

Authors

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Dr. Bard is a staff member at the Scientific Center in Cambridge, where he is currently working on system performance measurement and evaluation. He has been with IBM since 1957. He received the B.S. in 1954 from the University of Pennsylvania and the M.S. and Ph.D. in Chemical Engineering in 1956 and 1966, respectively, from Columbia University. Dr. Bard has worked on the development of computer applications in the field of multicomponent distillation, nonlinear programming, mathematical model fitting and optimal control.

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Dr. Bosarge is an Advisory Mathematician in the Mathematics and Physics Department of the Houston Scientific Center. He joined the Federal Systems Division of IBM in Huntsville, Alabama in 1964. He received the B.S. and M.S. degrees in Applied Mathematics from the Georgia Institute of Technology in 1961 and 1963, respectively, and the Ph.D. degree in Applied Mathematics from Brown University in 1968, studying under an IBM Resident Study Graduate Fellowship. He also studied at the Eidgenossische Technische Hochschule, Zürich, under an Institute for International Education Fellowship. In 1968 he joined the IBM Scientific Center in Houston where he has been working in numerical analysis and control theory. Dr. Bosarge is a member of Sigma Xi, Phi Kappa Phi, Tau Beta Pi, and the Society for Industrial and Applied Mathematics.

Danny C. Clark

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Mr. Clark is a staff member in the Information Sciences Department at the research center in San Jose, where he has worked in the area of text processing and information retrieval. Recently, he has been on assignment to the Molecular Physics Department, where he contributed to the solution of design problems in a laboratory automation project. He received a B.A. in Mathematics in 1967 from San Jose State College. Mr. Clark is a member of the Association for Computing Machinery.

Paul M. Grant

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Dr. Grant is a member of the inorganic materials science group at the research center in San Jose where he is currently studying the optical properties of magnetic insulators in the intrinsic absorption region. He received the B.S. in Electrical Engineering in 1960 from Clarkson College of Technology, the A.M. and Ph.D. in Applied Physics in 1961 and 1965, respectively, from Harvard University. He has been with IBM since 1953, originally at Poughkeepsie, New York. In 1954 he attended the first SAGE Field Engineering class in Poughkeepsie, and later

transferred to Lincoln Laboratory to work as field engineer and reliability and diagnostic programmer on the SAGE AN/FSQ-7, XDI installation. He obtained an educational leave of absence in 1956 to attend undergraduate school, returning each summer to work in the Federal Systems Division Development Laboratory in Kingston, New York. In 1960 the Federal Systems Division awarded him the IBM Resident Study Fellowship to attend Harvard University, where he became a Research Associate in 1965. He currently maintains a high interest in the problems of computational physics and computer systems. Dr. Grant is a member of the American Institute of Physics, Tau Beta Pi, Eta Kappa Nu and Sigma Xi.

Stuart A. Greenberg

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Dr. Greenberg is a staff member in the operations research group at the Scientific Center in Cambridge. He has been with IBM since 1969. His degrees are all in Electrical Engineering—the B.S. in 1965 from the University of Pennsylvania, and the M.S. and Ph.D. in 1966 and 1969, respectively, from the Massachusetts Institute of Technology. During the summers of 1961 to 1965 he worked at the U.S. Naval Development Center, and the summer of 1967 at AVCO Corporation. Dr. Greenberg is a member of the IEEE, Tau Beta Pi, Eta Kappa Nu and Sigma Xi.

Bernard G. Huth

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Dr. Huth is an Advisory Physicist in the Quantum Electronics Department of the Federal Systems Division's Electronic Systems Center. Since joining IBM in July, 1967, he has worked on organic dye lasers, infra-red Raman sources, and molecular lasers. He received a B.S. in Electrical Engineering from Case Institute of Technology in 1963, and an M.S. and a Ph.D. in Electrical Engineering from Stanford University in 1964 and 1967, respectively. Dr. Huth was an NSF Fellow at Stanford, and conducted research on the nonlinear interaction of light and matter. He is a member of the American Physical Society, IEEE, Eta Kappa Nu, Tau Beta Pi and Sigma Xi.

Morton R. Kagan

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Dr. Kagan is Manager of the Laser Technology and Applications Department in the Electronics Systems Center of IBM's Federal Systems Division. He has been with IBM since September 1966, working in such areas as dye lasers, solid-state lasers, diffraction-limited gallium arsenide lasers, and various areas of nonlinear optics. His education includes a B.S. degree in Physics from Case Institute of Technology in 1955; M.S. and Ph.D. degrees in Physics, were obtained in 1957 and 1966, respectively, from the University of Maryland and the Catholic University of America. In 1960, Dr. Kagan joined Melpar's Research Division working in areas of microwave spectroscopy, semiconductor physics, flame spectroscopy, ion mobility measurements in gases, and spectroscopic properties of rare-earth chelates for laser applications. In September 1965, Dr. Kagan was appointed Assistant Professor of Electrical Engineering at Catholic University, also serving as consultant to Melpar, Inc., and the Chemical Research and Development Laboratories in Edgewood, Maryland. He is a member of American Association for the Advancement of Science, American Institute of Physics, American Physical Society, Sigma Pi Sigma and Sigma Xi.

