An Overview of the IMS2000 Technical Program

Peter W. Staecker, *Fellow, IEEE,* and Manfred J. Schindler, *Senior Member, IEEE*

I. Introduction

THE 2000 IEEE International Microwave Symposium (IMS2000) featured an excellent and varied Technical Program. It was also a year of innovation in process of creating the Technical Program. A new electronic infrastructure was developed and utilized. The excellence of the Technical Program is the result of the contributions of many, including those who created the new electronic infrastructure, the reviewers, the volunteers on the IMS2000 Committee, and, most importantly, the authors of this TRANSACTIONS papers.

II. Technical Sessions

As in previous years, the contributed papers formed the centerpiece of the Technical Program. A Technical Program Committee (TPC) made up of 246 members in 31 subcommittees reviewed a record total of 845 contributed papers. The 54% acceptance rate emphasized the highly competitive nature of paper submission. Of the 456 accepted papers, 184 (40%) were accepted as full-length podium papers, 123 (27%) were accepted as short podium papers, and 149 (33%) were accepted for presentation in the Interactive Forum. In addition to the technical areas represented by the 31 technical subcommittees, we found it appropriate to convene two *ad hoc* review committees in the areas of microelectromechanical systems (MEMS) and linearizers. There was a dramatic and unanticipated increase in submissions in these two areas, and also in ferroelectrics.

The presented papers were organized into 53 technical sessions over three days. Included in these sessions were three focused sessions and four special sessions. The focused sessions addressed areas that received a large number of contributed papers: "Micromachining and MEMS Technology," "Ferroelectric Devices," and "Power Amplifier Linearization." The Special Session topics of "X-Band T/R Modules," "Biological Effects and Medical Applications," "Applied Sensor Technology," and "Photonic Synthesis on Microwave Signals" were selected in advance by the TPC, and papers were invited. All invited papers were reviewed and accepted to the same standards as the contributed papers.

IMS2000 also had joint sessions with the RF Integrated Circuit (RFIC) and Automatic RF Techniques Group (ARFTG) Symposia. There were three joint sessions with the RFIC, and they included some papers submitted to IMS2000 and some submitted to the RFIC. There was a single joint session with the ARFTG Conference, and due to the different submission schedule of the ARFTG, the joint session included papers of ARFTG interest which had been contributed to IMS2000.

The Interactive Forum continues to grow as a popular and effective format to exchange technical ideas. This year, the Interactive Forum was extended to three afternoons, resulting in a more spacious and comfortable setting. The Interactive Forum sessions were very well attended and very successful.

III. Electronic Submission

IMS2000 broke new ground by using electronic (paperless) techniques throughout the submission, review, and publishing processes. Of particular interest is the electronic registration and submission of the paper summaries. In previous years, all paper summaries were submitted by mail, thus, IMS2000 made both electronic submission via the Internet and conventional submission via mail available. Of the 945 total paper summary submissions to IMS2000 and the RFIC, only eight papers (or 0.85%) were submitted using conventional mail. The electronic submission process worked well, but was not without problems. We received over 1300 electronic submissions, yielding 945 paper summaries. Duplicate submissions accounted for nearly every excess summary. In some cases, authors sent revised versions of a paper summary, but in many cases, authors inadvertently submitted a paper more than once. Culling the real paper submissions from all the electronic submissions was a significant manual task. Papers with technical problems were also a significant issue. A total of 138 paper summaries (or 15% of all paper summaries) had technical problems. These problems were primarily due to nonstandard fonts used in PDF submissions and overlength submissions and large files. These were all returned to authors for correction. These problems are being corrected for the 2001 submission process.

It is interesting to review the dependence of submission rate on time. Clearly, many of our contributors waited until the last moment. Fig. 1 shows both the cumulative submissions with time and the submission rate. The submission rate reaches a significant peak on the submission deadline of Monday, December 6, 1999, with a smaller peak on the preceding Friday. There continue to be submissions after the deadline, which represent corrections requested of the authors.

IV. Workshops

Workshops are also of growing interest to our attendees, who submitted a total of 4296 registrations to IMS2000 Workshops. A total of 30 sessions on a varied range of topics (22 of the workshops were full day sessions, and the remaining eight were half-day sessions) were spread over three days. We also innovated with the Workshops this year. Workshop topics were selected from those recommended to the TPC via the Internet. No

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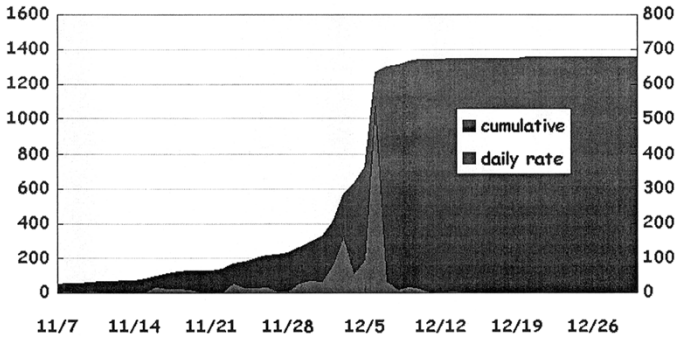

Fig. 1. Electronic submission of paper summaries to IMS2000 with time, both cumulatively and daily rate.

suggestions were accepted without the identification of an organizer and a list of presenters. At the symposium, in addition to the traditional hardcopy of the workshop notes, all technical registrants received a CD-ROM containing the workshop notes for all the workshop sessions.

