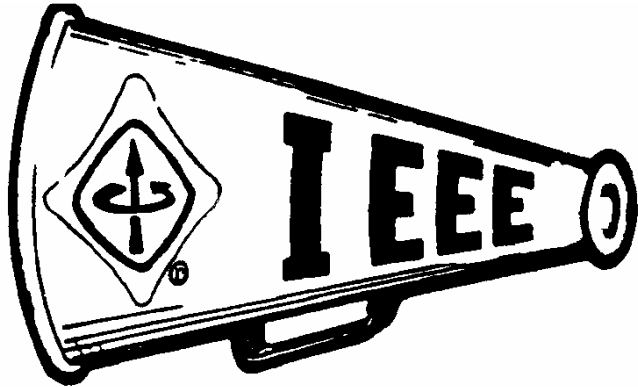


The Valley Megaphone



Newsletter of the
**Institute of Electrical and
Electronics Engineers, Inc.**
Phoenix Section
October 2007, Volume XXI, Number 10

Executive Committee

Past Chair

Rao Thallam, 602-236-8064
thallam@ieee.org

Chair

Rao Bonda, 480-413-6121
r_bonda@ieee.org

Vice Chair

Dongming He, 480-552-0947
dongming@ieee.org

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Keith Holbert, 480-965-8594
holbert@asu.edu

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Debendra Mallik, 480-554-5328
dmallik@ieee.org

Publicity

Eric Palmer
ecpalmer@ieee.org

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m_andrews@ieee.org

Membership

Russ Kinner, 602-997-2353
r_kinner@ieee.org

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Jim Drye, 480-413-5685
jdrye@ieee.org

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braunisch@ieee.org

Awards

Vasudeva P. Atluri, 480-554-0360
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Inter-Society

Mike Andrews, 480-991-1619
m_andrews@ieee.org

Web Master

Chandan K. Das, 480-554-1300
cdas@ieee.org

This Issue of The Valley Megaphone Features:

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IEEE Phoenix Section Executive Committee meeting minutes can be found at: <http://www.ieee.org/phoenix>

Please send announcements for Valley Megaphone to Eric Palmer: ecpalmer@ieee.org.

Chapters

Communication & Signal Processing
Gang Qian
gang.qian@asu.edu

Computer Society

Cesar A. Vasquez-Carrera
C.Vasquez-Carrera@computer.org

Consultants Network (PACN)

Vaughn L. Treude, 602-750-3662
vaughn@nakota-software.com

CPMT Society

Victor Prokofiev
victor.prokofiev@intel.com

Education Chapter

Martin Reisslein, 480-965-8593
reisslein@asu.edu

EMBS Chapter

Ahmed Abdelkhalik
ahmed_a@acm.org

EMC Society

Harry Gaul, 480-441-5321
harry.gaul@ieee.org

GOLD

Mike Poggie
Mike.Poggie@ieee.org

Power Engineering Society

Jim Hudson
jhhudson@srpnet.com

Solid State Circuits

Bertan Bakkaloglu
bertan@asu.edu

Waves & Devices Society

Chuck Weitzel, 480-413-5906
Chuck.weitzel@freescale.com

The Valley Megaphone is the newsletter of the Phoenix Section of the Institute of Electrical and Electronics Engineers. It is published monthly and reaches about 4000 members. Submit articles, advertisements, and announcements to Eric Palmer at the above email address. Deadline for announcements and advertisements is the third Friday of the month prior to publication. Advertising Rates: Full page: \$200, 3/4page: \$125, 1/2 page: \$75, 1/3 page: \$50, 1/4 page: \$25. Change of address/email? Call toll free 1-800-678-IEEE. Please allow 6-8 weeks. Section Web Page is: <http://www.ieee.org/phoenix>

Student Branches

ASU Main, Engineering

Chair: Cory P. Murphy

ieeasuchair@gmail.com

Advisor: Cihan Tepedelenlioglu,
(480) 965-6623, Cihan@asu.edu

ASU Main, Computer Society

Chair: Luis Tari

luis.tari@asu.edu

Advisor: Joseph Urban, 480-965-3374,
joseph.urban@asu.edu

ASU Polytechnic

Chair: Brian Siskoy

bsiskoy@gmail.com

Advisor: Barbara Rempel
Barbara.Rempel@asu.edu

DeVry, Phoenix

Chair: Richard Taylor

RLTaylor@ieee.org

DeVry, Computer Society

Chair:

NAU, Engineering

Chair:

Advisor: Phil Mlsna, 928-523-2112

Phillip.Mlsna@nau.edu

Embry-Riddle, Prescott

Chair:

Advisor: Chuck Cone

conec@erau.edu

Phoenix Section Executive Committee Meeting – First Tuesday of the month.

Time: 6:00 pm to 8:00 pm

Place: Phoenix Airport Hilton, 2435 South 47th Street
Phoenix, AZ, 85034
Phone: 480-804-6017

Directions: From 143, exit University Ave, go west, turn right on 47th street.

More Info: Meetings held first Tuesday of month. No meetings in July and August. All interested IEEE members are welcome to attend.

