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# SOLID-STATE CIRCUITS



IEEE Solid-State Circuits Society Quarterly Newsletter

## MEMS Interface Circuits Workshop

MicroElectroMechanical Systems (MEMS) and their interface circuits is the focus of the Solid-State Circuits and Technology Committee Workshop this fall. MEMS technology permits the fabrication of complex, mechanical shapes on a micron scale, using batch processing similar to that used by integrated circuit manufacturers.

The SSCTC workshops are interactive meetings of experts in disciplines related to IC design. Neither tutorials nor short courses, the workshops are informal with no written digest. Attendees are active

in the field of the workshop. The speakers discuss the latest developments in their work and there is significant time allocated for audience participation and discussion.

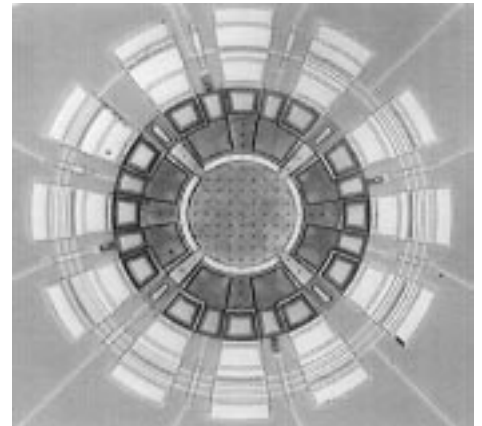
With a new generation of micro mechanical sensors and actuators arising, interfacing to these transducers presents new implementation opportunities and challenges to the circuit engineers. Topics are still being finalized but workshop speakers will present circuit-oriented work in areas such as these:

- capacitive sensors requiring sub femtofarad resolution and noninvasive stimulation;
- high-Q resonant structures for oscillators and micro-mechanical mixers and filters;
- variable capacitors and suspended inductors for high frequency tuned oscillators;
- suspended resistive bridges for low thermal time constant;
- 2-D Hall sensors and magneto-transistors;
- closed loop, e.g., force-balanced and/or levitated, sensors and actuators;
- large transducer arrays which demand low-noise, power-efficient circuits;
- CAD and process technology for integrated MEMS and circuit chips.

For more up-to-date information about the workshop, please consult the web site:

<http://www.sscs.org/ssctw/oct99/>

The workshop is scheduled for October 14-15, 1999 at the Key Bridge Marriott, in Arlington, VA just



I. Lyusternik of Case Western Reserve University will discuss the interface circuits to this micromotor with electrostatic bearings at the day and a half interactive workshop of experts on interface circuits for MEMSF scheduled October 14, 15 in the Washington, DC area.

across the Potomac River from Washington DC. The workshop will consist of approximately twenty 30-minute talks spread over one and a half days, Thursday and Friday morning. Mid-morning and mid-afternoon coffee breaks, in addition to lunch and reception on Thursday evening, are planned to allow participants to interact. Attendance is limited and pre-registration is required. Inquiries on agenda, registration, and local arrangements should be addressed by fax or e-mail to:

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Courtesy Associates  
fax: 202-973-8722,  
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Coordinators: Darrin Young and Steve Garverick (Case Western Reserve University)  
tel: 216-368-6436,  
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## SSCS Conference Announcer: Electronic news about Society technical meetings

To keep in touch with the news about IEEE Solid-State Circuits conferences, meetings, symposia and workshops, SSCS is establishing an electronic mailing list.

The SSCS Conference Announcer email list plans occasional notices, calls for papers, and late-breaking conference and workshop news. The announcements will only come from the Society Executive Office to minimize "spamming." Subscribers to the list will receive between 6 and 12 announcements a year.

The SSCS Newsletter and web site are still the most dependable and regular sources for this information. The email communication will be for quick notification of important developments. Subscribers can benefit from notices of changes in paper submission deadlines or revisions to

the topics of calls for papers without monitoring WEB page on a regular basis. Subscribers can be notified about late-breaking decisions on premier speakers at Society sponsored meetings. Many SSCS members have already received their first notice through this new electronic service. If you would like to be added to the email distribution follow the boxed instructions.

The SSCS Conference Announcer is not limited to SSCS or IEEE members only, so you may recommend this service to other colleagues who may not have joined.

To ensure your continued receipt of email announcements, IEEE members should consider getting an IEEE alias.

To subscribe to the SSCS Conference Announcer, send a message to:

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With the following command in the body of the email message:

**subscribe sscs-conf youremail@address**

Youremail@address is referring to your complete email address or standard alias address.

Send questions to *sscs@ieee.org*.

*First\_initial.lastname@ieee.org.*

The alias is good as long as you stay a member and keep the alias updated to your current real address. This alias service also provides virus scanning and is free to all members. Set up your alias at this URL

*[http://elecomm.ieee.org/  
personal-aliases.html](http://elecomm.ieee.org/personal-aliases.html)* ●

## ESSCIRC '99 Preview

The European Solid-State Circuits Conference (ESSCIRC) is a major forum to present, discuss, and exchange new ideas in the area of microelectronic circuits. It is an annual event and it rotates among different European countries. Though European in name, this is a truly international conference attracting numerous overseas attendees and contributors, especially from North America and Far East. The conference traditionally addresses analog, digital, and mixed analog/digital solid-state circuit design and other closely related topics.

This year the 25th ESSCIRC will take place on September 21-23 in Duisburg, Germany. The Organization Committee is chaired by Prof. G. Zimmer, while the Technical Programme Committee is under the chairmanship of Prof. B. J. Hosticka. Both chairmen are with the Fraunhofer Institute of Microelectronic Circuits and Systems in Duisburg. As are Mrs. C. Metz, the Conference Secre-

tary, and Mrs. S. Roß who handles local arrangements. Conference Vice-chairmen are Prof. W. Spletstoßer, Siemens in Duesseldorf, and Dr. K. Weyer, EL MOS in Dortmund. Permanent Secretary of the ESSCIRC conference series is Prof. H. Grünbacher, Villach, Austria.

ESSCIRC'99 will adhere to the tradition of the previous ESSCIRC conferences and feature over 60 regular papers and about 40 poster presentations in the areas of analog ICs, RF circuits, mixed analog/digital circuits, communication circuits, data conversion, digital systems and processors, smart sensors and imagers, neural networks and fuzzy logic and memories, smart power, and design methodologies. The deadline for paper submission was April 9 and the meeting of the Technical Programme Committee that selects



The Fraunhofer Institute of Microelectronic Circuits and Systems in Duisburg is host of this year's 25th ESSCIRC to be held on the Duisburg University campus. The Institute is a contributor to the economic transformation of the Ruhr Valley in microelectronics. The meeting venue is less than a 10 minute bus ride from the center of the city of Duisburg which is served by the Duesseldorf and Cologne airports.

papers for presentation was scheduled May 18. The Final Programme has been available for distribution since June.

The oral presentations of accepted regular papers will be organized in three parallel sessions while the poster session will be concentrated on one late afternoon. In addition there will be seven plenary talks

featuring invited speakers. Here, renowned experts will address important current topics. Finally two workshops will accompany ESSCIRC'99, one on RF Circuits, chaired by Dr. T. Wagemans of Philips on September 20, and the other on Integrated Systems by Prof. H.-L. Fiedler of Fraunhofer IMS on September 24. The registration for the workshops will be handled separately on a space available basis.

The conference will be held on the campus of the University of Duisburg, quite close to the Fraunhofer Institute of Microelectronic Circuits and Systems. The university campus can be reached by bus in less than ten minutes from the center of the city of Duisburg where the main railway station and most of the hotels are located. Duisburg itself is extremely accessible. There are two major German airports in its vicinity, Duesseldorf and Cologne. From Duesseldorf International Airport it takes about 20-25 minutes directly by suburban railway to reach the Duisburg main railway station. Duisburg is also a major German railway hub and can be easily reached by train from all over Germany and Europe. In addition, it is well connected to the maze of the German Autobahn system although the Ruhr Valley suffers from frequent traffic congestion especially during the rush hours.

