The Valley Megaphone

Newsletter of the Institute of Electrical and Electronics Engineers, Inc., Phoenix Section

October 2012, Volume XXVI, Number 10

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IEEE Phoenix Section on-line updates can be found at http://ewh.ieee.org/r6/phoenix/ and on LinkedIn at: http://www.linkedin.com/groups?gid=2765918 Please send announcements for the *Valley Megaphone* to Surinder Tuli at surinder.tuli@gmail.com and to Russ Kinner at r.kinner@ieee.org for inclusion in the Section Calendar.

The IEEE Banquet pictures are up, see http://ewh.ieee.org/r6/phoenix/index.php

Chapters

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Waves & Devices Society
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Women In Engineering
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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 Surinder Tuli at the above email address. Deadline for announcements and dvertisements is the third Friday of the month prior to publication. Advertising Rates: Full page: $200, 3/4page: $125, ½ 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://ewh.ieee.org/r6/phoenix/

U – News

(for Student Members)

Updates of Student Advisors and Committee Members

Each Student Branch noted on the right side of this page should review current information on Advisors and Student Committee Members and forward to my attention within this week, as we are reviewing contacts for reporting and activities including Student Monthly Meetings.

S. Diane Smith
602-749-4601
sdianesmith@computer.org
Student Activities Chair

Student Branches

ASU Main, Engineering
Chair: Ahmet Durgun,
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ASU Polytechnic
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Advisor: TBD

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NAU, Engineering
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Embry-Riddle, Prescott
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Advisor: John E. Post
postj@erau.edu

U – Newsbytes

ASU Polytechnic is currently seeking Advisor for the Student Branch. Please email Diane (at email address above) with Recommendations.

Start your own MicroMouse and compete for cash prizes!

The Section has a full tournament sized MicroMouse maze. Funding for your project may be available. For details contact the Section Student Activities Chair, S. Diane Smith sdianesmith@computer.org

- View pictures from the MicroMouse contest at the Southwest Area Spring 2010 meeting at http://picasaweb.google.com/ieeegoldphx/2010IEEESWASpringMeeting (photography by David Huerta, GOLD Affinity Group Chair)

IEEE-PHOENIX Section Scholarships

IEEE Phoenix Section Scholarships

- In 2013 the IEEE Phoenix Section will award $1000 scholarships to three qualified applicants.
- Detailed information and the scholarship application form can be found at http://ewh.ieee.org/r6/phoenix/Scholarships.htm
- Application deadline is January 13, 2013

Dr S. Diane Smith
IEEE Phoenix Section
Student Activities Chair
sdianesmith@computer.org

Phoenix Section Student Paper Contest

- **Undergraduate students can win cash prizes and top entrants are eligible to present their paper at the IEEE Region 6 Southwest Area later in Spring 2013 .**
- **Detailed information can be found at http://ewh.ieee.org/r6/phoenix/StudentPaper.htm**

The submission deadline is March 2, 2013

Dr S. Diane Smith
IEEE Phoenix Section
Student Activities Chair
sdianesmith@computer.org

Signal Processing & Communications Society

Phoenix Chapter of IEEE Signal Processing Society and Communications Society

Upcoming events, please note that due to unexpected reasons the talk by Dr. Ramakrishnan (AT&T labs) has been canceled.

1. **Dr. Mischa Dohler,** Centre Tecnologic de Telecomunicacions de Catalunya (CTTC), Barcelona, Spain.
   Topic: Home Networking
   Date and Time: Friday, Nov 16th 2012, 11:00am
   Location: ASU Campus, Usability Engineering Bldg., USE Room 104

2. **Dr. Kadangode Ramakrishnan**, AT&T Research Labs. **Canceled**

3. **Live Free Webinar from IEEE Communications Society.** Register now for live webinar on ***Synchronization in Next Generation Telecom Networks.*** Thursday, 18 October 2012, 11:00 AM Eastern. Expert panel from IEEE Communications and ITU-T standards Committees.

Please contact Chapter Chair Pavan Turaga (pturaga@asu.edu) to volunteer or propose a speaker for upcoming meetings.

CPMT Phoenix Chapter

CPMT- Packaging and Manufacturing Technology Society

IEEE Components, Packaging and Manufacturing Technology Society Phoenix Chapter

Wednesday, October 17th, 2012 at 6 PM

Regulatory & Environmental Landscape

Stephen Tisdale

Standards Manager with Intel Corporation at Intel Corporation Chandler AZ 85226

ABSTRACT:
This presentation will cover the topic of environmentally sustainable electronics, and will focus on the current situation regarding global legislation as well as some key voluntary initiatives within the electronics industry. Some of the topic areas to be covered in detail will be the RoHS Revision (Recast) and the move to Low-Halogen Electronic Products. It will also touch up other topics such as REACH, China RoHS and EPEAT at a higher level so that participants can get a general understanding of some of the current issues facing both material suppliers as well as the end product manufacturers.