Contact: Rao Bonda, Phoenix Section Chairman, r.bonda@ieee.org

<advertisement>



w w w . m d b i n c . c o m

6 0 2 . 7 8 8 . 1 3 3 8

mdb-career@cox.net



Mark David Barrera

Writer • Editor • Electrical Engineer

Professional Writing and Editing Services

<advertisement>



Signal Integrity and EMI Control in High Speed Circuits A Practical Approach

The Greater Phoenix Chapter of the IPC Designers Council is proud to present an outstanding learning opportunity on Signal Integrity and EMI Control in High Speed Circuits, from one of the leading industry experts, Rick Hartley. In today's world, PCB's are an active part of the circuit and this information is crucial in order to design a product that will function properly and pass agency compliance.

Please join us for an exciting educational experience that no designer or engineer should miss. Seating is limited and discounts for early registration apply, so act soon to reserve your spot for an educational journey that will put you out in front of the rest!

Friday, Nov. 02, 2007

Hampton Inn, 601 N 44th St. Phx, AZ 85008

8:00 AM to 8:30 AM Registration

8:30 AM to 5:00 PM Workshop

Seating is limited so please register early to reserve your spot!

Contact: David Baldwin - (480) 600-3939

E-Mail: IPC-DC_Ph@cox.net

This 1-day course is a crisp focus on the issues PCB designers and engineers need to know. The topics include:

- Recommended Reading List
- Electrical & Electronic Domain (R, C, L, Current, Frequency)
- Signal Wave & Propagation/Transmission Line defined
- What is Transmission Line Impedance & Why Control It
- Relative Permittivity, Propagation Time/Velocity & Rise Distance
- Line Impedance Models & How to Resolve Impedance
- Line Types & Impedance Values – What & Why
- Trace Routing & Termination Schemes
- Signal & Wave Attenuation/Analysis of Attenuation
- Connectors in High-Speed Circuits
- Differential Pairs – What, Why & How
- Power Distribution & Power Decoupling
- Crosstalk & EMI: Understanding & Control
- Determining Layer Stack & Line Width
- PC Board Fabrication Drawing Needs
- Cost Differential for Impedance Controlled Boards

Course Cost: IPC DC Members: \$125.00
Non Members: \$175.00

*** Register before October 10th and receive an additional \$20.00 Discount!**

*** Join the Greater Phoenix Chapter of the IPC DC on-line for only \$50.00 and receive member pricing and additional benefits!**

*** This seminar is greatly discounted (less than 25% of what it would cost at PCB West) and will be one of the best educational investments that you will ever make.**

For More Information:

<http://dcchapters.ipc.org/phoenix/>

IEEE ANNOUNCEMENTS

2008 IEEE Phoenix Section Officers Election

Nominations of officers for the 2008 Phoenix Section executive committee are extended to November 1st, 2007. Nominations will be recommended by the current executive and standing committees. Additional nominations from the general section membership will be accepted via written petition signed by at least ten members. The petitions must be received by the Section secretary (Dr. Keith Holbert) prior to November 1st, 2007. The written petition must provide a statement signed by the petition candidate stating his/her willingness to serve if elected. Emailed scanned petition copies will be accepted. Please send nominations by email/mail to:

Dr. Keith Holbert.
Electrical Engineering Department
Arizona State University
P.O. Box 875706
Tempe, AZ 85287-5706
Phone: (480) 965-8594
Email: Keith.Holbert@asu.edu

2008 IEEE Phoenix Section - Chapter Officers Election

The following chapters of the IEEE Phoenix Section are seeking nominations for officers to serve during 2008. Please contact the chairs of the respective chapters listed below for additional information. The nominations must be received by the chapter chairs by Thursday, November 1st, 2007. Please send an email with subject "IEEE Phoenix Section - Chapter Officers Nominations for 2008".

Communication & Signal Processing

Gang Qian
gang.qian@asu.edu

Computer Society

Cesar A. Vasquez-Carrera
c.vasquez-carrera@computer.org

Consultants Network (PACN)

Vaughn L. Treude
vaughn@nakota-software.com

CPMT Society

Victor Prokofiev
victor.prokofiev@intel.com

Education Chapter

Martin Reisslein
reisslein@asu.edu

EMBS Chapter

Ahmed Abdelkhalek
ahmed@mindspring.com

EMC Society

Harry Gaul
harry.gaul@ieee.org

GOLD

Mike Poggie
mike.poggie@ieee.org

Power Engineering Society

Jim Hudson
jhhudson@srpnet.com

Waves & Devices Society

Chuck Weitzel
chuck.weitzel@freescale.com



Institute of Electrical and Electronics Engineers, Inc. Phoenix Section

Components, Packaging and Manufacturing Technology Society Chapter
&
Waves and Devices Chapter

PRESENT AN ALL-DAY WORKSHOP ON

Emerging Device and Packaging Technologies

Date: Tuesday, December 11th, 2007

Time: 7:00 A.M. – 5:00 P.M.