The city of Duisburg lies at the confluence of the Rhine and the Ruhr rivers and is one of the most important cities of the Ruhr Valley. This is the industrial heartland of Germany with history going back to 19th century when steel plants and coal mines dotted the valley. But in the second half of this century the need for replacement by new industries arose. For this reason in the seventies and eighties the local government of the State of North Rhine-Westphalia started a major restructuring effort of the Ruhr Valley. New industries were created, including microelectronics, that are contributing to the economic transformation of the area. Hence, ESSCIRC'99 taking place in Duisburg is recognition of the excellent progress the Ruhr Valley has made in the industrial restructuring.

We welcome you to attend ESSCIRC'99. For more information visit the ESSCIRC website at [www.esscirc.org](http://www.esscirc.org) or contact the conference secretary, Mrs. C. Metz (phone: +49/2 03/37 83-2 10, fax: +49/2 03/37 83-2 78, email: [metz@ims.fhg.de](mailto:metz@ims.fhg.de)).

### Highlights of the Conference

#### Invited speakers

- Keynote Speaker: S. Mehrgardt, Siemens, Germany

- K. Itoh, Hitachi, Japan: VLSI Memory Technology: Current Status and Future Trends
- J. Fenk, Siemens, Germany: Highly Integrated RF-ICs for GSM, DECT and UMTS Systems: A Status Review and Development Trends
- L. Thylen, University of Stockholm, Sweden: Comparing and Combining Photonics and Electronics in Information Transmission and Processing
- Ch. Svensson, University of Linköping, Sweden: High Speed Electronics Interfacing Fibre Networks
- B. Murari, STM, Italy: Automotive Semiconductor Technologies for the New Millenium
- A. Theuwissen, Philips Imaging Technology, Eindhoven, The Netherlands: CCD or CMOS image sensor for digital photography?
- D. Hammerschmidt, Fraunhofer IMS, Germany: Sensor Systems - Interface between Microelectronics and Physical Environment

#### Workshops

- RF Circuits — Organizer: T. Wagemans, Philips, The Netherlands
- Integrated Systems — Organizer: H.-L. Fiedler, Fraunhofer IMS, Germany ●

## Reflections on the 1999 ISSCC

### by Stewart Taylor, Program Chair

As a service to Solid-State Circuit Society members, the ISSCC99 program subcommittee chairs and several of their subcommittee members have selected and commented on some of the significant papers presented at the 1999 ISSCC in each of their respective disciplines. We hope you find it interesting.

#### Analog

Paper #18.6, "A 6b 500MS/s CMOS Flash ADC with a Background Interpolated Auto-Zeroing Technique," by K. Yoon et al. of Seoul National University, presented a circuit that

achieves a high sampling rate in a 0.6- $\mu$ m technology through the use of off-set cancellation rather than large transistor dimensions.

Paper #23.1, "A 450kHz CMOS Gm-C Bandpass Filter with +/-0.5% Center Frequency Accuracy for On-Chip PDC IF Receivers," by H. Yamazaki et al. of Fujitsu, described a bandpass filter tuning technique based on the natural frequency of the filter in response to a step input. The accuracy achieved using this method is one order of magnitude higher than that of other techniques. Finally, paper #23.3, "A 2.5 Gb/s Adaptive Cable Equalizer," by M.

Did you miss a "hot" presentation during the busy 1999 ISSCC schedule? The accompanying retrospective comments on some of the significant selections. See the November and December issues of the JSSC for journal length papers of selected presentations.

Shakiba of Gennum Corporation, presented the fastest equalizer built in silicon technology. With 100 meters of cable, the circuit provides an open eye with a peak-to-peak jitter of 80 ps.

#### Memory

Paper #11.2, "A 500MHz 1.5MB Cache with On-Chip CPU," by J. Lachman, et al. of Hewlett Packard, described three 0.5MB embedded SRAM arrays  
*Continued on next page →*

## Reflections *continued*

that achieve 16GB/s aggregate bandwidth with 2ns cycle time *and* latency. Paper #11.6, "An 18Mb, 12.3GB/s CMOS Pipeline-Burst Cache SRAM with 1.54Gb/s/pin," by C. Zhao, et al. of Intel, presented a very large SRAM with 770MHz DDR on 64 pins. SRAM was challenged by DRAM with a combination of speed and size in paper #24.4, "64Mb 6.8ns Random Row Access DRAM Macro for ASICs," by T. Kimura, et al. of NEC. Paper #6.6, "A 130mm<sup>2</sup> 256Mb NAND Flash with Shallow Trench Isolation Technology," by K. Imamiya, et al. of Toshiba, described the smallest 256Mb flash die using 0.25µm STI Technology. Additionally, it achieved a fast program time of 200µs/ 1Kbyte(one page). Finally, paper #24.7, "A 390mm 16-bank 1Gb DDR SDRAM with Hybrid Bitline Architecture," by T. Kirihaata, et al. of IBM, demonstrated an array efficiency of 67% and 1.6 GB/s data rate.

### Signal Processing

Paper #19.1, "A Single-Chip Universal Digital Satellite Receiver with 480MHz IF Input," by A. Kwentus et al. of Broadcom, presented significant achievements in the level of mixed-signal integration. This 1.2M transistor, 0.35µm CMOS chip contains two 8-b A/Ds operating at 128MHz sample rate on the same substrate as a digital BPSK/QPSK/OQPSK receiver, Viterbi decoder and Reed-Solomon decoder. Paper #19.2, "A Single-Chip Universal Cable Set-Top Box/Modem Transceiver," by L. J. D'Luna et al. of Broadcom, described a milestone in the integration of cable modem components. It is the first reported chip that incorporates both the burst-rate upstream modulator together with two downstream demodulators (1 for TV and 1 for access control). Paper #2.5, "260 Mb/s Mixed-Signal Single-Chip Integrated System Electronics for

Achieving a fast program time of 200 µs/1Kbyte, Imamiya described the smallest 256 Mb NAND flash die using 0.25µm STI technology.

Magnetic Hard Disk Drives," by S. Nemazie et al. of Cirrus Logic, presented the first IC that integrates the four major VLSI functions required in magnetic hard disk drive systems. This CMOS IC contains a read channel, an ATA hard disk controller, a micro-controller (with an ARM RISC µP, ROM, and RAM), and a motion-control servo block. Paper #2.4, "360Mb/s (400MHz) 1.1W 0.35µm CMOS PRML Read Channels with 6 Burst 8-20x Oversampling Digital Servo," by S. Sutardja of Marvell Semiconductor, presented a CMOS IC that targets high capacity, low-power disk drives and achieves a 360 Mb/s channel rate in an industry-standard 0.35 µm digital CMOS process. Paper #14.1, "A 0.5µm CMOS ADSL Analog Front-End IC," by J. Cornil et al. of Alcatel Bell, and paper #14.2, "A CMOS Analog Front-End IC for DMT," by C. Conroy et al. of DataPath Systems, described high performance analog front ends for DMT-based (Discrete Multi-tone)

ADSL systems, operating with full data rate (1.5MB/s) over 18kft phone lines. Paper #14.7, "A 52Mb/s Universal DSL Transceiver IC," by R. Joshi et al. of Broadcom, described a fully integrated QAM-based VDSL system with up to 52Mb/s data rate. Paper #15.1, "A Microprocessor with 128b CPU, 10 Floating-Point MACs, 4 Floating-Point Dividers, and MPEG2 Decoder," by K. Kutaragi et al. of Sony, described a highly integrated system with multiple processing units suitable for the hand-held game market. This complex chip contains a MIPS-compatible CPU and two floating-point vector units, an image processing unit, and 10-channel direct memory access controller. Paper #15.3, "A 2.5GFLOPS

A milestone in the integration of cable modem components for set-top boxes, D'Luna et al. reported the first chip to incorporate both the burst-rate upstream modulator together with two downstream demodulators.

6.5 Million Polygons per Second 4-Way VLIW Geometry Processor with SIMD Instructions and a Software Bypass Mechanism," by N. Higaki et al. of Fujitsu, described a high-performance graphics processor with all bus unit interfaces on-chip for seamless integration into PC systems.