BIOGRAPHY:
Stephen Tisdale has been with Intel for 8 years and is the Standards Manager with the Corporate Product Regulations & Standards Group within the Customer Quality Network Organization. He received a Bachelors Degree in Chemistry from Holy Cross College, an MBA in Operations Management from U-Mass and a Masters in Program Management from George Washington University. Since joining Intel, he has worked on a number of environmental and standards initiatives including both lead-free and halogen-free projects. He is a sponsor of the Industry Standards Clearing Committee, which reviews and evaluates future and existing products for alignment with accepted industry standards. He is also involved in various Consortia Projects and is involved in addressing technical communications regarding pending legislation in various Geo's. Prior to joining Intel, Mr. Tisdale held various engineering and R&D management positions within the electronics industry, and holds more than 30 patents covering new material formulations, manufacturing processing and product design.

(NOTE NEW DIRECTIONS DUE TO CONSTRUCTION:)

Date: Wednesday, October 17th , 2012

Location: Group Conference Room, Freescale Semiconductor, Inc., 2100 E. Elliot Rd. Tempe, AZ. To enter the Freescale facility, after exiting from 101, go West on Elliot Road. Turn North on Country Club Way (first right turn). Enter the facility and walk to the Main (South) lobby in building 94, by the flag poles; you will be escorted to the meeting venue.

Time: 5:30–6:00 Social/Refreshments, 6:00–7:00 Presentation, 7:00 Dinner
(Pizza and Soda will be provided by the IEEE CPMT Phoenix Chapter)

IEEE members and non-members are all welcome to attend. Those who plan to attend should be at the facility entrance no later than 6:00 pm, as there will be no escorts available after that.

For more information, please contact any of the following CPMT officers:

Surinder Tuli (480) 554-8275
Vivek Gupta (480) 413-5849
David Dougherty (480) 413-6923
Vasu Atluri (480) 227-8411
Mahesh Shah (480) 544-9438

IEEE CPMT Society Phoenix Chapter is seeking volunteers to serve as Chapter Officers for 2013. One has to be a member of IEEE CPMT Society to serve as the IEEE CPMT Society Phoenix Chapter Officer. If interested, please contact Dr. Vasudeva P. Atluri, Chair, IEEE CPMT Society Phoenix Chapter, by sending an email to vpatluri@ieee.org.

4th IEEE Soft Error Rate (SER) Workshop/Webinar

4th IEEE Soft Error Rate (SER) Workshop/Webinar

-- Thursday, October 25, 2012 -- A **live Webinar** (also available later, on-demand) -- 11:30 AM - 5:00 PM -- **No cost (**live on the Internet)

Speakers:
Nelson Tam, **Marvell**
Robin Gardiner, **Matheson Gas**
Bharat Bhuva, **Vanderbilt University**
Jeff Wilkinson, **Medtronic**
Brendan McNally, **XIA**
Mike Gordon, **IBM**;
Shah Jahinuzzaman, **Intel**;
Brett Clark, **Honeywell**;
Yi-Pin Fang, **TSMC**;
Sang H. Baeg, **Hanyang University**

TOPICS: - alpha emissions - packaging materials and manufacturing process - control and mitigation - low-k - updates and advances

Full details, listing of talk summaries, and to register: **www.cpmt.org/scv/meetings/cpmt1210w.html**

Power & Energy Society

IEEE Power and Energy Society
Phoenix Chapter
http://ewh.ieee.org/soc/pes/phoenix/

News and Announcements:

- Don't miss our **55th Annual PES Golf Tournament**, which will be held on Saturday, October 13th, at the Antelope Hills Golf Club in Prescott. This is our annual fundraising event, allowing us to sponsor scholarships, student outreach programs, and, of course, our $5 luncheons and technical seminars. See further information on the next page.

- Our October Luncheon will be held on October 18th at the SRP PERA Club. More information is provided two pages down.

- At the IEEE Phoenix Section Annual Award Banquet, the Phoenix PES Chapter was named the Outstanding Chapter for 2011 (http://ewh.ieee.org/soc/pes/phoenix/OutstandingChapterAward2011.JPG). We would like to thank everyone who supports our Chapter by sponsoring and participating in our annual golf tournament and by attending our monthly luncheons.