Location: Arizona State University, Tempe, Arizona – ASU Memorial Union (Arizona Room)

Abstract

The semiconductor industry is entering an era with tremendous opportunities to exploit emerging technologies for the benefit of widely diverse markets. Moore's Law requires increasingly intensive materials innovations to maintain its momentum. Meanwhile, new markets in the areas of bioelectronics, sensors, etc., are leveraging the existing manufacturing infrastructure while incorporating new materials and techniques. This one-day workshop will bring together experts from industry, academia, research labs, and consortia to share their technology roadmaps and visions, novel materials and methods, and discuss technical opportunities. The status and challenges facing device, interconnect, and packaging technologies will be discussed in depth. An expert panel discussion will bring a closure to the day's workshop. Vendors will be on hand to exhibit products and services in all aspects of the supply chain for IC, packaging, and module design and manufacturing.

Topics

- Nanotechnology and Continuum Model Limits
- ITRS Roadmap Challenges
- SiP: 3D, Modules, Discrete Passives Integration
- Flexible Electronics
- Green Materials and Packaging
- Bioelectronics and Sensors Technologies
- General Industry and Technology Visions
- Panel Discussion on Future Challenges and Opportunities for Emerging Technologies

Vendor Displays

Workshop Chair: Vasu Atluri (480) 554-0360

Workshop Co-Chair: Chuck Weitzel (480) 413-5906

Technical Committee

Henning Braunsch (480) 552-0844
Shahin Farahani (480) 413-6010
Steve Goodnick (480) 965-6410
Vivek Gupta (480) 413-5849
Mali Mahalingam (480) 413-5368
Sunit Mahajan (480) 552-5317

Debendra Mallik (Co-Chair) (480) 554-5328
Mel Miller (Chair) (480) 413-6111
Kalluri Sarma (602) 436-6415
Sudhama Shastri (602) 244-3660
Sandeep Tonapi (480) 760-2484
Dragan Zupac (480) 413-3964



IEEE ANNOUNCEMENTS
INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
COMPONENTS, PACKAGING AND
MANUFACTURING TECHNOLOGY SOCIETY
ECTC Components & RF Program Committee
CPMT RF & Wireless Technical Committee



**58th ECTC May 27 – May 30, 2008
Orlando, Florida USA**

The CPMT RF & Wireless Technical Committee and the ECTC Electronic Components & RF Program Committee encourage you to submit an abstract to ECTC 2008 in the area of passive components & networks, RF and Microwave components and modules and subsystems. ECTC is the premier Electronic Components and Packaging conference held annually and attended by about 1000 delegates with equal participation from companies and academia. As in the past, Components, RF & Microwave related papers are solicited for focus sessions during this prestigious conference.

Discrete Passive Components

Design, materials, processes and manufacturing considerations for discrete passive components- resistors, capacitors, inductors and passive networks.

Integrated and Embedded Passive Components

Design, materials, processing, modeling, manufacturing, and characterization of integrated and embedded passive components on silicon, organic, ceramic and glass type substrates for digital, mixed signal, & RF applications

Materials, Processing, Reliability, and Manufacturing of Electronic Components

Design, Materials , Processing, yield and reliability aspects of electronic components

New Technology Development for Electronic Components

Technologies for on chip integration of passive components – silicon through vias, wafer level RDL, nano materials and processes

Technologies for substrate level integration – embedded passive and active components, component integration on ultra thin substrates

RF and Microwave Components

Integrated antennas, filters, baluns, RFID/sensors, RF MEMS, tunable devices and switches, high power and high efficiency RF/Microwave power amplifiers- design, technology and high frequency characterization

RF and Microwave Modules

Module Integration technologies in semiconductor, organic and glass substrates – System in Package, System on Chip, Package on Package, 3D integration

SUBMISSIONS:

Please submit abstracts using the ECTC web site: www.ectc.net by October 15, 2007. Abstracts must comply with the guidelines outlined at the website. To have your paper considered for inclusion in the “Components & RF” focused sessions YOU MUST SELECT “**Electronic Components & RF**” committee as your **PRIMARY subcommittee preference** when you submit your abstract at the ECTC web site. Again, to have your paper considered for the RF & microwave components sessions, please do the following:

IEEE ANNOUNCEMENTS

- STEP #1: Submit abstract through the ECTC web site (www.ectc.net) and select **“Electronic Components & RF” as PRIMARY subcommittee** preference
- STEP #2: Email abstract copy and author’s email & contact information to: Craig Gaw at c.a.gaw@ieee.org & Mahadevan Iyer at mahadevan.iyer@ece.gatech.edu

Craig Gaw, Chair - CPMT RF & Wireless TC
Freescale Semiconductor Inc.
c.a.gaw@ieee.org

Mahadevan K Iyer, Chair - ECTC RF & Components TC
Georgia Institute of Technology
mahadevan.iyer@ece.gatech.edu



ECTC 2008 Announces Call for Papers

Abstracts due October 15, 2007

Papers representing new developments and knowledge in the following areas are invited:

Advanced Packaging
Electronic Components & RF
Emerging Technologies

Interconnections
Manufacturing Technology

Materials & Processing
Modeling & Simulation

Optoelectronics

Posters
Quality & Reliability

You are invited to submit a 750-word abstract that describes the scope, content, and key points of your proposed paper. The first 100 abstracts received will be entered into a drawing for a chance to win a free registration for the 58th ECTC.