### Digital

Papers #25.3 and #25.7 by M. Canada et al., and D. Allen et al., of IBM, presented the first functional processors in partially depleted SOI technology resulting in a 20% improvement in clock frequency. Solutions to SOI circuit design issues were also discussed for the first time. Paper #5.1, "A 500MHz 64b RISC CPU with 1.5MB On-chip Cache," by P. Barnes of Hewlett Packard, describes a processor with over 100 million transistors in a 0.25µm process (75% are in the large L1 cache) with the highest reported performances at SPECint95 of 30 and SPECfp95 of 50. Paper #5.4, "A 7th Generation x86 Microprocessor," by S. Hesley et al. of AMD, presented a completely new architecture supporting 3 instructions

per cycle to independent integer and floating point schedulers with advanced high-speed logic circuits that allow operation above 500MHz. Paper #5.7, "A 600Mhz IA-32 Microprocessor with

Enhanced Data Streaming for Graphics and Video," by S. Fisher et al. of Intel, described a next generation P6 processor with up to 650MHz operation, 70 new IA-32 instructions, and 8 new 128b registers, implemented in a 0.25µm process.

### Communications

Paper #22.4, "A 60dB Gain 55dB Dynamic Range 10Gb/s Broadband SiGe HBT Limiting Amplifier," by Y. Greshishchev et al. of Northern Telecom, described a limiting amplifier in

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SiGe HBT technology for low-cost 10Gb/s fiber-optic applications with a sensitivity of 3.5mVpp, >60dB gain, and AM to PM conversion <5ps. Paper #22.6, "15mW 155Mb/s CMOS Burst-Mode Laser Driver with Automatic Power Control and End-of-life Detection," by E. Sackinger et al. of Lucent Technologies, presented a burst-mode laser driver for the customer-end of an ATM-based passive optical network (PON). This 155Mb/s, low-power, laser driver automatically adjusts the current in the laser to maintain constant (+/-5%) output power over temperature, data patterns, and power supply variations. Paper #9.5, "A 622Mb/s 256k ATM Resource-Management Circuit," by Phillippe Gallay et al. of France Telecom, described a circuit architecture for a traffic and control algorithm needed to resolve conflicts from multiple connections arriving at the switch. Paper #13.1, "A Wide-Band Direct Conversion Receiver for WCDMA Applications," by Parssinen et al. of the University of Helsinki, presents the first prototype chipset for a direct conversion receiver that uses wideband code-division multiple access (WCDMA) at 2GHz. The front-end noise figure is 5.3dB while the image-reject downconverter has a very high IIP2 (+60dBm), as required for direct conversion.

Nemazie et al. described the first CMOS IC that integrates the four major VLSI functions required in magnetic hard disk drive systems; a read channel, an ATA hard disk controller, a microcontroller and a motion-control servo block.

### Imagers & MEMS

Paper #7.6, "A CMOS Micro Touch Pointer," by N. Manaresi et al. of the University of Bologna, presented a new idea for miniature track ball pointing devices for portable applications such as palmtop and credit-card size computers. Paper #7.7, "A 100

A 20% improvement in clock frequency by using partially depleted SOI technology for functional processors was described for the first time along with new solutions to SOI circuit design issues in papers by Canada et al. and Allen et al.

Frame/s CMOS Active Pixel Sensor for 3D-Gesture Recognition System," by H. Miura et al. of Toshiba, described a new technique to analyze the complicated 3D motion of an object by a PC in real time. Multiple technologies of CMOS image sensors and real-time signal processing methods produced a compact system capable of human/object gesture recognition at 100 Frame/s. Paper #17.3, "An Integrated 800x600 CMOS imaging System," by W. Yang et al. of Hyundai, presented a high resolution CMOS imager derived from a DRAM process rather than a conventional logic processes. The result is enabling additional imaging functions including data buffering, data correction, and increased flexibility through programmability.

### Technology Directions

Paper #4.1, "How SiGe Evolved into a Manufacturable Semiconduc-

tor Production Process," by S. Subbanna et al. of IBM, and paper #4.2, "A DECT Transceiver Chip Set Using SiGe Technology," by M. Bopp et al. of TEMIC showed that SiGe has moved from R&D into commercial applications. Paper #4.5, "High Frequency Analog Filters in Deep-Submicron CMOS Technology," by R. Castello et al., and paper #4.6, "Analog Broadband Communication Circuits in Pure Digital Deep-Sub-Micron CMOS," by K. Bult of Broadcom, demonstrated that analog communications circuits can be built in pure digital deep-sub-micron processes. Finally, paper #12.6, "A Wireless Single-Chip Telemetry-Powered Neural-Stimulation System," by J. Von Arx et al. of the University of Michigan, described a circuit using the RF field for both power and data transmission, allowing an implantable device to remain permanently implanted without the need for batteries or external wires. ●

SiGe has moved from R&D into commercial applications as reported by both Subbanna et al. and Bopp et al.

**ISSCC 2000 CALL FOR PAPERS highlights**  
**Conference Theme - "ICs for 21st Century Systems"**  
**Monday - Wednesday**  
**February 7 - 9, 2000**  
**San Francisco Marriott Hotel, San Francisco, Ca**

Authors should submit 3 items for review. A draft of the final manuscript for the Digest of Technical Papers and an abstract to be used in the Advance Program are required. Abstracts of accepted papers will be disclosed to the press at ISSCC Press Conferences that occur in early November. Additional supplementary material is not mandatory but strongly encouraged. Authors must clearly indicate a single subject area under which their paper should be reviewed. For the complete list of topics, see the full call for papers on the conference web site

ISSCC is the premier global forum for debut of technical innovation in such areas as architecture, circuitry, and algorithms. The Conference pre-publication policy intends to maintain that. Yet contrary to popular opinion, a paper may be acceptable even if it is connected with a product that has sampled, entered production, and/or appeared in a publication. See more details and submission advice on the conference web page. The Program Committee will be the final judge.

45 copies of each submission must be received in Washington, DC: Friday, September 10, 1999. Additional copies may be required depending on an authors' geographical origin. Use of express delivery service is required for traceability. Papers received after the deadline will be returned to authors unopened.

Limited financial assistance is available to student presenters upon request.

*There are many more details of author instructions and an author's check list on the Conference Website: <http://www.isscc.org>. Be sure to review the complete submission requirements!*



## Give us your TIPS!

SSCS has updated its TIP codes.

Those mysterious

Technical Interest Profile codes (or "TIP codes"), which the IEEE asks you to look at and update when you renew, are actually a very useful source of information for SSCS, other societies, and the IEEE as a whole. They indicate the fields in which our members are working or are interested. This in turn helps us develop Society directions and activities, meetings, and publications. Over a period of time, they are an important indication of how the interests and activities of the members are changing.

The Society has reviewed its TIP

Codes and updated them to better reflect the field of solid-state circuits. We are limited in the number of codes, so it is not possible to make a deep-sort of technical areas. A table of the new and old TIP Codes is given below. Several new areas were added, the text of several codes were revised and expanded, and the Integrated Circuits Code was subdivided into three codes to better reflect the diversity of the field. In places there is some overlap between codes; if in doubt between two codes, it is generally advisable to check both. Members should check all codes that apply to their work and/or interests.

Please look over your codes

when you receive your renewal information in September - it will just take a moment, and will be very helpful to the Society.

IMPORTANT: if you now have checked #3710 and do not make any changes you will continue to be listed in #3710, even though the scope of that code will have become narrower. ●



**Lewis Terman**  
*President*

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NEW TIP CODES		OLD TIP CODES	
3710	Integrated Circuits - Digital		
3711*	Integrated Circuits - Analog and Mixed Signal		
3712*	Integrated Circuits - Communication and RF	3710	Integrated Circuits
3713*	Semi-Custom and ASIC Design		
3714*	VLSI Circuit, Chip and System Design		
3720	Memories - Semiconductor, Magnetic, Optical	3720	Memories - Semiconductor, Magnetic, Optical
3730	Optoelectronics and Imaging	3730	Optoelectronics
3740	Computer Aided Design - Analysis, Synthesis, Verification, Physical Design	3740	Comp. Aids to Design - Anal, Msk, Layout, Test
3750	Solid-State Microwave Electronics	3750	Solid-State Microwave Electronics
3760	New Solid-State Device and Circuit Applications	3760	New Device Applications
3770	Solid-State Circuit Design Techniques	3770	Solid-State Circuit Design Techniques
3780	Medical Electronics	3780	Medical Electronics
3781*	MEMS/Sensor/Actuator/Transducer Electronics		
3790*	Circuit and System Test		

\*indicates a new number

## Fall Elections: TAB VP Elect and SSCS AdCom

This September, IEEE will be holding its annual election for a new Vice-President Elect of the Technical Activities Board [TAB]. TAB is made up of the Presidents of all IEEE Societies and Technical Council, Division Directors and appointed Standing Committee chairs. It promotes and facilitates the technical activities of the IEEE.