- We are pleased to announce that our Chapter sponsored a $1000 electrical engineering scholarship, which was awarded by the IEEE Phoenix Section in February. The deadline for the next round of scholarships is January 2013. For more details, visit http://www.ewh.ieee.org/r6/phoenix/Scholarships.htm.

- Want to know more about IEEE Power and Energy Society? Watch this video:
  - http://www.youtube.com/watch?v=BRKM4lpo_tk
  - More videos are available at: http://ieee-pes.org/outreach/pes-informational-promotional-videos

- Have you considered becoming a Senior Member of IEEE? It's not as difficult as you think. Basically, you need ten years of professional experience, and your bachelor's degree counts for three of those years. Find out more at: http://www.ieee.org/membership_services/membership/senior/index.html

55th IEEE-PES FUNDRAISER GOLF TOURNAMENT

October 13, 2012 in Prescott, AZ

Be sure to join us at Antelope Hills Golf Course, located at 1 Perkins Drive, Prescott, AZ 86301, for a 12:00 PM Shotgun Start.

This is the annual fundraiser for your IEEE-PES Chapter. The fee is $100 per player or $400 to sponsor a foursome. Be sure to come early and stay late as there will be free range balls beforehand and dinner afterwards. Cash prizes awarded for first, second, and second to last place teams. There will also be a Raffle, Skills Games, and Giveaways Galore. We have a block of rooms reserved at the Marriott Residence Inn, 3599 Lee Circle, Prescott, AZ 86301. The phone number is (928) 775-2232.

To sign up for the tournament, please call (480) 991-9191. The sign-up form is available at http://ewh.ieee.org/soc/pes/phoenix/IEEEGolfFlyer2012.pdf.

IEEE PES Phoenix Chapter
October 2012 Luncheon Meeting

Date: Thursday, October 18, 2012

Time: 11:30 am - 11:45: Registration
11:45 noon: Lunch
12:15 pm: Program

Location: SRP PERA Club
1 E Continental Dr
Tempe, AZ
Map: http://ewh.ieee.org/soc/pes/phoenix/images/PERAMAP.pdf

Speaker: Jay Prigmore, Ph.D. Student, Arizona State University

Topic: A Neodymium Based Hybrid Fault Current Limiter For Use in the FREEDM Project

Cost: $5.00 (No cost if you are a college student)

Reservations: Contact Nancy or Stacy at (480) 991-9191 Ext 10 or Ext 16 or submit your name at http://ewh.ieee.org/soc/pes/phoenix/lunch.php. Reservations deadline is 5PM on Friday, October 12, 2012. If you have already registered for this luncheon but need to cancel, please submit your name at http://ewh.ieee.org/soc/pes/phoenix/lunchcancel.php.

Abstract:

A novel Neodymium (NdFeB) based fault current limiter for the National Science Foundation's FREEDM Project will be presented. The proposed device incorporates a fast mechanical contact switch in parallel with the NdFeB core. The proposed fault current limiter exploits the nonlinear characteristics of the ferromagnetic core. The hysteretic properties of the ferromagnetic core are modeled by the Preisach method of Hysteresis. Finite Element Analysis is performed on the coils of the proposed device and the results are displayed. A low voltage simulation is done to determine the feasibility of the proposed device and to determine the correct operation. The simulations show the NdFeB fault current limiter can limit the potential fault current by the required 50%. Also, harmonic analysis is performed and is determined the NdFeB fault current limiter does not inject any additional harmonics into the FREEDM system.

Biography:

Jay Prigmore received his bachelor's degree in electrical engineering in May 2010 from Lamar University in Beaumont, TX, USA. He received his Masters of Science degree in electrical engineering from Arizona State University in Tempe, AZ in May 2012. He attends graduate school at Arizona State University to obtain his PhD in electrical engineering with an emphasis on power system protection. His research interests include power system protection with the utilization of power electronics for the smart grid.

Solid State Circuits Society

IEEE

INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS

SSCS IEEE SOLID-STATE CIRCUITS SOCIETY

Next Updates coming soon

EMC Society

Technical Meeting Announcement on Printed Circuit Board EMC Design Review

Date: Tuesday, November 13th, 2012
Place: Garcia's Mexican Restaurant at Embassy Suites Hotel
Address: 4400 South Rural Road, Tempe, Arizona
Address: Just South of U.S. 60 on West side of Rural Rd.
Time: 5:30PM Social in Garcia's, 6PM Dinner in Garcia's, 7PM Meeting in Embassy Suites Junior Ballroom (upstairs)

Title: Printed Circuit Board EMC Design Review

Speaker: Daryl Gerke PE, Kimmel-Gerke Associates Ltd

Abstract: As EMC consulting engineers, we are often asked to conduct EMC design reviews. A key area of concern is the printed circuit board -- critical circuits, stackup, trace routing, I/O protection, and more. The goal is to catch problems early in the design stage, when it is inexpensive (or even free) to fix them. Knowing what to look for, you can do simple EMC design reviews yourself. You may not catch everything, but if you eliminate 90% of the problems, you are 10x (20 dB) better than before. This presentation will address twelve of those EMC design concerns.