George J. Kahan

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Dr. Kahan is a member of a product assurance packaging group at the laboratory in East Fishkill. He joined IBM in 1957 at the research laboratory in Poughkeepsie, where he worked on superconducting thin-film applications. He received a Dr. Rer. Nat. degree from the German University at Prague in 1938. Dr. Kahan is a member of RESA.

John C. Marinace

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Mr. Marinace is a staff member at the research center in Yorktown where he has been engaged in injection laser research since 1962. He joined IBM at the laboratory in Poughkeepsie in 1956, working in the field of semiconductors. He received a B.S. in Physics in 1949 from the University of Denver. From 1949 to 1956 he worked for the General Electric Company. Mr. Marinace is a member of Sigma Pi Sigma, the American Physical Society, the IEEE and the Electrochemical Society.

Donald L. Raimondi

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Dr. Raimondi is a research staff member in the Molecular Physics Department at the laboratory in San Jose, where he is currently involved in the coordination of laboratory automation activities. He received the B.S. in 1963 from San Jose State College and the Ph.D. in 1966 from the University of California at Berkeley, both in Chemistry. Before joining the Research Division in 1966 he worked for the Service Bureau Corporation from 1960 to 1962, and in the Systems Development Division laboratory at San Jose from 1962 to 1963.

Barry H. Schechtman

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Dr. Schechtman is a physicist in the photophysics research group at the research laboratory in San Jose. He has been with IBM since 1968, and has been involved in theoretical and experimental studies of electronic transport in insulating solids and with the laboratory automation of high-speed transient physics experiments. His degrees are all in Electrical Engineering—the B.E.E. from Cooper Union in 1963, the M.S. and Ph.D. in 1964 and 1969, respectively, from Stanford University. He has worked on VHF, UHF, and microwave circuit design for Bell Laboratories and Hughes Aircraft Company, and has studied tunneling in solid insulating films at the General Electric Research Laboratory. Dr. Schechtman is a member of the American Physical Society, Tau Beta Pi, Eta Kappa Nu and Sigma Xi.

Carl L. Smith

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Dr. Smith has joined the staff of the International Mathematical and Statistical Libraries after having received the Ph.D. in Electrical Engineering from Rice University in 1971. He had received the B.S. and M.S. degrees in Electrical Engineering in 1967 and 1968, respectively, from the University of Kansas.

During his study at Kansas he was a teaching assistant and later held joint appointments as Lecturer in the Department of Electrical Engineering and Research Assistant at the Center for Research in Engineering Sciences. In 1968 he won a fellowship at Rice University where he continued his studies, and during the summer of 1969 he worked as a Research Assistant at the Los Alamos Scientific Laboratories. Dr. Smith is a member of the IEEE.

Gerard J. Sprokel

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Dr. Sprokel is an Advisory Chemist in an optical devices group at the laboratory in East Fishkill. He joined IBM in 1958 at the radioisotope laboratory in Endicott working on the design of scintillation detectors and applying radiotracer techniques to semiconductor problems. In 1966 he transferred to the Components Division to work on electron-beam irradiated silicon diodes and laser arrays. He received the Ph.D. in Physical Chemistry and Theoretical Physics from Utrecht University in the Netherlands in 1952 and in 1956 he studied at Oak Ridge National Laboratory. Dr. Sprokel is a member of the Royal Dutch Chemical Society, the American Chemical Society, the Electrochemical Society and the IEEE.

Harald Werlich

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Mr. Werlich is a Research Associate in the Systems Department at the research center in San Jose. He joined IBM in 1963 with the Systems Development Division in San Jose working in the field of optical character recognition, and in 1966 transferred to his present position to work in the field of holography and optical data processing. He received the A.A. degree in 1959 in Applied Physics from Bayer Technical Center in Germany. From 1960 to 1963 he worked in the physics department of the Ontario Research Foundation where he was engaged in the study of x-ray spectroscopy and electron gun development.

Harold Wieder

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Dr. Wieder is a staff member at the research laboratory in San Jose, where his interests have included fundamental studies of laser processes, as well as the applications of lasers to optical deflectors, real-time optical processing and magneto-optic memories. He joined IBM in 1963 at the Thomas J. Watson Research Center in Yorktown Heights. He received the M.S. in 1957 from the University of Rochester and the Ph.D. in Physics in 1964 from Case Institute of Technology. He was a staff member at RCA Laboratories from 1950 to 1954, and a research physicist at Union Carbide Research Center from 1957 to 1961. Dr. Wieder is a member of the American Physical Society and Sigma Xi.

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Dr. Winters is a physicist in a materials science group at the research laboratory in San Jose. He has been with IBM since 1963. He received the B.S. from Whitworth College in 1958, and the Ph.D. in Physics from Washington State University in 1963. He has published in the fields of vacuum physics, surface physics, electron physics, and thin film physics. Dr. Winters is a member of the American Vacuum Society, the American Association for the Advancement of Science and the American Scientific Affiliation.

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