

## 1996 PIONEER AWARD

### Dr. Kaneyuki Kurokawa

The Pioneer Award recognizes contributions that have had a major impact on the field and have stood the test of time. The basis for nomination is an archival paper in the field of interest of MTT-S, published at least 20 years prior to the year of the award. This award recognizes important technical contributions that have had a continuing impact on the practice of microwave engineering over the last several decades.

The recipient this year is Dr. Kaneyuki Kurokawa, a Life Fellow of IEEE. Dr. Kurokawa is well known for his many developments in microwave and optical components while working for Bell Laboratories and Fujitsu. He has been a Fujitsu Fellow since 1994.

The award consists of a plaque and an honorarium of \$2,000. His citation reads: FOR PIONEERING DEVELOPMENTS ON THE GENERAL THEORY OF MICROWAVE SOLID-STATE OSCILLATORS."

**Kaneyuki Kurokawa** was born on August 14, 1928 in Tokyo. He received the B.S. degree in electrical engineering in 1951 and the Ph.D. degree in 1958, both from the University of Tokyo. He developed the complete mode theory of microwave resonant cavities and derived for the first time their correct admittance. In 1957, he became Assistant Professor at the University of Tokyo. From 1959 to 1961, he worked on parametric amplifiers at Bell Laboratories, Murray Hill, on leave of absence from the University.

In 1963, he joined Bell Laboratories as a Member of Technical Staff and was later promoted to a supervisor. At Bell, he developed microwave balanced transistor amplifiers, millimeter wave path length modulators, the theory of microwave solid state oscillators, and initiated the development of optical fiber transmission systems. In his power wave paper, he presented the scattering parameter expressions of the stability factor  $K$ , the maximum transducer gain, and the condition for input and output simultaneous matching of two port networks. These S-parameter expressions became standard textbook material. His other contributions include the extension of the variational principle to the propagation constant of waveguides with lossy walls, the actual noise measure, the quality factor of digital switching diodes, and the dynamics of high-field domains in bulk semiconductors. In 1975, after the delivery of a half-dozen optical transmitter and receiver modules from Murray Hill to Holmdel for the Atlanta Experiment, Dr. Kurokawa left Bell to join Fujitsu.

At Fujitsu, he directed the efforts to develop optical fiber systems, array and simulation processors, Josephson junction IC's, and silicon on insulator technology. From 1985 to 1989, he was in charge of Fujitsu's Atsugi Laboratories, where HEMT devices and distributed feedback lasers were successfully developed. During this



period, in addition to his managerial duties, he personally clarified the head crash mechanism of hard-disks, which had plagued the hard-disk industry for almost a decade.

Dr. Kurokawa became Director of Fujitsu Laboratories in 1979, Managing Director in 1985 and Vice President in 1992. He has been Fujitsu Fellow since 1994. From 1986 to 1989, he also served as a Visiting Professor at the Institute of Industrial Science of the University of Tokyo. Dr. Kurokawa is the author of *An Introduction to the Theory of Microwave Circuits*, published by Academic Press in 1969. He is an IEEE Fellow, a member of the Association of Computing Machinery, and the Institute of Electronics, Information and Communication Engineers. He received the Certificate of Appreciation from the International Solid-State Circuits Conference in 1965.