Biography: Daryl Gerke, PE, is a partner with Kimmel Gerke Associates Ltd, an engineering consulting firm that specializes in EMI/EMC design issues. Daryl has been involved with EMC for over 40 years, and has been a full time consulting engineer for 25 years. Daryl has a BSEE from the University of Nebraska, and is a Registered Professional Engineer (PE) and a NARTE Certified EMC Engineer. He is the vice-chairman of the Phoenix EMC Society Chapter, and resides in Mesa, AZ.

Reservations: To help us get an accurate headcount, please send an RSVP email to Harry Gaul (harry.gaul@ieee.org). There is no charge for meetings, but you pay for your own meal and drinks. If you decide at the last minute, please come anyway. You don't need to be an IEEE or EMC Society member to attend -- all are welcome.

Life Member Affinity Group

IEEE Phoenix Section Life Member Affinity Group

Celebrating 125 Years of Engineering the Future

Technical Meeting

Topic: The Golden Age of Air Racing by Warren Folkerts

The Golden Age of Air Racing was a period in our country's aviation history that was ushered in by Charles Lindbergh's solo flight from Long Island to Paris in 1927 and continued until the eruption of World War II. Despite the Great Depression throughout the 1930's – or perhaps because of the economic desperation of that that time – "backyard mechanics" and their custom built racers dominated the air races as these builders and flyers pushed the performance envelope of aviation. The people and machines of this period make up a very unique and significant chapter in the history of American aviation. This presentation will tell the stories of some of these innovators, their dreams that were transformed into the racing aircraft and the courageous people who piloted these airships during this Golden Age of aviation history.

Biography

Warren Folkerts earned his chemical engineering degree from the University of Arizona. He has been at SRP for 30 years and is currently a Principal Engineer in the Computer Applications group within System Operations department. Previously he worked for the Phelps Dodge Corporation from 1980 to 1982. Throughout his career at SRP, his key responsibilities focused on the support of SRP's Energy Management System. One of Warren's avocations is an interest in aviation. He is especially interested in aviation history for the period from the late 1920's through World War II. . Warren is a member of the Experimental Aircraft Association and the Academy of Model Aeronautics. He also is a member of Toastmasters International for the past 4 years.

When: Tuesday, October 16, 2012, 11:00am – 1:00pm Registration fee is $15.
Where: SRP's **PERA Club** Bighorn Room,
1 East Continental Drive, Tempe, AZ
West of 68th St., ½ mile south of McDowell Road

RSVP: Please respond to Program Chair, Ronald Sprague by email:
rlsprague@q.com at least a few days before the meeting.

The Program Chair is seeking suggestion from members for future technical presentations. Any ideas of interest are open for consideration. Please contact Ronald Sprague Program Chair at rlsprague@q.com or any officer with ideas.

About IEEE Phoenix Section Life Member Affinity Group:

The IEEE Phoenix Section Life Member Affinity Group was organized to enable IEEE Life Members to retain active IEEE associations, contribute to the social good in their communities, advance IEEE's professional interests and enjoy each other's company.

An IEEE member automatically becomes an IEEE "Life Member" status when at least 65 years of age and the sum of your current age and years of membership is 100. For more details use the link
http://www.ieee.org/web/volunteers/mga/home/life_members_committee/index.html

Activities: Annual technical meetings scheduled in February, May, October, and December. Elections are held at the December meeting.

Technical meeting topics and suggested speakers are encouraged. Contact any Officer.

