Authors

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Dr. Arnett is a research staff member currently working on the exploratory cryogenic technology area of applied research. He received a B.S. in mechanical engineering from Ohio University, Athens, in 1961 and an M.A. and a Ph.D. in physics from the University of Southern California in 1965 and 1968. He joined IBM at the Burlington development laboratory in 1968, initially working on magnetic thin films and later on semiconductor based computer memories. In 1973 he went on assignment to the Thomas J. Watson Research Center to study properties of insulators of importance to solid-state devices and, subsequently, joined the Research Division in 1975. Dr. Arnett is a member of the American Physical Society.

We-Min Chow

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Dr. Chow is a member of the computer science department at the Thomas J. Watson Research Center, where he joined IBM in November 1973. His current technical interests include computer system queuing theory and combinatorial optimization. Dr. Chow received a B.S. in business administration from Cheng Kung University, Taiwan, in 1966, an M.S. in applied mathematics from Washington University, St. Louis, in 1970, and a Ph.D. in operations research from the University of California, Berkeley, in 1973.

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Dr. Dill joined IBM Research in 1958 and is currently working in display technologies. His continuing interest in lithography and lithographic materials stems from earlier work in semiconductor devices and technologies ranging from tunnel diodes and injection lasers to high-speed integrated circuits. He received a B.S. in physics in 1954 and an M.S. and a Ph.D. in electrical engineering from Carnegie Institute of Technology. He was a visiting lecturer at the University of California, Berkeley, 1958 to 1959, and at the Massachusetts Institute of Technology in 1974. Dr. Dill is a senior member of the Institute for Electrical and Electronics Engineers.

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Dr. DiMaria is a staff member in the applied research department and is currently working on the electrical and photoelectrical properties of thin film insulators. He joined IBM at the Thomas J. Watson Research Center in 1973 as a post-doctoral fellow. Dr. DiMaria received his B.S. in engineering physics with highest honors in 1968, his M.S. in physics in 1970, and his Ph.D. in physics in 1973, all from Lehigh University. He is a member of Phi Beta Kappa and Tau Beta Pi.

Norbert A. Feliss

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In 1973 Dr. Feliss joined IBM as a staff engineer at Boulder. He then spent a one-year sabbatical in the Research Division, San Jose, studying flexible media technology, and in 1975 returned to the tribology department in Boulder. Dr. Feliss is now on a sabbatical at the Hursley (United Kingdom) laboratory in a recording-head-contour development program; his current interests are head and media wear phenomena for flexible disk technology. Dr. Feliss received his B.S. in chemistry from the University of Notre Dame in 1969 and his M.S. in chemistry from Michigan State University in 1971. He went on to receive a Ph.D. in mechanical engineering in 1973 from Michigan State University.

Eduardo B. Fernández

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Dr. Fernández joined IBM in 1973 and is a staff member at the Los Angeles Scientific Center, where he is currently working on the design of a secure data base. Previously he was an associate professor at the University of Chile, Santiago, from 1963 to 1972. He received the degree of Ingeniero Electricista from Universidad Technica F. Santa Maria Valparaiso, Chile, in 1960, an M.S. degree in electrical engineering from Purdue University in 1963, and a Ph.D. degree in computer science from the University of California at Los Angeles in 1972. Dr. Fernández has been a lecturer at the Catholic University, Santiago, Chile, and in the Computer Science Department of the University of California at Los Angeles. He is a member of the Association for Computing Machinery and of the Institute for Electrical and Electronics Engineers.

Margaret A. Frisch

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Dr. Frisch joined IBM in 1968 and is a research staff member in the physical sciences department. She is currently interested in the kinetics and mechanics of thermal decomposition and desorption reactions in thin films, and also computer control and analysis, primarily as applied to mass spectrometry. In 1973 she took a sabbatical leave to the System Products Division, where she worked on the design of automated analytical

instruments. Dr. Frisch received her B.S. in chemistry from Nazareth College of Rochester and her Ph.D. in 1962 in physical chemistry from the University of Wisconsin. She is a member of the American Society for Mass Spectrometry, the American Chemical Society, and Sigma Xi.

Noel M. Herbst

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Dr. Herbst joined the Research Division at the Thomas J. Watson Research Center in 1963, where he worked on early studies of optical character recognition. He subsequently managed the programming of the experimental image processing system and investigated various topics in pattern recognition. Since 1973 he has been manager of the signature verification project, which is investigating automatic signature verification. Dr. Herbst received the B.S.E.E., M.S., and Ph.D. degrees from Cornell University in 1959, 1961, and 1963. He is a member of the Association for Computing Machinery and Sigma Xi.

