Focus and Special Session Information for IMS2009

IMS 2009 has arranged for Focus and Special Sessions to receive contributions from all sources. If you believe your contribution is appropriate for one of these sessions, please feel free to submit your paper to that session. Be sure to include your second and third submission options in case the special or focus session becomes full.

Below, please find the "*short*" and ("*full*") titles and a more detailed description of these sessions, for your information.

Focus Session: "*Mixed Technology*" (Mixed Technology Circuits – COSMOS)

The COmpound Semiconductor Materials on Silicon (COSMOS) program is developing processes for the fine-scale heterogeneous integration of Compound Semiconductor devices with standard Silicon CMOS and to establish that this integration enables superior performance in specific mixed-signal circuit demonstrators.

Focus Session: "*Terahertz CMOS*" (CMOS Terahertz Electronics)

High cost and low level of integration of III-V devices utilized for THz systems have limited their wide use. The improvements in high frequency capability of CMOS to f_T and f_{max} greater than 400 GHz, as well as the expected continuation of this trend have made it possible to consider CMOS as an alternative means for realization of THz systems. This session will present the status of CMOS technology and its future as well as several examples of CMOS components operating at high millimeter-wave and low sub-millimeter wave regime

Focus Session: "*Design Optimization*" (Computationally Efficient Microwave Design Optimization Methods)

Due to the increasing complexity of microwave devices, EM-based optimization becomes indispensable, but more difficult. Traditional optimization that directly utilizes the EM-simulated responses typically fails or is impractical because of the high computational cost. As a consequence, there is a shift to alternative optimization and modeling methodologies, especially ones that exploit computationally cheap surrogate models.

Focus Session: "*Positioning Systems*" (Advances in RF Positioning Systems)

Over the past decade a wide range of civilian, consumer and military applications have become increasingly dependent on reference systems that provide precise position, velocity, and timing information for both static and mobile platforms. This has propelled positioning systems research into three areas of development: modernization of satellite positioning systems, high performance receivers in challenging environment, and non-GPS based positioning devices using RF and optical signals of opportunity (SOP).

Focus Session: "*Superconductor Technology*" (Recent Advances in Microwave Superconductor Technology)

It is well known, that cooling electronics to cryogenic temperatures will significantly improve performance and after the discovery of High Temperature Superconductor (HTS) materials, there was great interest within the microwave community to exploit these materials in microwave and millimeter wave devices and components and there was a flurry of activity within the microwave community. This session will present a number of recent advances in the applications of superconducting materials and devices in the microwave and terahertz frequency regions of interest to the MTT-S community

Special Session: *"Boston History"* (Microwave History of the Boston Area)

The Boston area is rich in microwave history from the refinement of the magnetron for high volume use in radar transmitters to the microwave oven to the design and use of advanced MMIC technology. This special session will highlight the work of companies and individuals in the greater Boston area that have advanced the state-of-the-art in the area of microwave design.

Special Session: *"Collaborative Research"* (Industry/University Collaborative Research)

Over the past few decades internal R&D groups seem to have vanished at most companies. This does not reflect a lack of interest in basic and applied research, rather an unwillingness of most companies to carry the costs of such groups. An alternative to the internal R&D group can be found in collaborative research programs between industry and academia. This session explores some of the strengths and challenges of these collaborative programs, with presentations from both industry and academia.