V. Panel and Rump Sessions

Panel and rump sessions continue to be a popular forum for technical interchange. We organized five noontime panel sessions over four days, and one rump session on Tuesday evening. The topics of the sessions were all of keen interest. A total of 2175 registrations were recorded for panel and rump sessions. We found it necessary to limit the attendance to some panel sessions because the rooms were full. Our primary panel session room had a capacity of 500 people. The topics of the panel sessions were varied, including sessions on SiGe versus GaAs, high data-rate communications, RF MEMS, devices for high-speed fiber optics, and on low-cost LMDS terminals. The Tuesday evening rump session topic was "Wide Bandgap Microwave Power Transistors."

VI. Student Paper Competition

Once again, a Student Paper Competition was held as part of the IMS. Entries to this competition are taken from the papers submitted to the IMS. In order to be eligible for the competition, the primary author must be enrolled as a full-time student at the time the work was done. Of the 945 papers submitted to the IMS and RFIC, 169 were eligible for the Student Paper Competition. Of the 169 submitted, 98 were accepted through the standard review/acceptance process from which the TPC then selected 24 finalists for the competition. All finalist papers were presented in podium and interactive forum settings, and were judged by a panel of 12 senior members of the TPC. Awards were presented at the Student Paper Luncheon on Thursday.

VII. Overall Technical Program

The IMS2000 Technical Program was comprehensive and successful. In addition to the areas highlighted above, the Technical Program covers many other areas. The CD-ROM is now a standard IMS feature, and was included with all technical registrations (of which there were 2824). Included on the disk this year were a number of free software programs of interest to microwave engineers. A traditional paper digest, this year in three volumes, remained available for IMS2000, since many of our attendees (a total of 1901) continue to desire the optional paper digest. The Historical Exhibit is a popular component of the Technical Program. This year it featured displays throughout the large corridor adjoining the technical sessions, as well as a daily talk by Prof. Karl Stephan on "Marconi and Microwaves." The micro-applications sessions continue to be a forum for exhibitors to present technical topics related to their products, with sessions running through the days of the exhibition.

The success of the IMS2000 Technical Program is a direct result of the efforts of the hundreds of volunteers responsible for its production, the authors of the technical presentations, who provided the content, and the thousands of attendees who manufactured and experienced the interaction.

Peter W. Staecker (S'63–M'72–SM'87–F'95) received the B.S. degree from the Massachusetts Institute of Technology (MIT), Cambridge, and the Ph.D. degree from the Polytechnic Institute of Brooklyn, Brooklyn, NY, both in electrical engineering.

While with the MIT Lincoln Laboratory, Cambridge, he designed microwave devices and circuits, and developed measurement techniques for their application to satellite communications. As Director of Engineering in the Corporate Research and Development Center, he helped facilitate the company's transition from government to commercial focus. In 1998, he retired from AMP M/A-COM as Director of Research and Development. He serves on the Editorial Advisory Review Boards on *Microwave Journal*, *Applied Microwave and Wireless Magazine*, and Artech House Publishers, Norwood, MA.

Dr. Staecker has served for many years in technical and administration capacities in the IEEE Microwave Theory and Techniques Society (IEEE MTT-S). He was general chair of the 1991 IEEE MTT-S International Microwave Symposium (IMS) and was technical chair of the 2000 IEEE MTT-S IMS. He served as president of the IEEE MTT-S in 1993 and is current its awards chair. He is the Division IV director-elect for the year 2000. In addition to his IEEE activities, he has chaired the Technical Working Group on RF Components, National Electronics Manufacturing Initiative from 1996 to 1999, and is a member of the National Research Council NIST-EEEL Assessment Panel.

Manfred J. Schindler (S'78–M'79–SM'92) received the B.S.E.E. degree from the School of Engineering and Applied Sciences, Columbia University, New York, NY, and the MSECE degree with a concentration in microwave engineering from the School of Engineering, University of Massachusetts, Amherst, in 1982.

He is currently the Director of the RF Micro Devices Boston Design Center, Boston, MA, where he is engaged in the development of commercial mixed-signal, RF, and microwave integrated circuits for wireless and broad-band communications applications. He was previously Manager of Segment Systems Architecture for Wireless Products at the IBM Microelectronics Division, Engineering Manager for ATN-Microwave, and manager of the Microwave Circuits Research Laboratory, Raytheon Advanced Device Center and Research Division. He has been involved in the development of a number of GaAs microwave and millimeter-wave integrated circuits, GaAs technology, microwave and millimeter-wave measurement systems, and RF SiGe commercial applications.

Mr. Schindler has been an elected member of the IEEE Microwave Theory and Techniques Society (IEEE MTT-S) Administrative Committee since 1994, and has chaired the society's meetings and symposia, operations, electronic information, and marketing and publicity committees. He currently chairs membership services. In 1993, he was secretary of the IEEE MTT-S. He has also served on the GaAs Integrated Circuit Symposium Technical Committee and the IEEE International Microwave Symposium (IEEE IMS) Technical Program Committee. In 2000, he was Technical Program co-chair for the IEEE IMS held in Boston, MA. He was a Raytheon Microwave Scholar.