Future Technical Meetings:

- Tuesday, October 16, 2012 SRP PERA CLUB
- Tuesday, December 4, 2012 SRP PERA CLUB

Officers:

Chair	A. Barry Cummings	*Barry.Cummings@srpnet.com*
Vice Chair	Michel Ebertin	*Michel@ebertin.net*
Secretary	Tom Lundquist	Tom.Lundquist@ieee.org
Treasurer	Leslie Daviet II	*lesdavietii@cs.com*
Program Chair	Ronald L. Sprague, P.E.	rlsprague@q.com
Past Chair	C Bruce Johnson	*cbjsg@q.com*

Women in Engineering Affinity Group

IEEE Phoenix Section
Women in Engineering
Affinity Group

Diane Smith, Shamala Chickamenahalli, Lesley Polka and Jennifer Taggart represented the IEEE Phoenix Section **Women in Engineering (WIE) Affinity Group (AG)** at the Arizona State University (ASU) Engineering Career Exploration Night on ASU's Tempe Campus on September 12, 2012, from 4:00 to 8:00 pm. This unique event specifically targets students in their first year of engineering study. The event is focused on helping new engineering students learn about the many facets of engineering and learn from real engineers. Several students stopped by the WIE AG table and talked to the WIE members about careers in engineering and the specific areas they are considering. WIE members provided the students with feedback and encouragement.

WIE is also planning an event for the third week of October. The October meeting will feature a panel of women discussing the transition from engineering student to professional engineer. This event will be an opportunity for students to learn lessons from experienced engineers on how to successfully transition to the full-time workplace. Please stay tuned for more information in next month's Megaphone.

If you would like to be added to our distribution list for further information about this and future events, please contact Diane Watkins (diane.watkins@srpnet.com).

If you would be interested in helping to organize any of our activities or have suggestions for other activities or speakers for future events, please feel free to contact any of our Executive Committee members:

Chair: Shamala Chickamenahalli (shamala@ieee.org)
Vice-Chair: Joy Harris (joyelle.j.harris@intel.com)
Secretary / Publicity: Diane Watkins (diane.watkins@srpnet.com)
Treasurer: Diane Smith (diane@web-oasis.com)
Web Master: Audrey Skidmore (ASkidmore@azmag.gov)
Membership: Lesley Polka (lesley.a.polka@intel.com)
Region 6 Liaison: Barbara McMinn (barbara.mcminn@aps.com)

The IEEE WIE Affinity Group's mission is to inspire, engage, encourage and empower IEEE women worldwide with a vision of creating a community of IEEE women and men innovating the world of tomorrow. More information about IEEE WIE can be found at: http://www.ieee.org/membership_services/membership/women/women_about.html.

Computer Society

Phoenix Chapter of the IEEE Computer Society
September, 2012

News

- We are planning a chapter picnic for November. The picnic will be at Desert Breeze Park in Chandler and will be held on Saturday, November 17th. More details will be forthcoming.

- Chapter elections for officer positions for 2013 will be held at the chapter meeting in November. If you are interested in an officer position in 2013 please contact one of the current officers.

Future Events

- September 5 – Chapter meeting, DeVry University, speakers Dr. Steve Miller, Don Willey, MCS, "Integrating GPS from a Software Perspective".

- November 14 – Chapter meeting, DeVry University, speaker Gil Speyer, PhD, graphical processing units and applications.

- November 17 – Chapter Picnic, Desert Breeze Park, Chandler.

- January 9, 2013 – Chapter meeting, Devry University, speaker TBD.

Meetings start at 6:00 pm with networking and light refreshments followed by the presentation at 7:00 pm. DeVry University is located at 2149 W Dunlap Avenue, Phoenix.

Visit the CS Chapter website for the latest information: http://ewh.ieee.org/r6/phoenix/compsociety/.
For brief announcements regarding upcoming events we are also on Twitter: @IEEECS_PHX

If you would like to suggest a topic or speaker for any of our future meetings, please contact one of the chapter officers:

Jerry Crow (jerry.crow@computer.org)
Brad Morantz (bradscientist@ieee.org)
Audrey Skidmore (askidmore@computer.org)
Diane Smith (sdianesmith@computer.org)

Wave and Devices

Institute of Electrical and Electronic Engineers
Waves and Devices Phoenix Chapter
http://ewh.ieee.org/r6/phoenix/wad/

Photonics Society Meeting
GWC-487, Friday, 3:30 PM, Oct 5th, 2012

Absorption edge of GaAsN and GaAsBi measured by photothermal deflection spectroscopy and synthesis of InSb nanowires by template assisted eletrodeposition