The TAB VP Elect serves for the year 2000 as VP-Elect then succeeds to Vice-President in 2001 to serve as

the chair of the Technical Activities Board. The TAB VP is also one of five Vice-Presidents of IEEE serving on the IEEE Board of Directors and the IEEE Executive Committee. The candidates for this year's election have both served as members of TAB. They are:

Lewis Terman (President of the Solid-State Circuits Society)

Roger Pollard (Past President of the Microwave Theory and Techniques Society).

Remember ballots for IEEE-wide and regional elections come in a separate envelope from the SSCS and other Society

Adcom ballots. Candidates for five SSCS AdCom positions will be announced in the ballot you will receive later this fall. We encourage you to vote in both the upcoming elections. ●



## A Decade of the JSSC on CD

A full decade of the JSSC is now available on CD-ROM. Fill in the gaps in your collection by ordering through

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- JSSC 1989-98 JC 3789  
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### Or purchase individual sets:

- JSSC 1995-96 JC 3795  
2 years on 1 CD-ROM  
Member Price: \$25  
List price \$175
- JSSC 1997-98 JC 18199  
2 years on 1 CD-ROM  
Member Price: \$25  
List price \$175
- JSSC 1989-94 JC 41089  
Six years on 3 CD-ROMs  
Member Price: \$35  
List price \$200



Lew Terman, SSCS President introduced the 1989-94 JSSC CD-ROM set in February.

## Chapters Update

### First Chapters meeting held in San Francisco and New Subsidy Program

Welcome to SSCS newest chapter in Dallas under the leadership of Paul C. Yu. SSCS now has 14 chapters with more in formation in Los Angeles, Atlanta, West Switzerland and Canada. Our goal is to have 50 chapters by 2003. For help or questions on forming a local chapter contact the author (*jan@ee.upenn.edu*) or Anne O'Neill, the Executive Director of the SSCS (*sscs@ieee.org*)

The first SSCS chapters meeting was held in San Francisco on February 17th, 1999, in conjunction with the International Solid-State Circuit Conference. The chapters represented were: Santa Clara (Jonathan David), Boston (Bruce Hecht), Benelux (Michiel Steyaert), Tokyo (Toshiaki Masuhara), Zurich (Qiuting Huang), and the United Kingdom and Republic of Ireland (Peter Real). Fourteen participants gathered over lunch and shared information about chapter practices. Jonathan David of the Santa Clara chapter and Bruce Hecht of the Boston chapter talked about their groups' best practices. They discussed the use of the web to advertise planned events, the use of regular email postings to keep members informed about Society

projects, the holding of regular planning meetings by the Executive Committee, and the role of the program Vice Chair who coordinates technical planning discussions. Society support to its chapters through the chapters subsidy program and a distinguished lecturers series, was reviewed. Chapters were encouraged to develop homepages in order to reach out to their membership, and to post details of upcoming activities. The IEEE can provide disk space and the Society will post the URLs on its homepage.

The Administrative Committee approved a new subsidy program for countries with emerging economies with the goal to increase SSCS membership and to help launch chapter activities in these countries. The program provides free IEEE and SSCS membership for those who's income is less than \$8,600 US per year and who form a new or joint chapter. The program subsidizes up to 6 members in a joint societies chapter and up to 14 members in an SSCS only chapter. Funding is for three years. Contact the Executive Director, Anne O'Neill,



SSCS Chapters Committee formed this January, consists of a distinguished group of volunteers l-r: Chris Mangelsdorf (Reg. 10), Sergio Bampi (Reg. 9), Eric Vittoz (Reg. 8), Jan Van der Spiegel (chair), Toshiaki Masuhara (Reg. 10), and Paul Jespers (Reg. 8), missing from this photo. These members will take an active role in the formation of chapters and provide support for existing chapters.

if you are interested in taking advantage of this unique program.

### Launch of the Boston SSCS Chapter: Making Waves in New England by Bruce Hecht

This year saw the launch of the Boston chapter with a series of lectures on innovative circuits. We had the help of some experienced crew members to get us afloat, including the support of the SSCS office and staff, and the local IEEE Boston Section. With so many eager hands pulling for us, we were off to a great start.

We are now well underway and into planning next year's events. We hope to expand our range of cir-

*Continued on page 10*

# AdCom Organization and Actions

The SSCS AdCom met on February 14th, the day before the start of the ISSCC, in San Francisco. All 23 of the elected and appointed members of the Administrative Committee, along with 7 committee members, were in attendance at the meeting. The interest and dedication of the members was apparent in the full attendance, numerous thorough reports, and an agenda that engaged all the allotted time.

Here are some of the actions from the AdCom meeting.

## SSCS AdCom Organization

President Lew Terman announced organizational improvements in the 1999 SSCS Administrative Committee. Each AdCom member now serves on at least one and often two or three committees and/or in other positions of responsibility within the Society governance. AdCom members were surveyed in order to provide them with assignments in their respective areas of interest. All Committees now have new staffing as a result. Two new committees have also been formed: the Technical Committee and the Standards Committee will return to the next AdCom with proposals for their activities.

## SSCS provides technical co-sponsorship to 10 meetings in 1999.

SSCS AdCom voted to add two new meetings to the list for which the SSCS provides technical Co-Sponsorship in 1999: Asia Pacific Conference on ASICs and the International Workshop on Memory Technology for 1999. This raises to 10 the number of technically co-sponsored meetings.

The Asia Pacific Conference on ASICs is a new meeting being sponsored by the SSCS Seoul Chapter. It will be held August 23 - 25, 1999 at Yonsei University, Seoul, Korea. Moon-Key Lee, the SSCS Chapter and conference chair, and Dr. Hyungkyu Lim, Vice-President of Samsung Electronics and the program chair presented the details for the conference to Ad Com. Hosted

by Yonsei University, the conference technical co-sponsors include all three SSCS chapters in Region 10: Seoul, Korea; Taipei, R.O.C. and Tokyo, Japan. Future goals include rotating the host location of this meeting among the Region 10 chapters and scheduling the meeting in even numbered years to avoid conflict with the VLSI Symposia held in Japan and the VLSI TSA meeting held in Taiwan, both in odd-numbered years.

The International Workshop on Memory Technology will be held August 9-10, 1999 at the Fairmont Hotel, San Jose, CA. It has been sponsored by the Computer Society for nearly a decade on the West Coast. The Solid-State Circuits Society/Council provided technical co-sponsorship many times over the years. This AdCom action renewed the relationship with the workshop for 1999.

Charlie Sodini, the SSCS Meetings Chair, led AdCom through reports of its four sponsored conferences and workshop, and the now list of 10 meetings for which the SSCS provides technical Co-Sponsorship. See the last page of the newsletter for complete details on meetings planned for the remainder of the year.

## Increased page budget approved for JSSC.

Dick Jaeger, the Society Publications Chair presented to AdCom status reports and motions on the Journal of Solid State Circuits, the Transactions on VLSI Systems, electronic publishing and manuscripts for IEEE Press.

The Publications Committee recommendation to increase the JSSC page budget to 2,300 pages for the year 2000 was passed by AdCom. This budgeted page count is more in line with the actual



L-r: standing Bob Cordell, Dick Hester, Rudy van de Plassche, Trnka, Tim Tredwell, Ashwin Shah, Richard Jaeger, Neil We, Toshiaki Masuhara, Willy Sansen  
Seated: Steve Kosonocky, Stan Schuster, TR Viswanathan, Robert Swartz, Peter Verofstadt, Kevin O'Connor, Nicky Lu

page count of the Journal for the last two years, and assures more accurate financial planning for the Society and IEEE.