Submission: Please visit www.ectc.net to submit abstract. For any additional information regarding abstract and paper submissions, please contact 58th ECTC program chair, Jean Trehwella at jeanmh@us.ibm.com.

The deadline for abstract submission is October 15, 2007

Selection: Authors will be notified of paper acceptance with instructions for publication by December 15, 2007. Abstracts that are submitted may be considered for poster sessions at the discretion of the program committee. Manuscripts are due in final form for publication in the Conference Proceedings by February 25, 2008. The work submitted should be original, not previously published, and avoid the inclusion of commercial content. In addition to a printed copy conforming to the ECTC format, a computer file for the CD-ROM is needed in the preferred MS Word format.

Call for Professional Development Courses

Proposals are also solicited from individuals interested in teaching educational short courses (4 hours) on topics described in the Call for Papers. Proposals including course descriptions must be submitted via the website at www.ectc.net. Due date for receiving the abstracts and PDC proposals: October 15, 2007. Authors will be notified of course acceptance with instructions by December 15, 2007. Each selected course will be given an honorarium of minimum \$1000.

For more information on the conference, paper submissions, professional development course opportunities, available awards, and the Technology Corner exhibit hall, download a PDF of the complete [Call for Papers](#), visit www.ectc.net.

Conference Sponsors:





ARFTG 70th Microwave Measurement Symposium
High Power RF Measurement Techniques

Tempe Mission Palms Hotel, Tempe, AZ

Nov 27th – 30th, 2007

www.arftg.org

ARFTG CONFERENCE

Keynote presentation: "Characterization Challenges for Cellular Base-Station", Jaime Plá, Freescale Semiconductor

Technical papers describing original work in the areas of microwave and millimeter wave measurements for high power technologies will be presented on the following topics:

- Load-pull techniques: active and passive, fundamental and harmonic
- RF system measurement addressing linearity, efficiency, pre-distortion
- Linear and nonlinear device and behavioral modeling
- Calibration methods and techniques (1-port, 2-port, multi-port, high-power)
- Other areas of RF, microwave, and millimeter wave measurement theory and practice

Accepted papers for the technical program will be posted on www.arftg.org after September 24, 2007.

RF PA DESIGN SHORT COURSE

Join us in a practical tutorial describing modern RF power amplifier design techniques that will be presented by Dr. Steve Cripps, of *Hywave Associates*.

Day 1: A review of classical reduced conduction angle amplifier modes: Class A, AB, B, C; high efficiency amplifier modes: Class E, F, J; Doherty amplifier design; waveform measurement and verification techniques; RF PA nonlinearities.

Day 2: Linearization techniques: feedback and feedforward basics; pre-distortion basics and digital pre-distortion (DPD) techniques.

Conference Chair Mohamed Sayed mmsayed@sbcglobal.net +1-707-318-5255	Technical Program Chair John Wood John.Wood@freescale.com +1-480-413-5732	Local Organization Gayle Collins gcollins@rfmd.com +1-480-763-4686	Local Organization Mike Majerus Michael.Majerus@freescale.com +1-480-413-3461
Exhibits Chair Joe Tauritz jltauritz@ieee.org +31-53-4894330	Short Course Chair Basim Noori Basim.Noori@freescale.com +1-480-413-3360	Nonlinear Workshop Peter Aaen Peter.Aaen@freescale.com +1-480-413-6505	Signal Integrity W/shop Tom Ruttan Thomas.g.ruttan@intel.com +1-503-456-1245





SCHEDULE OF EVENTS

Tuesday, November 27 8.00am – 5.00pm	RF PA Design Short Course
Wednesday, November 28 8.00am – 12.00pm	
Tuesday evening	Short Course Dinner
Wednesday, November 28 1.15pm – 5.00pm	Nonlinear Measurement Workshop
Wednesday, November 28 5.00pm – 7.00pm	NVNA Users' Forum
Thursday, November 29 8.00am – 5.00pm	ARFTG 70 th Measurement Conference
Friday, November 30 8.00am – 12.00pm	
Thursday evening	Reception & Award Banquet
Friday, November 30 1.15pm – 5.00pm	Signal Integrity Workshop

NONLINEAR MEASUREMENT WORKSHOP

In this workshop we shall focus on the challenges of measurement of high power microwave transistors and amplifiers, and describe some of the techniques used to overcome thermal problems, memory effects, and the characterization of the impedance environment presented to the device. Talks include:

- Pulse Measurement Techniques*
Jean-Pierre Teyssier, University of Limoges
- LSNA Measurements for PA Characterization*
Marc Vanden Bossche, NMDG
- Characterization of High-Power Transistors: Waveform Measurement and Engineering*
Paul Tasker, University of Cardiff
- Active, closed-loop, harmonic load-pull systems*
Andreo Ferrero, Politecnico di Torino
- Digital Pre-Distortion Characterization of RFPAs*