Tomas Lang

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Dr. Lang received an electrical engineering degree from the University of Chile in 1963, an M.S. degree from the University of California at Berkeley in 1965, and a Ph.D. degree from Stanford University in 1974. He served as Professor of Electrical Engineering at the University of Chile from 1964 to 1973 and joined the Computer Science Department of the University of California at Los Angeles in 1974. His research and teaching interests are computer architecture, logic design, and parallel computers and computation.

Chao-Ning Liu

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Dr. Liu is currently a member of the signature verification group at the Thomas J. Watson Research Center; he joined the Research Laboratory in Poughkeepsie in 1957. His interests include techniques for automatic signature verification based on accelerometry and writing pressure patterns. He received the B.S. degree in electrical engineering in 1956 from South Dakota School of Mines and Technology and the M.S. degree in electrical engineering in 1957 from the University of Illinois. While on educational leave from IBM, he received the Ph.D. degree in 1961 from the University of Illinois. He was a visiting associate professor at Purdue University in 1968-69 and a visiting research professor at Academia Sinica in Taiwan in 1971-72. Dr. Liu is a member of the Association for Computing Machinery and the Institute of Electrical and Electronics Engineers.

Kiyoshi Maruyama

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Dr. Maruyama is a member of the computer sciences department at the Thomas J. Watson Research Center, which he joined in 1974. His current research is in computer communication networking, especially in developing algorithms for network design. He has also worked in the areas of data bases, picture processing, and computational complexity. He received a B.S. degree in 1968 in electrical engineering from Nihon University, Tokyo, Japan; an M.S. degree in 1970 and a Ph.D. degree in 1972, both in computer science, from the University of Illinois, Champaign-Urbana. From 1972 until 1974 he was a postdoctoral fellow at the Research Center. Dr. Maruyama is a member of the Association for Computing Machinery.

Jane M. Shaw

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Mrs. Shaw joined the Thomas J. Watson Research Center in 1966, where she has worked on the photochemical synthesis of small ringed compounds. She is currently a member of the lithography process project in the applied research department. Her current interests include characterization and modeling of optical and electron beam resists. She received her B.S. in 1962 from Elms College, Chicopee, Massachusetts.

Frank E. Talke

Research Division, San Jose, California

Dr. Talke joined IBM in 1969 at the Research laboratory and has been manager of a mechanics and hydrodynamics project in the applied science complex in San Jose since 1971. In this capacity he has been studying the mechanical aspects of magnetic recording technology. In 1971 he received an IBM Outstanding Contribution Award for his investigations in friction, wear, and lubrication of disk files. Dr. Talke has also taught graduate courses in friction wear and lubrication at the University of Santa Clara, California. He attended the University of Stuttgart, Germany, where he received a Diplom-Ingenieur degree (MS) in applied mechanics in 1965, and the University of California at Berkeley, where he received a Ph.D. in mechanical engineering in 1969.

Donald T. Tang

Research Division, Yorktown Heights, New York

Dr. Tang is currently manager of the teleprocessing system studies group in the computer sciences department at the Thomas J. Watson Research Center. His research interests include network flows, error-control coding, magnetic recording, system performance modeling and analysis, and communication system configuration. Before joining IBM in 1960 he received a B.S. degree in 1954 from the National Taiwan University and a Ph.D. degree in 1960 from the University of Illinois, both in electrical engineering. Dr. Tang is a member of the Association for Computing Machinery, Eta Kappa Nu, the Institute of Electrical and Electronics Engineers, and Sigma Xi.

Chak-Kuen Wong

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Dr. Wong joined IBM in 1969 as a member of the computer science department at the Thomas J. Watson Research Center. His current interests include abstract and concrete computational complexity theory, optimization problems related to data allocation, magnetic bubble memory structures, and theory of fuzzy sets. Dr. Wong received the B.A. degree in mathematics from the University of Hong Kong in 1965 and the M.A. and Ph.D. degrees in mathematics from Columbia University in 1966 and 1970. For the academic year 1972-73 he was a visiting associate professor of computer science at the University of Illinois, Urbana. He received an IBM Outstanding Invention Award in 1971 for a new family of sorting methods.

Lin S. Woo

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Mr. Woo is a member of the teleprocessing system optimization group of the computer science department at the Thomas J. Watson Research Center. His current interests involve the optimization of large computer networks and the analysis of queuing systems. He joined the Research Division in 1971. Prior to that, he worked at the IBM New York Scientific Center on mechanical and structural engineering problems. He received a B.S. degree in 1939 from the Chiao-Tung University in China and an M.S. degree in 1951 in mechanical engineering from the Virginia Polytechnic Institute. In 1970 he received the Levy Award from the Benjamin Franklin Institute of Philadelphia for his contribution to the *Journal of the Franklin Institute*.