1997 IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM DIGEST

Future International Microwave Symposia and Historical Exhibit

Future IEEE MTT-S International Microwave Symposia

1998-Baltimore, Maryland
June 7-12, 1998

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June 13-18, 1999

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2001-Phoenix, Arizonia
May 20-25, 2001

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2002-Seattle, Washington
June 3-7, 2002

Chairman: Donn Harvey, Metawave Communications Corp. (206) 869-7499, FAX (206) 869-2778

2003-Philadelphia, Pennsylvania
June 8-13, 2003

Chairman: Richard V. Snyder, RS Microwave, (201) 492-1207, FAX (201) 492-2471

2004-Fort Worth, Texas
June 7-12, 2004

Chairman: Karl Varian, Texas Instruments, (972) 995-3783, FAX (972) 995-4583

1997 International Microwave Symposium
Historical Exhibit

The IMS Historical Exhibit (located in the Colorado Convention Center, Exhibition Hall A) features a special exhibition and working demonstrations of the 19th Century millimeter-wave instruments of Sir Jagadis Chandra Bose. We honor the centenary of his 1897 presentation to the Royal Institution of London of his quasi-optical studies of 60 GHz radiation.

J.C. Bose, a distinguished Indian physicist, performed astonishing quasi-optical millimeter wave research actively from 1890 to 1900. He developed an elegant microwave spectrometer using high pass filters on a spark-gap generator, a semiconducting detector, diffraction gratings, dielectric lenses, microwave absorbers, rectangular waveguides and horn antennas. He ascertained the polarizing properties of many organic and inorganic substances including chiral materials using ingenious crossed grating polarimeters. Some of Bose's designs remain state-of-the-art! The Kitt's Peak Observatory recently developed a 200 GHz attenuator based on one of his drawings.

In honor of the centenary, the 1997 IEEE MTT-S International Microwave Symposium has arranged a display of much of Bose's original equipment and components. Many of these are in operating condition and will be demonstrated on site. In conjunction with the display, the IMS technical program includes a special session dedicated to the centenary. Session WE2C: "Millimeter and Submillimeter waves-J.C. Bose Memorial Session" chaired by Kris Agarwal and J.W. Dees features two excellent invited talks on the work of Bose: "The Work of Jagadis Chandra Bose: 100 Years of mm-Wave Research" by D.T. Emerson, Kitt's Peak Observatory, Tucson, Arizona & "Sir J.C. Bose and Radio Science" by A.K. Sen, Calcutta University, India.

The 1997 IMS owes a debt of gratitude to a number of people for making the Bose activities possible: Mr. A.K. Sen for making arrangements to demonstrate instruments plus giving a paper, Mr. Dibakar Sen of the J.C. Bose museum in Calcutta for arranging shipment of the instruments, Darrell Emerson for suggesting the idea of celebrating this Centenary at the IMS and for contributing a paper to the Special Session, Michael Marcus of the FCC for bringing the idea to the IMS 1997 Steering Committee, and Roger Marks of NIST for developing the ideas of a Special Session and Historical Exhibit. The IMS 1997 Steering Committee provided financial support.

In addition to the special Bose display, the Historical Exhibit includes:

1. A special exhibit of early reference standards of power, attenuation and noise plus standard gain horns developed by the U.S. National Institute of Standards and Technology (formerly NBS). A focused session entitled "Microwave Metrology and Standards: A Historical View" (Session TH1B, 8 am, Room A209 CCC) will feature talks relating to development of these standards. The session organizer and Chair is Dr. Robert A. Kamper, former Director of the NIST Boulder Laboratories.
2. The MTT-S library of books tracing the early exposition of microwave theory and important experimental results, and a videotape depicting historical developments in microwaves.
3. A portion of the permanent Historical Electronics Museum of Baltimore, Maryland including hardware, photographs and other artifacts covering the development of microwave devices dating back to the 1930's. Included are early vacuum tubes, klystrons, magnetrons, traveling wave tubes plus recent MMIC chips and modules. Newer additions to the permanent MTT historical exhibit include a MERA solid-state phased array and EAR antennas developed for the Air Force.

The Historical Exhibit is open during all regular Exhibition Hours (9 a.m. to 5 p.m. on Tuesday and Wednesday, 9 a.m. to 3 p.m. on Thursday). We encourage attendees to visit the Historical Exhibit during the Symposium.