SIGNAL INTEGRITY WORKSHOP

- Paul Draxler, UC San Diego
- High speed signal integrity is a topic of great interest in the industry today. There is large demand for higher speed data transfer rates from computer and communications systems for fast internet downloads, streaming video, CAD applications, etc. This workshop presents microwave modeling and measurement techniques applied to these problems.
- Building Bridges between Digital & Microwave*
M. Resso, Agilent Technologies
- Measurement-based Modeling for High Speed Semiconductor Test Interface Boards*
Heidi Barnes, Verigy
- Measuring Multiple Aggressor Differential Crosstalk*
Bob Schaefer, Agilent Technologies
- A Supercomputer in a PCI-express Form Factor*
Greg Edlund, IBM
- Why do we need Multiport VNAs for Signal Integrity?*
Brett Grossman, Intel Corp.



IEEE ANNOUNCEMENTS

LOCATION

The Tempe Mission Palms hotel is centrally located in downtown Tempe. A shuttle is available from the Phoenix Sky Harbor airport. All sessions will be held in the hotel.

Tempe Mission Palms Hotel,
60 East 5th St.,
Tempe, AZ 85281
Tel: +1-480-894-1400
www.missionpalms.com

ARFTG Room Rate is \$159.00 per night, plus local taxes and amenities.

Reserve your hotel room before November 2, 2007, to get the special ARFTG Conference rate; this rate is also available for accommodations three days before and after the conference dates. The Group Code for the ARFTG special rate is 2T9478. Reservations can be made online, or by telephone: 1-800-547-8705.

Special Awards Banquet Presentation:

Guest speaker Mike Golio (Microwave magazine) will talk about "Engineering Your Retirement"



REGISTRATION FORM

Last Name _____
First Name _____
Company _____
Mail Stop _____
Address 1 _____
Address 2 _____
City _____ State _____ Zip _____
Country _____
Phone _____
Fax _____
Email _____
RF PA Short Course, inc. NLM W/S \$450 \$ _____
ARFTG Conference, inc. NLM W/S \$495 \$ _____
ARFTG Conference, inc. SI W/S \$495 \$ _____
ARFTG Conference, + both W/S \$595 \$ _____
Nonlinear Workshop only \$150 \$ _____
Signal Integrity Workshop only \$150 \$ _____
RF PA + ARFTG Conf + NLM W/S \$745 \$ _____
RF PA + ARFTG Conf, both W/S \$850 \$ _____
• Check (payable to "ARFTG", in \$US on US bank)
• Credit card: _____ Visa _____ MC _____ AmEx
Name on Card _____
CC # _____
Expiration Date _____
Signature _____

Mail, Fax or email this form and payment to:

Ray Tucker,
ARFTG Member Services
PO Box 228
Rome, NY 13442-0228
Phone: 315-337-6938 Fax: 315-338-0531
Email: tuckerr@twcny.rr.com

Registration forms are also available online at:
www.arftg.org



Call for Papers

IEEE Signal Processing Society

Special Issue on Adaptive Waveform Design for Agile Sensing and Communication

With the available EM spectrum becoming increasingly scarce, a crucial need in sensing applications is one of multiple sensing, multi-modal sensor operation, and multi-function processing from diverse platforms. Specific application areas of interest include sensing, communications, countermeasures, and network centric warfare. End-to-end optimization for sensor, communication or intelligence gathering system using diverse waveforms includes selection of waveforms in real-time using all available information. Waveform diverse systems must exploit information pertaining to the propagation/scattering environment, transmit and receive antennas/arrays and their motion, targets and clutter, and communication signals. Several aspects of this information evolve with time. Therefore, waveform generation resources have to be optimally and adaptively integrated with electromagnetic phenomenology and other available knowledge sources using physical, experimental, and data-dependent approaches. Sensor fusion has a potential for enhanced performance in difficult operational scenarios. However, this potential was not fully realized in the past. In this context, it becomes imperative to associate data from multiple sensors with suitable models. The association problem becomes especially difficult when multiple platforms are used and when strong clutter precludes the detection of targets by individual sensors. Concurrent detection and tracking, or concurrent detection, tracking and fusion have to be employed. These problems are the focus of a number of supported research efforts worldwide.

