

## Contributors to This Issue

FRANCIS J. BROPHY, B.S. (Mathematics), 1968, St. Joseph's College; M.S. (Mathematics), 1971, Stevens Institute of Technology; Bell Laboratories, 1968—. Mr. Brophy has been involved with software simulation of various data transmission techniques and most recently with the design of digital filters.

PETER CUMMISKEY, B.S. (Electrical Engineering), 1963, Fairleigh Dickinson University; M.S. (Electrical Engineering), 1966, and Dr.Sc. (Electrical Engineering), 1973, Newark College of Engineering; Bell Laboratories, 1962—. Mr. Cummiskey has designed experimental hardware for use in speech research. He has also been called upon to interface equipment to minicomputers and to program them. Mr. Cummiskey's most recent work has been with delta modulation and DPCM coding of speech signals. The work contributed to the paper in this issue was done in partial fulfillment of the requirements for the Doctor of Science degree at Newark College of Engineering.

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Stevens Institute of Technology; Bell Laboratories, 1961—. Mr. Foschini initially worked on real-time program design. Since 1965, he has been mainly engaged in analytical work concerning the transmission of signals. Currently, he is working in the area of data communication theory. Member, Sigma Xi, Mathematical Association of America, American Men of Science, New York Academy of Sciences.

RICHARD L. FRANKS, B.S.E.E., 1963, University of Washington; M.S. (E.E.), 1969, and Ph.D. (E.E.), 1970, University of California, Berkeley; Bell Laboratories, 1970—. Mr. Franks has done work in control theory and algorithms. His current interest is in the modeling and analysis of telephone traffic systems. Member, IEEE, Tau Beta Pi, Sigma Xi.

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HARRY HEFFES, B.E.E., 1962, City College of New York; M.E.E., 1964, and Ph.D., 1968, New York University; Bell Laboratories, 1962—. Mr. Heffes' work was previously in the areas of control theory, filtering theory, guidance and navigation problems, trajectory optimization, and error analyses. More recently, he has been concerned with modeling and analysis of telephone traffic systems. He has also been an Adjunct Associate Professor of Electrical Engineering at New York University. Member, Tau Beta Pi, Eta Kappa Nu.

NUGGEHALLY S. JAYANT, B.Sc., 1962, University of Mysore (India); B.E. (Distinction), 1965, and Ph.D., 1970, Indian Institute of Science, Bangalore; Research Associate, Stanford Electronics Laboratories, 1967-68; Visiting Scientist, Indian Institute of Science, January-March, 1972; Bell Laboratories, 1968—. Mr. Jayant has worked on

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S. LIN, B.A., 1951, University of the Philippines; M.A., 1953, and Ph.D., 1963, The Ohio State University; Assistant Professor of Mathematics, Ohio University, 1959–1962; Lecturer and Research Associate, The Ohio State University, 1962–1963; Visiting Lecturer, Princeton University, 1972; Bell Laboratories, 1963—. Since joining Bell Laboratories, Mr. Lin has been engaged in research on heuristic techniques to solve large combinatorial problems by computer and development of computer-oriented algorithms to solve problems in number theory and combinatorial analysis. Member, American Mathematical Society, Mathematical Association of America, SIAM, AAAS, Phi Kappa Phi.

ENRIQUE A. J. MARCATILI, Aeronautical Engineer, 1947, and E.E., 1948, University of Cordoba (Argentina); research staff, University of Cordoba, 1947–54; Bell Laboratories, 1954—. Mr. Marcatili has been engaged in theory and design of filters in multimode waveguides and in waveguide systems research. More recently he has concentrated on optical transmission media. Fellow, IEEE.

DIETRICH MARCUSE, Diplom Vorpruefung, 1952, Dipl. Phys., 1954, Berlin Free University; D.E.E., 1962, Technische Hochschule, Karlsruhe, Germany; Siemens and Halske (Germany), 1954–57; Bell Laboratories, 1957—. At Siemens and Halske, Mr. Marcuse was engaged in transmission research, studying coaxial cable and circular waveguide transmission. At Bell Laboratories, he has been engaged in studies of circular electric waveguides and work on gaseous masers. He spent one year (1966–1967) on leave of absence from Bell Laboratories at the University of Utah. He is presently working on the transmission aspect of a light communications system. Mr. Marcuse is the author of two books. Fellow, IEEE; member, Optical Society of America.

ARUN NETRAVALI, B.Tech.(Hons.), 1967, Indian Institute of Technology; M.S.(E.E.), 1969, and Ph.D., 1971, Rice University; Bell

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STEPHEN O. RICE, B.S. (Electrical Engineering), 1929, and D.Sc. (Hon.), 1961, Oregon State College; Bell Laboratories, 1930–1972. Mr. Rice has been concerned with theoretical problems related to electromagnetic wave propagation, signal modulation, and noise. At the time of his retirement from Bell Laboratories, he was head of the Communications Analysis Research Department. In 1965, Mr. Rice received the Mervin J. Kelly Award from the Institute of Electrical and Electronic Engineers. Fellow, IEEE.

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DAVID SLEPIAN, University of Michigan, 1941–1943; M.A., 1947, and Ph.D., 1949, Harvard University; Bell Laboratories, 1950—. Mr. Slepian has been engaged in mathematical research in communication theory and noise theory, as well as in a variety of aspects of applied mathematics. During the academic year 1958–59, he was a Visiting Mackay Professor of Electrical Engineering at the University of California at Berkeley and during the spring semesters of 1967 and 1970 he was a Visiting Professor of Electrical Engineering at the University of Hawaii. He now is Professor of Electrical Engineering at the University of Hawaii and shares his time between that institute and Bell Laboratories. He was Editor of the Proceedings of the IEEE

during 1969 and 1970. Fellow, IEEE, Institute of Mathematical Statistics. Member, AAAS, SIAM.

JULIAN STONE, B.S. (Physics), 1950, The City College, New York; M.S. (Physics), 1951, and Ph.D. (Physics), 1958, New York University; Bell Laboratories, 1969—. Mr. Stone taught at The City College from 1952 to 1953 and 1956 to 1958. He was at The Hudson Laboratories of Columbia University from 1953 to 1969 where he was Associate Director for General Physics and was active in underwater acoustics and optics. At Bell Laboratories, Mr. Stone has been working on problems in optical transmission. Member, American Physical Society.

JACK K. WOLF, B.S.E.E., 1956, University of Pennsylvania; M.S.E., 1957, M.A., 1958, and Ph.D., 1960, Princeton University. From 1963 to 1965, Mr. Wolf was a member of the Department of Electrical Engineering, New York University. From 1965 until June 1973 he served on the faculty of the Polytechnic Institute of Brooklyn, since 1969 in the capacity of Professor of Electrical Engineering. He is currently Professor and Chairman of the Electrical and Computer Engineering Department at the University of Massachusetts. During the academic year 1968-1969, Mr. Wolf was on leave of absence from the Polytechnic as a member of the Mathematics and Statistics Research Center, Bell Laboratories. He spent the year 1971-72 as a National Science Foundation Senior Postdoctoral Fellow at the University of Hawaii. Fellow, IEEE; member, AAAS, AAUP.