## Transactions on VLSI will now publish six times a year.

The Transactions on VLSI Systems, for which SSCS is one of the three sponsors, was authorized to expand its publication schedule from four to six issues per year. Even with a very rigorous 30% acceptance rate of submitted papers, the Transactions more than doubled the number of pages pro-



The SSCS Publications Committee met prior to AdCom to discuss recommendations subsequently adopted by AdCom. L-r: Rudy van de Plassche, Stephen Lewis, Asad Abidi, Richard Jaeger, Tim Tredwell, Eric Vittoz.



he, Chris Mangelsdorf, Stephen Lewis, Sergio Bampi, John ste, Mark Horowitz, Asad Abidi, Eric Vittoz, Ebi Friedman, Charles Sodini, Dave Hodges, Lew Terman, Bruce Wooley, and Jan Van der Spiegel. Not included, Gerhard Fettweis.

duced last year. It is growing a consistent backlog of accepted articles this year as it struggles to stay within its planned budget for publication. The quality of papers and focus of the field is growing in usefulness and importance.

### JSSC 1988-1966 CD-ROM set authorized.

\$85K was set aside to produce the 1966-88 JSSC CD-ROM set. This set will complete the issuance of all issues of the Journal of Solid-State Circuits back to Volume 1 Number 1 on CD-ROM. The set is expected to be available in time for the 2000 ISSCC. \$25K was authorized to move towards production of a compiled 1966-present JSSC set on DVD.

### IEEE Press titles ready in 2000.

SSCS agreed to sponsor the following IEEE Press Books, which are expected to be available in 2000:

#### *Design of Performance Microprocessors*

Edited by A. Chandrakasan (MIT),

W. Bowhill (Compaq), and F. Fox (Rambus)

#### *Testing of Digital Circuits*

By N. Jha (Princeton) and S. Gupta (USC).

#### *Advanced Theory of Semiconductor Devices*

By Karl Hess (Illinois).

### Membership and Chapters

Steve Kosonocky, Membership Chair, reviewed the continued growth of SSCS membership, which has just passed 12,000. SSCS remains the IEEE's second fastest growing Society. AdCom voted to send a personalized welcome letter to all new members, starting later this year.

Kosonocky also presented a proposal arising from interest in growing more chapters and membership in countries with emerging economies, which resulted in approval of a three year program to subsidize memberships in the IEEE and SSCS. Subsidies will be made available to members who qualify for IEEE minimum income status rates; i.e., their prior year's income did not exceed US \$8,600 or the equivalent. This subsidy will be offered only in conjunction with the formation of an SSCS chapter or joint chapter with one or more other IEEE society. SSCS plans to focus first on areas where similar subsidy programs are already flourishing within IEEE, and where there is interest in joint chapters. As the success of this program is proven, SSCS will initiate it in new regions and sections interested in SSCS chapter formation.

### Society donates \$50K for IEEE History Center Endowment

The Society will donate \$50K to the endowment of the IEEE History Center. The donation

will be matched 1 for 1 by the IEEE Foundation. The mission of the History Center is to preserve, research, and promote the history of information and electrical technologies. Most of the important advances of the 20th century are in the technical areas covered by the IEEE. Yet few historians are trained in science and even fewer are trained in technology and engineering. Journalists and government leaders lack understanding. By promoting worldwide the collection, study and dissemination of historical information about technologies and the IEEE itself, the IEEE History Center attacks the knowledge deficit and enhances the image of technology and science in general, the IEEE, and its members. AdCom felt that it was very important to support the capturing of technical history, in particular in solid-state circuits, while most of the early practitioners are still available.

The History Center has already produced a number of projects and books of interest to SSCS members, including:

*Facets: New Perspectives on the History of Semiconductors*, edited by Andrew Goldstein and W. Aspray (IEEE History Center, 1997)

*Engineers as Executives: An International Perspective* by William Aspray et al. (1994)

*Sparks of Genius: Portraits of Electrical Engineering Excellence* by Frederick Nebeker (1993)



*Technological Competitiveness: Contemporary and Historical Perspectives on the Electrical, Electronics and Computer Industries* edited by W. Aspray (1993)

The History Fund is a quarter of the way towards the goal of a \$10 million endowment. The impor-  
*Continued on next page →*

Order History Center books through IEEE Customer Service. (See below) Browse their abstracts at: [http://www.ieee.org/organizations/history\\_center/](http://www.ieee.org/organizations/history_center/)

Order books or subscriptions through IEEE Customer Service. Use the contact information on the back of your membership card. 800/678-IEEE within the US and Canada, or outside 1 732 981-0600. Fax 1 732 562-5445

## AdCom *continued*

tance of Technical Society financial support of the History Center has been emphasized by the IEEE Foundation, through its offer to match all Society donations to the Center's endowment, up to a total of one mil-

lion dollars. Although the History Center plans eventually to solicit donations from profit-making corporations and foundations, a fund raising message is always strongest when support has been shown first

by those closest to the effort, such as the IEEE Societies. Emerson Pugh, the IEEE History Committee Chair and 1989 IEEE President, explained the History Center's plans and efforts. ●

## Chapters Update *continued*

cuits and techniques. We will also build on our community of SSCS aficionados. We had our start in the fall of 1998 when volunteers from Analog Devices presented the first lectures. Paul Brokaw, Barrie Gilbert, and Jack Memishian all responded with an enthusiastic 'aye'. They each gave inspiring talks, with topics ranging from thermal sensing, circuit evolution, and a micromachined 2D accelerometer (complete with a live demo of a virtual motorcycle!).

In the spring we gained perspective on emerging technologies from two of the SSCS Distinguished Lecturers. Professor Charles Sodini of MIT described his group's work on designing ultra-low power wireless sensors. The following month, professor Tom Lee of Stanford gave a detailed cruise through the workings of RF CMOS circuits.

Our next meeting will be held jointly with the Electron Devices Society and the Magnetics Society. Dr. Gary Prinz of the Naval Research Lab will describe the future of magnetoelectronics at the end of May. Later this summer we hope to have a talk on VCO's and a summer social event.

Our agenda for next year is to build on our success to date by broadening our range. Our organizers now include individuals whose expertise covers analog, digital, microwave, and beyond. We also plan to increase our representation across New England, and to gain more student participation. One new event we hope to begin

### Chapters: Apply for year 2000 subsidies by July 27th to [sscs@ieee.org](mailto:sscs@ieee.org)

Subsidies can be used for activities such as membership promotion, travel allowances for invited speakers to chapter events, newsletter, web development, workshops, short courses, support for student activities at local institutions, etc. The maximum amount available from SSCS is \$1,000 per chapter.

Summarize the chapter subsidy request in a letter or email addressed to the SSCS Executive Director, Anne O'Neill. Report on the uses of last year's subsidy if any. Give a brief description of the proposed activities, the anticipated benefits for the chapter and SSCS, the specific amount requested from SSCS, and attach a budget. In the budget include all sources of funding; such as section and local support, and additional subsidies under request from other sponsoring Societies. For chapters with joint society sponsors, the amount requested from SSCS should be matched with subsidy requests from the other Societies.

will be a mini-symposium/course, with this year's topic to be on medical electronics. We are in planning for this event to be held in the late fall of 1999.

I would like to personally thank everyone who helped us get going. My thanks to Jonathan David for his tutorial on chapter startup in last year's newsletter. I'm also grateful for the spirit of co-operation I encountered at the chapter building event hosted by Jan van der Spiegel, Lew Terman, and Anne O'Neill at this year's ISSCC. Best of luck to this year's up and coming chapters! Tell us what you see on your horizon!