The goal of this special issue is to feature recent advances in the area of adaptive waveform design for agile sensing and communication as well as remaining challenges. The advances can include novel physical, mathematical, and computational methods to combat important signal processing challenges arising on account of large system dimensionality and stressful conditions of sample support and onerous computational requirements. We invite original research contributions in all areas relevant to the field. In particular, paper submissions are encouraged on topics for adaptive waveform design, diversity and configuration in:

- Radar/sonar systems, dispersive environments with clutter
- Target tracking/detection, countermeasures, bi-static/multi-static operations, multiuser detection
- Optimization techniques
- Passive sensing operations, target-adaptive matched filtering
- Interferometry, optical systems, multi-function operations, impulsive systems, tomography and SAR
- Polarimetry, net-centric laser systems, band sharing, STAP
- MIMO systems, channel estimation/equalization, interference suppression, ultra-wideband, modulation and multiple-access schemes
- Emerging computational methods

Submission procedure

This special issue is slated to appear in a new publication currently in the IEEE approval stages. In the event approval is delayed, the special issue will not be delayed. The Society has agreed to publish this special issue timely and in a manner be fitting its topical importance, as a separate issue with its own covers, that would be mailed polybagged with an issue of the IEEE Transactions on Signal Processing. Prospective authors can find submission information at <http://www.ece.byu.edu/jstsp>. Submitted manuscripts should not have been previously published nor be currently under consideration for publication elsewhere. The manuscripts will undergo peer review process.

Manuscript submissions due: September 1, 2006
First round of reviews completed: November 15, 2006
Revised manuscripts due: January 1, 2007
Second round of reviews completed: February 15, 2007
Final manuscripts due: March 1, 2007

Lead guest editor: Arye Nehorai, Washington University in St. Louis (nehorai@ese.wustl.edu)

Guest editors:

Fulvio Gini, University of Pisa (f.gini@ing.unipi.it)
Maria Greco, University of Pisa (m.greco@iet.unipi.it)
Antonia Papandreou-Suppappola, Arizona State University (papandreou@asu.edu)
Muralidhar Rangaswamy, Air Force Research Laboratory/SNHE (Muralidhar.Rangaswamy@hanscom.af.mil)



IEEE SCS Phoenix Chapter

DATE: Monday, October 15th, 2007
TIME: 1:30pm-2:30pm
LOCATION: Arizona State University
Goldwater Center GWC 487

Map: <http://www.asu.edu/map/interactive/?campus=tempe&building=GWC>

Integrated Biosensors

PRESENTER: Prof. Khaled Salama
Department of Electrical and Computer Systems Engineering
Rensselaer Polytechnic Institute

Abstract:

Over the past few years, we have witnessed a significant increase in research on biological systems by engineers or environmental and biomedical diagnostics. Despite efforts to develop chips for biological assay detection, there continues to be a need to improve implementations of micro-scale detection and processing systems for further convenience, scaling and portability. These devices will lead to a significant cost-savings, throughput increases, and enable heretofore infeasible biological assays making “in the field” biological testing a reality. We will present the design and implementation of monolithic and hybrid sensors using integrated circuits, particularly in CMOS. We will begin by providing the definitions and performance metrics of sensors and a brief overview of various noise processes. Subsequently, we will discuss the advantages and shortcomings of sensors built in silicon-based fabrication processes and examine, in detail, their integrated circuit topologies. Next, we will provide a comprehensive study of the design and analysis of CMOS integrated biosensors, and electronic backbone of MEMS hybrid sensors. Topics include: silicon photodetectors; CCD and CMOS sensor architectures and circuits; Affinity-based detection and biochemical transduction; optical, electrochemical, and mechanical transducer design; integrated microarrays, biochips, and sensor SoCs.

Bio:

Khaled Salama received his Bachelors degree with honors from the Electronics and Communications Department, Cairo University, Egypt in 1997 and the Masters and PhD degrees from the Electrical Engineering Department, Stanford University, USA in 2000 and 2005 respectively. He joined the Electrical, Computer and Systems Engineering department at Rensselaer Polytechnic Institute as an Assistant Professor in 2005 and the Biomedical department in 2007. He was elected to both IEEE Sensory systems and IEEE BioCircuits technical committees in 2006 and to the VLSI systems and applications committee in 2007. His work on low light detection and fully integrated imagers has been funded by DARPA and NIH and was awarded the Stanford-Berkeley Innovators Challenge Award in biological sciences. He was the organizer of two special sessions on “Sensory Circuits and Systems for Biological Applications” at the IEEE International Symposium on circuits and systems (ISCAS 2005) and a special session on “Neural Prosthesis” at the IEEE International Symposium on circuits and systems (ISCAS 2006). He is currently the tutorials chair at the IEEE BioCircuits conference (BioCAS 2008). He coauthored 30 papers and 3 patents in the areas of biosensors, low-power mixed-signal circuits for intelligent sensors and medical instrumentation.



IEEE SCS Phoenix Chapter

DATE: Friday, October 12th, 2007
TIME: 1:00pm-2:00pm
LOCATION: Arizona State University
Goldwater Center ERC 490

Map: <http://www.asu.edu/map/interactive/?campus=tempe&building=ERC>

Circuit and System Techniques for Adaptive Equalization in High-Speed Wire-Line Applications

PRESENTER: Dr. Ayman Fayed
Member of Technical Staff
Texas Instruments, Wireless Terminals Business Unit

Abstract:

As the demand for higher data rates in wire-line communication systems increases, Intersymbol interference (ISI) becomes a serious hurdle due to the bandwidth limitation of communication media, i.e. cables and board traces. Many high-speed wire-line transceivers available in the market, such as USB 2.0 and IEEE1394, while capable of achieving high transmission rates, they normally require relatively expensive cables with only four to five meters long to avoid performance degradation due to ISI. This presentation will give an overview of adaptive equalization schemes that can be used for such applications along with a specific implementation of a purely analog adaptive equalizer used for IEEE1394 transceivers. The equalizer enables transmission at 125Mbps across up to 100 meters of Unshielded-Twisted-Pair (UTP) Category-5 (CAT-5) Ethernet cables, which are commonly used in home networks. System and circuit design of the adaptive equalizer will be discussed along with simulation and measurements results.

