique for time resolved photographic recording of infrared spectra in the 2-20- μ m "fingerprint region." Prior to joining IBM in 1978, he was a Postdoctoral Visiting Scientist at the Thomas J. Watson Research Center. He received his B.S. in physics from Stanford University in 1970 and his Ph.D. in physics from the University of California at Berkeley in 1977. Dr. Bethune is a member of the American Physical Society, the Optical Society of America, and Phi Beta Kappa.

Richard G. Brewer

Research Division, San Jose, California

Dr. Brewer is an IBM Fellow at the San Jose Research laboratory, where he has been since 1963. His recent research is in quantum electronics and laser spectroscopy, particularly coherent optical transient phenomena. He received a B.S. from the California Institute of Technology, Pasadena, in 1951 and a Ph.D. from the University of California, Berkeley, in 1958 in physics and chemistry. He has taught at Harvard University and the University of California, Los Angeles, and has held Visiting Professorships at the Massachusetts Institute of Technology, University of California, Santa Cruz, and University of Tokyo, and is a Consulting Professor at Stanford University. He has received three IBM Outstanding Innovation and Outstanding Contribution Awards for "Self Trapping Intense Laser Light Pulses" (1968), "Nonlinear Spectroscopy" (1972), and "Laser Frequency Switching Techniques" (1977). He has coauthored a book entitled *Laser Spectroscopy*. Dr. Brewer is a Fellow of the American Physical Society and the Optical Society of America.

Donald M. Burland

Research Division, San Jose, California

Dr. Burland is a member of an organic solids department at the San Jose Research laboratory. He joined IBM in 1971. His technical interests include laser photochemistry in molecular crystals, energy and charge transport in solids and coherent optical phenomena. Dr. Burland received his A.B. in chemistry from Dartmouth College, Hanover, New Hampshire and his Ph.D. in chemistry and physics from the California Institute of Technology, Pasadena, in 1969. He then spent two years at the Kamerlingh Onnes Laboratory in the Netherlands before joining IBM. Dr. Burland is a member of the American Chemical Society and the American Physical Society.

John D. Crow

Research Division, Yorktown Heights, New York

Dr. Crow received his B.S., M.S., and Ph.D. in electrical engineering from the University of California at Berkeley in 1966, 1968, and 1972. He joined IBM's Research staff at the Thomas J. Watson Research Center in 1974 after working on experimental and theoretical studies of glass optical fibers at Corning Glass Works for two years. During 1978, Dr. Crow served as technical assistant to Dr. R. E. Gomory, IBM Vice President and Director of Research. He is presently working in fiber optic components and link applications.

Ralph G. DeVoe

Research Division, San Jose, California

Dr. DeVoe joined IBM at the San Jose Research laboratory in 1977. He is working on coherent optical transients and related phenomena in quantum optics. He received his B.A. in physics in 1967 from Harvard University and a Ph.D. in physics from the University of Chicago in 1976. He is a member of the American Physical Society and the Optical Society of America.

Dietrich Haarer

Research Division, San Jose, California

Dr. Haarer joined IBM at the San Jose Research laboratory in 1973. Since 1975 he has been manager of a project that focuses on excited states of organic solids. In the past he has worked in the fields of electron spin resonance, optical spectroscopy, and photoconduction of molecular crystals. Dr. Haarer received his Ph.D. in physics from the University of Stuttgart, West Germany, in 1969.

Roland Y. Hung

Research Division, Yorktown Heights, New York

Dr. Hung joined IBM at Kingston, New York, in 1968 after receiving a Ph.D. in applied physics from Case Institute of Technology, Cleveland, Ohio. He received his B.S.E.E. in 1957 from the National Taiwan University, Taipei, Republic of China, and his M.S.E.E. in 1960 from Oklahoma State University, Stillwater. He held a number of technical and managerial positions in

IBM laboratories at Kingston, East Fishkill, and Mohansic, New York, before being transferred to the Research Division at the Thomas J. Watson Research Center in 1973. He is currently manager of an injection laser technology group. His interests range from the understanding of semiconductor device physics to their applications. In 1972, Dr. Hung received an IBM Outstanding Contribution Award for his study on the development of high performance LIS/FET circuits. He is a member of the Institute of Electrical and Electronics Engineers.

John R. Lankard

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Mr. Lankard is currently working on quantum optics at the Thomas J. Watson Research Center. His main interests have been in quantum electronics including rare earth and dye lasers. Mr. Lankard joined IBM at Research in Poughkeepsie, New York, in 1960. He received his A.B. in physics from Marist College, Poughkeepsie, New York, in 1969. From 1950 to 1960 he worked for the U.S. Government as a radar technician for the U.S. Air Force and as an electronic specialist for the Department of Justice. In 1977 he received the IBM Outstanding Innovation Award for his nitrogen pumped dye laser. Mr. Lankard is a member of the American Physical Society.

Michael M. T. Loy

Research Division, Yorktown Heights, New York

Dr. Loy joined IBM as a member of a physical sciences department at the Thomas J. Watson Research Center in 1971, and is currently manager of a molecular physics with lasers group. His current interests include multiphoton, resonant coherent interaction of laser light with molecules. He received a B.S. in engineering physics in 1966 and a Ph.D. in physics in 1971, both from the University of California at Berkeley. In 1977, he received an IBM Outstanding Innovation Award for his work on two-photon coherent effects. Dr. Loy is a member of the American Physical Society.