Dr. Mario Beaudoin, University of British Columbia, Vancouver, Canada

Abstract: This talk will discuss photothermal deflection spectroscopy (PDS) measurements of epitaxial films and the synthesis of InSb nanowires. The PDS technique has been used to measure the absorption bandedge and gap states of GaAsN and GaAsBi films. Bulk samples with typical thickness of 200 nm are grown on GaAs substrates by solid source molecular beam epitaxy (MBE) with an RF plasma nitrogen source. The N concentrations as well as the sample thicknesses are assessed by high resolution X-ray diffraction measurements. A 1D model for PDS is used to extract the absorption edge of GaAsN from the raw PDS data. Since the GaAs substrates are transparent in the region of interest for GaAsN, reflections at the substrate backside become important in the magnitude of the PDS signal and need to be properly accounted for in the model. The results reveal details of the subgap and bandedge absorption in dilute $GaAs_{1-x}N_x$ films for x <2%. While the deduced optical bandgap is found to be in agreement with the empirical relation deduced by Tisch et al. [APL, **81** 463-465 (2002)], the characteristic energy of the exponential absorption edge is found to be 4 times larger than in pure GaAs films. InSb nanowires (NWs) have been synthesized by pulsed electrodeposition using anodic alumina membranes (AAM) as templates. Two sets of AAMs were used: one set had 150 nm diameter pores and a porosity of 32% with a density of 2x109 pores/cm^2 while the other set had 35 nm pores and 12% porosity with a density of 1010 pores/cm^2. Scanning electron microscopy imaging shows that the free standing nanowires had uniform diameters but varied in length although they were all several µm long. Transmission Electron Microscopy measurements performed on both sets of wires shows that the 35 nm diameter wires are amorphous while the 150 nm diameter wires have polycrystalline domains. Powder X-Ray Diffraction (XRD) shows that the 150 nm diameter nanowires exhibit polycrystalline properties with the {111} and {220} diffraction being slightly more prominent than the {331}, {422}. As-grown samples with 55 nm diameter annealed at 350°C showed a marked improvement in the powder XRD peak widths which improved from 0.46° to 0.26°.

Biography: Mario Beaudoin completed his B.Sc. and M.Sc. in physics at McGill University, in 1986 and 1988 respectively, with a thesis on electronic transport properties of n-type InP. Mario then completed a Ph.D. in engineering physics at the École Polytechnique in Montréal in 1992 where he synthesized a-Si:H/a-SiNX:H multilayers and studied their optical properties. Mario then held a series of postdoctoral fellowships and research positions at École Polytechnique (93-95), University of British Columbia (95-97) and Arizona State University (97-99) where he synthesized III-V semiconductor strained layer multi-quantum well structures by MOCVD and MBE in order to study their structural, electrical and optical properties as well as to fabricate optoelectronic devices. Those positions led Mario to California in 1999 to work for Bandwidth9, Inc., where he worked on the development of a novel tunable vertical cavity surface emitting lasers (VCSELs). Mario came back to UBC in 2003 where he now manages the Advanced Nanofabrication Facility. His current research interests are in the area of structural and optical characterization of semiconductor materials for photonic applications. Mario is also very active in the francophone and francophile community of Vancouver having recently created a new networking website, francouver.ca, to help promote and organize social events.

Date: Friday, October 5th, 2012; **Time:** *Presentation* and *Discussion* 3:30 – 5:00 PM

Location: Arizona State University, Tempe Campus, Goldwater Center (GWC) Room 487
Enter building through main (south) lobby and take elevator to fourth floor. Go north down the west hallway, the conference room is on the right. See http://www.asu.edu/map/ for map.

Sponsored jointly with the Center for Photonics Innovation, Arizona State University; for additional information please contact Shane Johnson at shane.johnson@asu.edu

INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS

WAVES AND DEVICES - Phoenix Chapter

Meeting Free & Open to Non-IEEE Members

4:00 to 5:30PM, Tuesday, October 9th, 2012

Freescale Semiconductor
2100 E. Elliot Rd., Tempe, AZ
Group Conference Room

RF I-V Waveform Measurement and Engineering

- the unifying link between transistor technology, circuit design and system performance

Professor Paul J Tasker
Cardiff School of Engineering

Abstract

Microwave power amplifier performance, output power, conversion efficiency and linearity, etc., is significantly influenced by the terminal voltage and current time varying waveforms that develop at the transistor terminals; *terminal waveforms are the unifying theoretical link between transistor technology, circuit design and system performance*. Thus *waveform engineering* should be a major objective driving the power amplifiers design flow. However, in practice power amplifier design, while waveform engineering may be a guiding principle, the lack of appropriate RF waveform measurements tools has hindered its direct application at microwave frequencies. However, the past 10 years has seen the development of a number of RF characterization systems capable of measuring RF voltage and current waveforms. Coupling such systems with impedance control hardware also enables experimental control (Engineering) of these terminal RF waveforms during measurements; *thus providing a practical RF Waveform Measurement & Engineering solution*. This lecture will discuss these emerging systems and show they are now finally enabling practical waveform engineering to be directly undertaken within the power amplifier design flow. Design support can involve either direct utilization of the measurement system in the design investigation/evaluation loop, or indirect use by providing CAD accessible datasets.