Bio:

Dr. Fayed received the B.Sc. degree from the Electronics and Communications Department, Cairo University, Cairo, Egypt in 1998, and the M.Sc. and Ph.D. degrees from The Ohio State University, Columbus, in 2000 and 2004 respectively. Since 2000, he has been with Texas Instruments Inc. as an analog and mixed-signal designer working on high-speed wire-line transceiver designs. He has been a key contributor to TI's high-speed wire-line transceivers product lines on 0.18um, 0.13um, and 90nm digital CMOS technologies. Since 2005, Dr. Fayed has been with the Wireless organization, where he has worked on sigma delta ADCs design for RF and baseband applications on 65nm and 45nm process nodes. He is a Member Group of Technical Staff with the Wireless group and is currently working on the development of embedded power management solutions on 65nm and 45nm processes for single-chip wireless and hand-held products. Dr. Fayed has several publications and patents in the field and has authored a book in the area of adaptive circuits and systems. His research interests include mixed-signal CMOS circuit design for wire-line and wireless applications, integrated power management, adaptive circuits, and ADCs.

IEEE Computer Society - Phoenix Chapter

October Meeting

<http://ewh.ieee.org/r6/phoenix/compsociety/index.html>

Speaker: Jon Adams



Date: 6:00 P.M., Wednesday, October 3, 2007

Location: DeVry University, 2149 West Dunlap Ave, Phoenix, AZ 85021 (1 mile east of I-17 on Dunlap, SE corner of 22nd Ave and Dunlap). Networking will be in the Courtyard (6-7PM with light meal), presentation at 7PM. **Free, everyone is welcome.** Please tell others about this meeting.

ZigBee Wireless Technology and the IEEE802.15.4 Protocol, Emerging Markets, and Future Uses.

The cost of networking sensors has always been an impediment to deploying geographically dense sensor systems. With the advent of IEEE 802.15.4 and mesh networking technologies like ZigBee, the cost and complexity of connecting sensors and control elements to one another and to "someone who cares" is no longer an issue. Find out how IEEE 802.15.4 works, get an overview of the ZigBee wireless networking and the function of the ZigBee Alliance, and hear how the technology is being used in market-leading innovative applications.

About the Speaker

Jon Adams is a director of wireless technology and strategy at Freescale Semiconductor Inc., and an authority in wireless including ZigBee, Wi-Fi, Bluetooth, WiMax, Ultra Wideband, NFC/RFID and Cellular (2/3/4G) technologies. He is experienced from circuit-level implementation to regulatory policy to market strategy in the handheld, mobile connectivity, multimedia, industrial, residential control and monitoring markets. In addition to his role as Vice-Chair at the ZigBee Alliance, he is on the Board of Directors of the IEEE Industry Standards and Technology Organization (IEEE-ISTO), and Freescale's lead delegate to the cellular-operator-led Open Mobile Terminal Platform (OMTP) organization and the handset-OEM-led Mobile Industry Processor Interface (MIPI) Alliance.

Mr. Adams is or has recently been a voting member of IEEE802.11/Wi-Fi, .15/Short-Range, .16/WiMax and .18/Regulatory working groups. Before Freescale, he was the payload manager for the NASA/JPL Electra transceiver, the beginning of a orbiting telecommunications network extending the Internet to Mars. He holds BSE and MSEE degrees from UCLA, with the latter a focus on EM Propagation and Scattering.

For more information about this meeting, contact C.Vasquez-Carrera@computer.org.

Would you like to be a speaker at this or future meetings? We are always looking for interesting speakers to cover computer related topics. Contact C.Vasquez-Carrera@computer.org for more information on becoming a speaker today.

IEEE Phoenix Area Consultants Network October Meeting: Virtualization - One Computer, Multiple Personalities

Date: Thursday, October 11, 2007

Time: Networking begins at 6:30 PM
Dinner begins at 7:00 PM
Program starts at 8:00 PM

Place: Denny's Restaurant
3315 N. Scottsdale Rd. (at Osborn)
Scottsdale, Arizona 85251

Abstract:

Computer expert Austin Godber will give a presentation on Virtualization. This technology allows the creation of "virtual computers" which can run different operating systems than the host computer. This is useful for better utilization of hardware resources, as well as testing, migration, disaster recovery, and more. Godber has a degree in Physics from ASU. He has experience in computer networking and security, and currently works for the server software company Jump Box.

For more information, contact Vaughn Treude, vaughn@nakota-software.com, or see the IEEE PACN website, ieeepacn.com.