### CHAPTER EVENTS

*Chapters are invited to list their upcoming meetings here.*

*Submit them to [sscs@ieee.org](mailto:sscs@ieee.org) by July 30 for publication in the October Newsletter.*

### BALTIMORE CHAPTER

"The Other Side of Computing" by Dr. William Trimmer, Vice-President of Technology of Standard MEMS

September, 1999 Agenda: 5:30 Refreshments, 6:00 Chapter Business, 6:15 Guest Speaker, 7:30 Adjourn. Location: Historical Electronics Museum is located at 1745 W. Nursery Rd. in Linthicum MD, next to the BWI Marriott.

For an abstract and exact date check:

<http://www.ewh.ieee.org/r2/baltimore/edss/99mtgs.html> ●



**Jan Van der Spiegel**  
Chapters Chair

IEEE Solid-State Circuits Society  
[jan@ee.upenn.edu](mailto:jan@ee.upenn.edu)

# Membership Report

The Solid-State Circuits Society began April with 12,138 active members, up 13.5% from April 1998. This represents a slight drop from the end of 1998, but that's normal as members from Regions 1 through 7 who failed to renew their membership last year were dropped from the roster in February. This also includes 216 new members recruited during the 1999 ISSCC joint EDS/SSCS membership promotion. Special thanks are extended to Linda Dreisbach for doing an excellent job running the membership both and processing so many applications during the short breaks between sessions.

## Don't Leave your IEEE and SSCS Membership at School

By the time many students read this newsletter, it will be summer and many SSCS student members will have just graduated and may be beginning their new careers. If you are one of the new graduates, remember to keep your IEEE and SSCS membership current. IEEE and SSCS membership may have already helped you land your first job, but the value of membership continues as a way of networking at confer-

ences and keeping up to date on new advances. As a recent graduate, you are eligible for up to four years of reduced IEEE dues and Society fees, but only if you remain an active member. Be sure to update your IEEE profile and membership if you change your address and contact information. This can be done through the IEEE home page [www.ieee.org](http://www.ieee.org), by selecting the IEEE Membership link.

## New SSCS Senior Members

*Congratulations are extended to the following SSCS members for their recent promotion to IEEE senior grade:*

Yachin Afek	Werner Bachtold
Swapna Banerjee	Paul D. Bradley
Amiram Caspi	Rami Caspi
Naftali Chayat	Jose C. Da Costa
Jonathan B. David	Sang Hoo Dhong
Massad Eyal	Paul D. Franzon
Georges Ge Gielen	Manfred Glesner
Kenneth A. Hansen	Martin Hollreiser
Ju Hi J. Hong	Peter A. Ivey
Shyh-Jye Jou	Bohumil Lojek
Alexander Y. Nikiforov	Leslie Palkuti
John X. Przybysz	Narendra M. Rao



The Membership Committee Welcomes elected AdCom member Dr. Nicky Lu (l) shown with chair, Steven Kosonocky (r). The Membership Committee and the Society Executive Director provide membership promotions at conferences and explore additional ways of promoting SSCS membership.

Thomas Reiner	Hans M. Rein
Mark J. Rodwell	Henry Samuelli
Arlene A. Santos	Raanan Sover
Joseph Tauritz	Stewart S. Taylor ●



**Steve Kosonocky**  
Membership Chair

IEEE Solid-State  
Circuits Society  
[stevekos@  
us.ibm.com](mailto:stevekos@us.ibm.com)

# System-on-Chip ASIC Conference in DC

## CALL FOR PARTICIPATION

### The road to System-on-Chip. The road to a new millennium!

We cordially invite you to participate in the 12th Annual IEEE International ASIC/SOC Conference to be held in Washington, DC, USA. For the last eleven years, this conference has been a forum for education and dissemination of new ideas related to the ASIC community. The Conference is scheduled September 15-18, 1999 at the DoubleTree Hotel National Airport, Washington, DC, sponsored by IEEE Solid-State Circuits Society and IEEE Rochester Section.

The 1999 ASIC/SOC Conference theme is "The Road to System-On-Chip (SOC)." On this road we are faced with important issues such as IP, design reuse, and the new enabling technologies: SOI, SiGe and Cu interconnects. At ASIC/SOC'99 you will learn about these issues and technologies as well as about new methods, ideas, solutions, and paradigms for System-on-Chip

Key topics addressed in this conference include:

- Design of High Performance, Low power Circuits, Devices & Architectures

- Design of Reconfigurable, Scalable, Reusable, and Embedded Cores/Macros (SIPs)
- Analog and Mixed-Signal Circuits
- Smart Sensors
- Design for Testability
- Deep Submicron
- Signal Integrity
- HW/SW Co-Design and Verification
- High Level Synthesis
- Physical Design and Synthesis
- I/O Interfacing
- Applications

Once again we were able to put together an outstanding program of  
*Continued on next page →*

great value to the ASIC and SOC Community. We are looking forward to seeing you at the premier event in the ASIC/SOC world on the road to a new millennium.

Ramalingam Sridhar  
*Conference Chair*  
Thomas Beuchner  
*Technical Program Chair*  
Robert C. Frye  
*Technical Program Co-Chair*

Please watch our web site at:

<http://asic.union.edu>

for the Advanced Program and registration details. ●

## SSCS Members honored as 1999 IEEE Fellows

Becoming an IEEE Fellow is a mark of unusual distinction in the profession. It is a recognition conferred only by the Board of Directors upon a person of outstanding and extraordinary qualifications and experience, who has made important individual contributions to one or more of IEEE designated fields. This year IEEE conferred the distinction of Fellow on 18 members of SSCS, out of a complete list 239 new IEEE Fellows. This article continues with the last seven profiles of these new Fellows and members of SSCS, and completes the introduction of all 18 that was begun in the April issue.

No more than one-tenth percent of the total Institute membership may be advanced to Fellow grade in any given year. A nomination for Fellow must be accompanied by at least five references from other Fellows in IEEE. A nominee must be a Senior Member of the Institute, and have been a member in any grade for at least five years prior to the year of election as Fellow. A Society as well as the 26 member Fellows Committee evaluates each nomination. Multiple reviewers produce a composite viewpoint that is used in recommending suitable candidates to the Board of Directors for election to Fellow grade.

Welcome and congratulations!

**Magdy A. Bayoumi**  
**University of Southwestern**  
**Louisiana**  
**Lafayette, LA**

*For contributions to application specific digital signal processing architectures and computer arithmetic.*

**Magdy A. Bayoumi** is an Edmiston Professor of Computer Engineering at the University of Southwestern Louisiana, where he has been a faculty member since 1985. Dr. Bayoumi received the B.S. and M.S. degrees in Electrical Engineering from Cairo University, Egypt; M.S. degree in Computer Engineering from Washington University, St. Louis; and the Ph.D. in Electrical Engineering from the University of Windsor, Canada. Dr. Bayoumi's research interest include VLSI Design Method and Architectures, Low Power Circuits and Systems, Digital Signal Processing Architectures, Parallel Algorithm Design, Computer Arithmetic, Image and Video Signal Processing, Neural Networks and Wideband Network Architectures.

Dr. Bayoumi is the vice president for the technical activities of the IEEE Circuits and Systems Society. He is a founding member of the VLSI Systems and Applications Technical Committee and was its chairman. He was an associate editor of the Circuits and Devices Magazine, the Transaction on VLSI Systems and the Transaction on Neural Networks.

Dr. Bayoumi was the co-chairman of the Workshop on Computer Architecture for Machine Perception, 1993 and he is a member of the Steering Committee of this workshop. He was the general chairman for the 8th Great Lake Symposium on VLSI, 1998. Dr. Bayoumi has edited and co-edited three books in the area of

VLSI Signal Processing. He is the faculty advisor for the IEEE Computer student chapter at USL. He won the USL 1988 Researcher of the Year award and the 1993 Distinguished Professor award at USL.

**Rajeev Jain**  
**University of California**  
**Los Angeles, CA**

*For contributions to computer-aided design tools for signal processing circuits.*

**Rajeev Jain** is a Professor of Electrical Engineering at UCLA and Chief Scientist at Angeles Design Systems. At Angeles he is participating in the development of design tools for embedded DSP system design. His early training in CAD for Signal Processing Circuits began at Siemens AG where he developed assembly code generators for digital filters in 1980. Later at IMEC, Leuven, as part of his Ph.D. work, he developed techniques for digital filter finite-precision optimization that were used in the DSP station ASIC design tools. As a post-doc at U.C Berkeley he worked on the development of a design manager in the Lager IV CAD system, which was a research tool for ASIC design. Since joining the faculty at UCLA in 1988, he has been working on design tools and methodologies for communications and networking systems. In particular he was selected for a Senior Award by the IEEE Signal Processing society for his publication on high-speed filter design automation.