Biography

Paul J Tasker has been working in the field of microwave and millimetre wave device & circuit characterization for over 25 years. He obtained a BSc in Physics and Electronics in 1979 and a PhD in Electronic Engineering in 1983, both from the Leeds University. He has worked (1984-1990) as research associate at Cornell University with Lester Eastman involved in the design and development of high frequency transistors. From 1990-1995 he was a senior researcher and manager, at the Fraunhofer Institute for Applied Solid State Physics (IAF) in Freiburg Germany, responsible for the development of millimetre wave MMICs. He joined the School of Engineering at Cardiff University as Professor in the summer of 1995. While at Cardiff he has establishing, and now Directs, the Cardiff University and Agilent Technology Centre for High Frequency Engineering. The Centre's research objective is to pioneer the development and application of RF I-V Waveform and Engineering Systems, with a particular focus to addressing the PA design problem. This centre is working with a number of national and international companies; i.e. Nokia, Freescale, Inphi, QinetiQ, Filtronic, IQE, SELEX, Mimex Broadband etc. in both the commercial communication and military sensor fields. He has contributed to over 200 journal and conference publications and given a number of invited conference workshop presentations. He is a Fellow of the IET and a Senior Member of the IEEE.

Date: **Tuesday, Oct. 9th, 2012**
Time: **4:00-5:30 PM Presentations (Pizza will be served following the Seminar)**
Location: Group Conference Rm, Bldg 94, Freescale Semiconductor, 2100 E. Elliot Rd., Tempe, AZ
Use Freescale Main Entrance (South) facing Elliot Road

For more information, contact: Steve Rockwell (WAD Chapter Chair) (480) 241-9891 steve.rockwell@ieee.org
Adel Elsherbini (Chapter Publicity) (734) 686-2278 a.elsherbini@ieee.org

WAD Website: http://ewh.ieee.org/r6/phoenix/wad/

INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS

WAVES AND DEVICES - Phoenix Chapter

Meeting Free & Open to Non-IEEE Members

4:00 to 5:30PM, Thursday, October 25th, 2012

Arizona State University

Brickyard on Mill, Room BYeng-660, Brickyard 6th Floor

(Location not confirmed at time of publication, check website)

Space Mapping: An Engineering Design Technology That Mimics Common Sense

John W. Bandler, McMaster University

Abstract

Space mapping, now in its twentieth year of development and exploitation, is an engineering design technology that fully exploits the engineer's traditional "quasi-global" intuition. Through suitable physics-based surrogates, space mapping facilitates design optimizations with high-fidelity or "fine-model" simulation accuracy but with "coarse-model" simulation speed. It implements the iterative enhancement of surrogates derived from simple mappings of coarse models to realize highly accurate surrogates of corresponding fine models. Importantly, space mapping offers a quantitative explanation for the engineer's mysterious "feel" for a problem. Because its characteristics parallel contemporarily understood aspects of how the brain carries out certain tasks, we assert that space mapping technology mimics "common sense." Here, we introduce the concept, recall important advances, draw parallels with everyday human experience, indicate the current state of the art, and provide illustrations from various engineering disciplines, including electromagnetics-based microwave device modeling and design optimization.

Biography

John W. Bandler studied at Imperial College of Science and Technology, UK, and received the B.Sc.(Eng.), Ph.D., and D.Sc.(Eng.) degrees from the University of London, England, in 1963, 1967, and 1976, respectively. He joined McMaster University, Canada, in 1969 and is now a Professor Emeritus. He was President of Optimization Systems Associates Inc. (OSA), which he founded in 1983, until 1997, when OSA was acquired by Hewlett-Packard. OSA implemented a first-generation yield-driven microwave CAD capability for Raytheon in 1985 and subsequently engineered and marketed several software products. He is President of Bandler Corporation, which he founded in 1997. He has published more than 470 technical papers, including contributions to books. He became a Fellow of the IEEE in 1978 (a Life Fellow since 2006). He is a Fellow of several other societies, including the Canadian Academy of Engineering and the Royal Society of Canada (since 1987). He received the Automatic Radio Frequency Techniques Group (ARFTG) Automated Measurements Career Award in 1994. In 2004 he received the IEEE MTT-S Microwave Application Award. In 2012 he received the IEEE Canada A.G.L. McNaughton Gold Medal. In 2012, at the IEEE MTT-S International Microwave Symposium, he delivered a rump session on "Human aspects of communication and persuasion: first impressions and subtext," a video of which is available on IEEE.tv. Active in artistic endeavors, he has written a novel, a screenplay, and several stage plays, three of which have been performed, one of which he directed himself in 2012.