IEEE ANNOUNCEMENTS

IEEE Membership Chair's Report – September 2007

The membership numbers have some mixed results for the IEEE Region 6 and for the Phoenix Section. The Region has grown higher grade memberships by 1.4% compared to the same time last year while our section has dropped 0.7% for the same time period. Locally, we have increased our Senior member rolls and 5 more of our 49 Fellows have qualified for Life Fellow membership since last summer. Our total membership for Phoenix is presently 3525.

For the IEEE in total, higher grade membership is up in all 10 Regions (the first time I've ever seen that happen) for a total higher grade membership of almost 271,000. Including students, our membership is up almost 6000 from last summer to 343,848.

This month is a great month for new members to apply. As the dues year starts in September, a new member would get the Institute and Spectrum for 15 months for the cost of 12! Let your colleagues know what a great value an IEEE membership is and at this time of year, it is even better.

Our chapters are active and many are having meetings (as shown elsewhere in this issue of the Valley Megaphone). Stop in at any meetings of interest, you will be warmly welcomed and just may learn a bit about your profession in the process. Local chapter and section meetings are part of the benefits you receive from your membership; take advantage of them.

Russ Kinner
Phoenix Membership Chair

IEEE ANNOUNCEMENTS

IEEE Mentoring Connection

IEEE is offering its members the opportunity to participate in an online program which will facilitate the matching of IEEE members for the purpose of establishing a mentoring partnership. By volunteering as a mentor, individuals use their career and life experiences to help other IEEE members in their professional development. I believe this program can be a great tool to provide our newest members of our profession guidance in their careers and provide experienced members a chance to hear first hand from the newly graduated about the latest training the next generation is receiving. This is a program for higher level members and is provided to help ease the transition out of school and into a career.

As a mentee, you lead your partnership by selecting your mentoring partner from among those who have volunteered to serve in this capacity. I ask that you review the time and effort commitment to the program to ensure a successful mentoring partnership. Participation in the program is voluntary and open to all IEEE members above the grade of Student Member.

If you are interested, please go to <http://www.ieee.org/mentoring> for information on the roles and responsibilities of each mentoring partner. I encourage you to take advantage of the IEEE network of technical professionals or offer your expertise and sign up for the online mentoring program today.

Who can be an IEEE Mentor?

IEEE higher-grade members (above Student Member grade) who are, but not limited to:

- Willing to give time and effort to the mentoring partnership (we suggest minimum of two hours per month)
- Able to communicate effectively with others
- Willing to share some career successes and failures
- Individuals who may be or have been executives, consultants, or in middle or upper management, or in research
- Individuals who may be or have been educators, entrepreneurs, or self-employed
- Individuals who may be or have been proven leaders offering inspiration and insight
- Individuals who may be or have been IEEE officers or volunteers
- Willing to review an orientation session to learn guidelines, tools of program and the mentee and mentor's role and responsibilities

Who can be an IEEE Mentee?

IEEE higher-grade members (above Student Member grade) who are, but not limited to:

- New professionals in their first or second job, or considering entering graduate programs
- Recent graduates entering the professional workforce for the first time
- Professional making a career move or career change
- Passionate for learning
- Willing to give time and effort to the mentoring partnership (we suggest minimum of two hours per month)
- Willing to identify and clarify their developmental goals
- Interested in learning from another professional "who has been there"
- Willing to participate in mentee orientation session to learn guidelines, and tools of program and their role and responsibilities as a mentee

This program deserves your consideration and doesn't require a large amount of time on your part. It can provide of great assistance to the next generation of engineers.

Russ Kinner
Membership Chair, Phoenix Section

RE-SEED

Retirees Enhancing Science Education through Experiments & Demonstrations

Overview

RE-SEED (Retirees Enhancing Science Education through Experiments and Demonstrations) is a Northeastern University program that prepares engineers, scientists, and other individuals with science backgrounds to work as volunteers, providing in-classroom support to upper elementary and middle school science teachers with teaching the physical sciences.

After completing a comprehensive free training program, participants volunteer in middle school classrooms on the average once a week for at least one year. RE-SEED began in 1991 with six volunteers. To date close to 500 RE-SEED volunteers have worked in schools in about 100 communities throughout the country offering about 500,000 hours of their time.

Nationally, 75 percent of 7th and 8th grade students are taught physical science by teachers who do not have a major or a minor in the subject (The National Science Board, Science and Engineering Indicators 2000). RE-SEED volunteers possess talent and expertise that complement those of science teachers. They bring with them a wealth of knowledge and experience that allows them to make science interesting and relevant to everyday situations.

RE-SEED volunteers work closely with the host science teachers to help them enrich and implement their school curriculum. Overall the volunteers become involved members of their schools' and even their districts' teaching team, sometimes taking part in curriculum adoption decisions.

Please contact us by email at reseed@neu.edu or phone 888-742-2424; Shelia Kirsch at Sheila.Kirsch@asu.edu and / or Deirdre Weedon, d.weedon@neu.edu. if you are interested in learning more about these training programs.