Alan C. Luntz

Research Division, San Jose, California

Dr. Luntz joined IBM in 1968 as a Postdoctoral Fellow in the San Jose Research laboratory. Since 1969, he has been a staff member at the same laboratory. His current interests are in the dynamics of chemical reactions, using both molecular beam and laser techniques for these studies. He received his B.S. in chemistry from Northwestern University, Evanston, Illinois, in 1963 and his Ph.D. in physical chemistry from the University of California, Berkeley, in 1968. Dr. Luntz is a member of the American Chemical Society, Phi Lambda Upsilon, and Sigma Xi.

Robert T. Lynch, Jr.

Research Division, Yorktown Heights, New York

Dr. Lynch joined IBM as a member of an applied research department at the Thomas J. Watson Research Center in 1977. His current interests include reliability and characterization studies of semiconductor injection lasers. He received a B.A. in physics from Wesleyan University, Middletown, Connecticut, in 1968 and a Ph.D. in applied physics from Harvard University in 1977. Dr. Lynch is a member of the American Physical Society, the Institute of Electrical and Electronics Engineers, and the Optical Society of America.

Roger M. Macfarlane

Research Division, San Jose, California

Dr. Macfarlane joined IBM in 1968 at the San Jose Research laboratory, where he is a member of a physical science department. He is currently working in the area of laser spectroscopy of solids. He received his B.S. in 1958, his M.S. in 1959, and his Ph.D. in 1964, all in physics from Canterbury University, New Zealand. He was a Research Associate in the Physics Department, Stanford University, from 1965 to 1968. Dr. Macfarlane spent 1974 to 1975 at Oxford University as a Senior Visiting Fellow and at the IBM Research laboratory in Zurich, Switzerland.

Hans Morawitz

Research Division, San Jose, California

Dr. Morawitz joined IBM at the San Jose Research laboratory in 1963 to work on the theory of laser coherence and photon correlation. He went to become an Associate Professor of physics at Monash University, Melbourne, Australia, in 1965 and spent one year (1966 to 1967) at the University of Vienna, Austria, as a Research Associate. In 1967 he returned to the IBM Research laboratory at San Jose and worked on electron-atom scattering theory, molecular relaxation processes near metal surfaces and cooperative emission. His present work includes studies of orientational phase transitions in organic solids and the interaction of electronically excited molecules near metal surfaces. He received a B.S. in physics (summa cum laude) from Stanford University in 1956 and a Ph.D. from the same institution in 1963. Dr. Morawitz is a member of the American Association for the Advancement of Science and the American Physical Society.

Dieter W. Pohl

Research Division, Zurich, Switzerland

Dr. Pohl is a member of a physics group at the IBM Research laboratory in Zurich. His interests include laser physics, infrared research, and light scattering. He joined IBM in 1968 after receiving a Ph.D. from the Technical University of Munich, West Germany. Dr. Pohl studied physics at the Universities of Stuttgart, Hamburg, and Munich. In 1976 he received an IBM Outstanding Contribution Award for his work on the detection of second sound by forced Rayleigh scattering. Dr. Pohl is a member of the European, Swiss, and German Physical Societies. He serves on the Editorial Board of *Europhysics News*.

Martin B. Small

Research Division, Yorktown Heights, New York

Dr. Small joined the Research Division in 1975. Previously he had spent two periods as a Summer Faculty Visitor at the Thomas J. Watson Research Center, while on vacation from his teaching position at the Brighton Polytechnic in England. He is working on the crystal growth of injection lasers and general problems of forming heterostructures from solution. He received his B.Sc. from London University in 1961 and his Ph.D. from Exeter University in 1964. Dr. Small is a member of the Institute of Physics.

Peter Sorokin

Research Division, Yorktown Heights, New York

Dr. Sorokin joined IBM in 1957 at the Poughkeepsie, New York, laboratory, where he worked in the fields of nuclear magnetic resonance, paramagnetic resonance, and optical masers. In 1968 he was named an IBM Fellow, and is currently manager of a laser sciences group at the Thomas J. Watson Research Center. He received his B.S. in physics in 1952, his M.S. in applied physics in 1953, and his Ph.D. in applied physics in 1957, all from Harvard University. Dr. Sorokin is the recipient of numerous IBM Outstanding Contribution Awards for his work in the area of lasers. In 1974 he received the Franklin Society's Michelson Award for his work in lasers. The Optical Society of America presented him with the R. W. Wood Award in 1978 for his work in dye lasers. Dr. Sorokin is a member of the American Physical Society and the American, National, and New York Academies of Sciences.

Silvia L. Völker

Huygens Laboratory, Leiden, The Netherlands

Dr. Völker, who joined the IBM Research laboratory in San Jose, California, as a Postdoctoral Fellow in an applied science department in 1976, is now at the Center for the Study of Excited States of Molecules at the Huygens Laboratory. Her current work includes high resolution optical spectroscopy, in particular, photochemical hole-burning of organic molecules. She received her M.S. in physics from the University of Buenos Aires, Argentina, in 1969. From 1969 to 1970 she held a research scholarship at the Atomic Energy Commission in Buenos Aires. In 1974 she received her Ph.D. in physics from the University of Stuttgart, West Germany. From 1974 to 1976 she was a research associate in the Department of Physical Chemistry at the University of Stuttgart. Dr. Völker is a member of the American Association for the Advancement of Science and the American Physical Society.

James J. Wynne

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Dr. Wynne is manager of a quantum physics and chemistry group at the Thomas J. Watson Research Center. He received an A.B. from Harvard University in 1964 and a Ph.D. in applied physics from Harvard in 1969. He joined IBM in 1969, working at the Zurich Research laboratory in Switzerland until 1971, when he moved to Yorktown. He is currently working in the area of atomic spectroscopy using laser techniques. Dr. Wynne is a member of the American Physical Society, the Optical Society of America, and Sigma Xi.