**Wolfgang Max Mathis**  
**University of Magdeburg**  
**Magdeburg, Germany**

*For contributions to nonlinear network theory.*

**Wolfgang Mathis** (M'85, SM'98, F'99) was born in Celle (Germany) on May 13, 1950. After his education as a television service man and as an electrical engineer from the FH Hannover in Germany, he received the Dipl.-Phys. degree in 1980 in physics from the Technical University of Braunschweig in Germany. From the same university he got the Ph.D. (Dr.-Ing.) degree in electrical engineering in 1984 and the Habilitation degree in 1988.

Now he is a Professor at the



Otto-von-Guericke-University of Magdeburg, Germany, and holds the chair of Electronics. From 1985 to 1990 he was an Assistant Professor at the Technical University of Braunschweig. From 1990 to 1996 he was a Professor at the University of Wuppertal, Germany. He was Associate Editor of the IEEE Transactions on Circuits and Systems from 1995 to 1997 and he is a member of VDE/ITG, DPG.

His research interests include theory of nonlinear circuits and dynamical systems, CAD and realization of nonlinear circuits, numerical mathematics, and computer algebra as well as history of Electrical Engineering and Physics. He has published more than 80 papers and 3 books in these areas.

**Pinaki Mazumder**  
**University of Michigan**  
**Ann Arbor, MI**

*For contributions to the field of VLSI design.*

**Pinaki Mazumder** is a Professor at the Department of Electrical Engineering and Computer Science of the University of Michigan, Ann Arbor. He received his BSEE



degree from the Indian Institute of Science in 1976, MS degree in computer science from the University of Alberta, Canada in 1985, and his doctoral degree in electrical and computer engineering from the University of Illinois at Urbana-Champaign in 1988. As a Research Assistant at the Bharat Electronics Ltd. (a collaborator of RCA), India, for over six years, he developed several types of analog and digital integrated circuits for consumer electronics products. During the summer of 1985 and 1986, he was a Member of the Technical Staff in the Indian Hill branch of AT&T Bell Laboratories, where he developed C modeling based CONES synthesis tool.

He has published over 100 papers on the topics of VLSI testing, physical design automation, and ultrafast circuit design in archival journals and proceedings of the international conferences. Dr. Mazumder was a recipient of Digital's Incentives for Excellence Award, BF Goodrich National Collegiate Invention Award, National Science Foundation Research Initiation Award and Bell Northern Research Laboratory Faculty Award. He has co-authored two books

He was a Guest Editor of the IEEE Design and Test Magazine's special issue on multimegabit memory testing, March 1993 and the Journal of Electronic Testing - Theory and Applications special issue on memory testing and reliability, June 1994. He is the guest editor of two special issues on emerging nanoelectronic technologies and their applications in IEEE

*Continued on next page →*

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**Vice President:**

Bruce Wooley  
 Stanford University  
 Stanford, CA

**Secretary:**

Asad Abidi  
 University of California  
 Los Angeles, CA

**Treasurer:**

David Hodges  
 University of California  
 Berkeley, CA

**Past President:**

Robert Swartz  
 Vanguard International  
 Semiconductor - America  
 San Jose, CA

**Elected AdCom to 12/31/99:**

Nicky Lu  
 Chris Mangelsdorf  
 Willy Sansen  
 Bruce Wooley  
 Eric Vittoz

**Elected AdCom to 12/31/00:**

Asad Abidi  
 Dick Hester  
 David Hodges  
 Toshiaki Masuhara  
 Rudy van de Plassche

For questions regarding Society business, contact the SSSC Executive Office.

Contributions for the October issue of the newsletter must be received by July 30 at the SSSC Executive Office.

Anne O'Neill, Executive Director      TEL: (732) 981-3400  
 IEEE SSSC      FAX: (732) 981-3401  
 445 Hoes Lane, PO Box 1331 e-mail: sscs@ieee.org  
 Piscataway, NJ 08855-1331

**Elected AdCom to 12/31/01:**

Gerhard Fettweis  
 Mark Horowitz  
 Richard C. Jaeger  
 Charles G. Sodini  
 Neil Weste

**Other Representatives:**

Representative from CAS to SSSC  
 Eby G. Friedman  
 Representative to CAS from SSSC  
 T.R. Viswanathan  
 Region 9 Representative  
 Sergio Bampi

**Chairs of Standing Committees:**

Awards	Bruce Wooley
Chapters	Jan Van der Speigel
Educational Activities	Kevin O'Connor
Meetings	Charles Sodini
Membership	Stephen Kosonocky
Nominations	David Pricer
Publications	Bruce Wooley

**Solid-State Circuits Technology**

**Committee co-chairs:**  
 Stan Schuster  
 Steve Garverick

Newsletter Editor:  
 Ashwin Shah  
 VLSI Technology  
 San Jose, CA  
 ashwin@ieee.org  
 (408) 922-5393 FAX

For detailed contact information, see the Society web page.  
<http://www.sscs.org/info/>

## Fellows *continued*

Transactions on VLSI Systems (December 1997) and the Proceedings of the IEEE (1998). He is also an associate editor of the IEEE Transactions on VLSI.

He is a member of Sigma Xi, Phi Kappa Phi, and ACM SIGDA.

### **Theresa Huai-Ying Meng** Stanford University Stanford, CA

*For contributions to the system integration of algorithms, parallel architectures and signal processing circuits.*

**Teresa H-Y. Meng** joined the faculty of the Electrical Engineering Department at Stanford University in 1988, where she is Associate Professor. Her current research activities include low-power circuit design, wireless communications, and portable DSP systems. Among the awards she has received are the IEEE Signal Processing Society's Paper Award in 1989, the 1989 NSF Presidential Young Investigator Award, the 1989 ONR Young Investigator Award, a 1989 IBM Faculty Development Award, and the 1988 Eli Jury Award from U.C. Berkeley for recognition of excellence in systems research. She received a B.S. degree from National Taiwan University in 1983 and an M.S. and Ph.D. from U.C. Berkeley in 1984 and 1988 respectively.

### **Nelson H Morgan** International Computer Sciences Institute Berkeley, CA

*For contributions to the processing and recognition of brain and speech signals.*

**Nelson Morgan** is Director of the International Computer Science Institute (ICSI), a research institute in Berkeley that is closely associated with the University of California at Berkeley. He is also the leader of the



ICSI Realization Group, a group focused on algorithms and systems for speech processing. He is an Adjunct Professor in EECS at UC Berkeley, where he currently supervises 8 PhD students. He received his PhD in EE from UC Berkeley in 1980. Following his PhD work, he led engineering research efforts at National Semiconductor (in speech analysis and synthesis), and at EEG Systems Labs (in signal processing for basic brain research). He holds 6 patents and has authored over 150 technical publications. He is currently the co-editor-in-chief of the international journal *Speech Communication*, and the co-author (with Ben Gold of Lincoln) of a 1999 textbook on *Speech and Audio Processing*.

### **Heiner Ryssel** Fraunhofer Institute of Integrated Circuits Erlangen, Germany

*For introduction of ion implantation technology into the German Semiconductor Industry.*

**Heiner Ryssel** received his Dipl.-Ing. degree in electrical engineering in 1967, and his Dr.-Ing. degree in



1973, both from the Technical University, Munich, Germany.

From 1968 to 1972, he was with the Institute of Technical Electronics, Munich, working on GaAs epitaxy and ion implantation. In 1973, he joined the Institute of Integrated Circuits, Munich, where he worked on ion implantation in Si, Ge, and III-V compounds. In 1974, he joined the Institute of Solid State Technology, Munich, where he worked in the area of semiconductor device development and basic implantation studies.

Since 1985 he has been professor of Electrical Engineering at the University of Erlangen-Nuernberg, and director of the Fraunhofer Institute of Integrated Circuits in Erlangen. His main research topics are ion implantation into semiconductors and metals, process modeling, and semiconductor processing equipment. He has authored or co-authored more than 300 papers, written a book on ion implantation, and edited 6 books. In 1998 he was awarded the "Wilhelm Exner Medal" of Austria. ●

## Suggestions sought for recipients of IEEE technical awards

Do you have possible nominees for the prestigious IEEE Technical Field Awards? The IEEE annually recognizes outstanding contributors to the art and science of electro- and information technologies worldwide with 22 of these awards. At least five of these institute-wide awards are especially important for the field of Solid-State Circuits.

**Solid-State Circuits Award** for outstanding contributions in the field of solid-state circuits to an individual or team of not more than three. Bronze medal, certificate and cash prize

**Cledo Brunetti Award** for outstanding contributions in miniaturization in the electronic arts. Certificate and cash prize.

**Morris N. Liebmann Memorial Award** for important contribution to emerging technologies recognized within recent years to an individual or team of not more than three. Certificate and cash prize.

**Frederik Philips Award** for outstanding accomplishments in the management of R&D resulting in effective innovation to an individual or team of not more than three. Bronze medal, certificate and cash prize

**David Sarnoff Award** for outstanding contribution in electronics. Preference given to an individual for achievement in the past 10 years; may be presented to a team of not more than three. Bronze medal, certificate and cash prize

The SSCS Awards committee is open to suggestions for these awards' nominations. Any person may nominate a candidate for an IEEE medal or award. Self-nomination is not allowed. The SSCS awards committee exists to help focus the application process including ensuring quality endorsement and society letters.

Please send your recommendations to:

Bruce A Wooley  
Center for Integrated Systems

Stanford University  
420 Via Palou Mall, CIS 206  
Stanford, CA 94305-4070  
wooley@ee.stanford.edu  
(650) 725-3383 FAX ●



**Bruce Wooley**  
Vice-President

IEEE Solid-State  
Circuits Society  
wooley@  
ee.stanford.edu



**1999 IEEE Solid-State Circuits Field Award recipient Kensall Wise being congratulated by Jan Van der Spiegel and TR Viswanathan, after the award presentation at the ISSCC plenary last February.**

## Events Calendar

*continued from page 16*

### Technically Co-Sponsored Meetings

#### MTDT IEEE International Workshop on Memory Technology Design and Testing

August 9-10, 1999

Fairmont Hotel, San Jose, CA

Email: r.rajsuman@advantest.com

#### AP-ASIC Asia-Pacific Conference on ASICs

<http://www.ee.inha.ac.kr/sscs-eds-chapter>

August 23 - 25, 1999

Yonsei University, Seoul, Korea

Contact: AP-ASIC'99, Research Institute of ASIC Design,  
Yonsei University, Seoul, Korea

Phone: +82-2-361-3523

Fax: +82-2-364-8162

E-mail: asic@spark.yonsei.ac.kr

#### ASIC - SOC '99 Application-Specific Integrated Circuits - System-on-Chip Conference

<http://asic.union.edu/>

September 15-18, 1999,

DoubleTree Hotel National, Washington, DC

Contact: 1999 ASIC Conference

Gaithersburg, MD, 20877

Phone: (301) 527-0900

Fax: (301) 527-0994

Email: wmarwalker@aol.com

#### ESSCIRC '99 25th European Solid-State Circuits Conference

<http://www.eescirc.org>

September 21-23, 1999

Duisburg, Germany

Contact: Cornelia Metz

Franhofer Institute of Micro Electronic Circuits  
and Systems, Finkenstraße 61,  
D-47057 Duisburg, Germany

Tel: +49-2 03-37-83-2 10

Fax: +49-2 03-37-83-2 78

E-mail: metz@ims.fhg.de

#### BCTM: IEEE Bipolar/BiCMOS Circuits and Technology Meeting

<http://www.snl.stanford.edu/Conferences/BCTM>

September 26 - September 28, 1999

Minneapolis Marriott City Center,

Minneapolis, MN, USA

Contact: Janice Jopke

CCS Associates, Eden Prairie, MN

Tel: 612-934-5082



The SSCS Meetings committee met February 14 to make its recommendations to AdCom. L-r Stan Schuster, John Trnka, Dave Hodges, Charlie Sodini, Mark Horowitz and Bob Cordell. Not included: Paul Jespers.

Fax: 612-934-6741

Email: jopke@aol.com

#### 1999 IEEE GaAs IC Symposium

<http://www.gaasic.org/>

October 17-20, 1999

Monterey Conference Center, Monterey California

Contact: Ms. Marie Leonardis

IEEE, 1999 IEEE GaAs IC Symposium

445 Hoes Lane

Piscataway, NJ 08855

Phone: +1-732-562-3875

FAX: +1-732-981-1203

E-mail: m.leonardis@ieee.org

#### ICVC International Conference on VLSI and CAD

<http://icvc.lgsemicon.co.kr/index.htm>

October 26-27, 1999

Hotel Inter-Continental, Seoul, Korea

Contact: Youn Choi

SEMI Korea

Korea World Trade Center #4005,

159-1, Samsung-dong, Kangnam-ku,

Seoul, Korea 135-729

Tel: 82-2-551-3404 (ext. 202)

Fax: 82-2-551-3406

E-mail: ychoi@semi.org

#### MSICD 1999 IEEE CAS International Workshop on Mixed Signal Integrated Circuit Design

<http://msicd.ece.uci.edu>

December 1-3, 1999

Hyatt Hotel, Long Beach, CA

Contact: Dr. Geert De Veirman

Silicon Systems

14351 Myford Rd.

Tustin, CA 92780

Phone: (714) 573-6829

FAX: (714) 573-6916

E-mail: geert.deveirman@tus.ssi1.com

# SSCS EVENTS CALENDAR

## 1999 SSCTC Workshop

### MEMS Interface Circuits

<http://www.sscs.org/ssctw/oct99/>

October 14,15 1999

Location: Key Bridge Marriott Hotel, Arlington, VA

Contact: Nicole Rath

Courtesy Associates

Washington DC

Tel: 202-331-2000

Fax: 202-973-8722

Email: SSCTC@courtesyassoc.com

## 2000 ISSCC

### International Solid-State Circuits Conference

<http://www.isscc.org>

Monday-Wednesday, February 7 - 9, 2000

San Francisco Marriott Hotel, San Francisco, CA

Paper submission deadline: September 10, 1999

Contact: Courtesy Associates

Washington DC

Tel: (202) 331-2000

Fax: (202) 331-0111

Email: ISSCC@courtesyassoc.com

## 2000 CICC

### Custom Integrated Circuit Conference

<http://www.his.com/~cicc/>

May 21-24, 2000

Caribe Royale, Lake Buena Vista, FL

Paper deadline: December 1, 1999

Contact: Ms. Melissa Widerkehr

Widerkehr & Associates.

Gaithersburg, MD

Tel: (301) 527-0902

Fax: (301) 527-0994

Email: cicc@his.com

## 2000 Symposium on VLSI Circuits

[http://www.bcasj.or.jp/vlsi\\_sym/](http://www.bcasj.or.jp/vlsi_sym/)

June 12 - 17, 2000

Hilton Hawaiian Village, Honolulu, HI.

Deadline for Receipt of Summaries: Jan.7 2000

Contact: Ms. Melissa Widerkehr

Widerkehr & Associates.

Gaithersburg, MD

Tel: (301) 527-0902

Fax: (301) 527-0994

Email: vlsi99@aol.com

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Societies Japan, Conference Dept.

5-16-9 Honkomagome, Bunkyo-ku

Tokyo 113-8622, Japan

Tel: +81-3-5814-5800

Fax: +81-3-5814-5823

E-mail: vlsisym@bcasj.or.jp

## The 1997-98 JSSC CD-ROM has been published

This 1999 SSCS member benefit was mailed to all members active in May. New members who have joined SSCS since May will receive theirs with an individual welcome letter. If you were late renewing your dues or for any reason haven't received yours yet, please send your name, mailing address and member number to [sscs@ieee.org](mailto:sscs@ieee.org).

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