Date: **Thursday, Oct. 25th , 2012**

Location: Arizona State University, Brickyard on Mill, 6th Floor, Room BYeng-660
699 S. Mill Ave. Tempe, AZ 85281
Best parking is underground. Take elevator at west end of parking area up to 6th floor.

Time: **3\:00 PM Presentation, Pizza will be served following the Seminar**

For more information, contact:

Steve Rockwell (WAD Chapter Chair)	(480) 241-9891	steve.rockwell@ieee.org
Adel Elsherbini (Publicity Chair)	(734) 686-2278	a.elsherbini@gmail.com

WAD Website: **http://ewh.ieee.org/r6/phoenix/wad/**

The Arizona Science Lab

THE ARIZONA SCIENCE LAB®

Please Help Ensure The Future Sustainability Of The "Arizona Science Lab"!

The volunteer staff of the "Arizona Science Lab" (ASL) has achieved a lot this past year and is now fully engaged in preparing to start the new school year. A stroll through our website: www.azsciencelab.org will give you a comprehensive overview of the objectives, achievements, structure, sponsorship and partners of this important and voluntary educational outreach initiative. You will also find lots of information and videos about our workshops, our staff, news articles, and so on.

Since we started in early 2009:

- **79 Teachers have been coached in Teacher in Service Program (TISP) workshops**
- **More than 6,000 students have participated in student workshops**
- **46 Schools have attended Arizona Science Lab**
- **164 student workshops have been given**
- **And approx. 300 teachers have participated in student workshops.**

In the current 2012/2013 school year we plan on having around 5,000 students participating in workshops. The Teacher in Service Program (TISP) sessions, where we teach the middle school science teachers the math and science they need to know plus how to use project-based learning techniques in the classroom, are very important as a means of correcting the acknowledged math and science teaching problems in the schools, and we were asked by the school districts to emphasize this teacher mentoring.

As an all-volunteer organization, the future financial sustainability of ASL is always a major concern for our management team. Over the past four years since early 2009, a major sponsorship has been by the individual members of the Phoenix Section — we couldn't have succeeded without you! As you will note, and have probably heard before now, we have been very successful in attracting charitable funding from SRP Community Outreach, APS Foundation, and Nina Mason Pulliam Charitable Trust. And it is a fulltime job for our Executive Director to look for any other funding opportunities! This success has allowed us to procure tables, chairs and equipment for the main classroom to replace the old furniture we had been loaned until now. However, any charitable funding comes with various constraints on how it can be spent and is almost always directed solely at the consumable materials and other direct costs involved in running the workshops. Frequently it cannot be used for the indirect expenses involved in operating an office as part of the

ASL. This includes ISP charges, printing charges, supplies of office materials, city garbage collection, cleaning services, and so on. Hence, we rely on the less constrained donations from the Section ExCom, the Technical Chapters, and the individual members to help us with that. So even though we are well funded for the direct costs of the workshops we provide to the grade 4 thru' 9 students, we are currently in the red for these indirect costs. Won't you please help us resolve this problem by making a tax deductible donation to the "Arizona Science Lab"? Any size of donation is of great help to us and will directly benefit the students by helping us continue our ASL operations.

Please use PayPal to make your donation by clicking this link or pasting it in to your Web browser:

https://www.paypal.com/cgi-bin/webscr?cmd=_s-xclick&hosted_button_id=KMXHMN385V4C4

Or, if you prefer, send your check made out to: "IEEE Phoenix Section TISP" to:

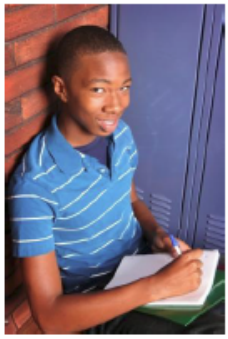
John Purchase, 1220 S. McKemy St, Tempe, AZ 85281.

Include your return mail address so I can send you a signed official receipt on headed paper. ASL is a 501(c)3 not-for-profit through IEEE and all donations are fully tax deductible.

Thank you for anything you can do to help us in our efforts to enhance the science, technology, engineering and math (STEM) learning of our grade 4 thru' 9 students, and to stimulate their interest in STEM subjects, and inspire them to pursue studies and future careers in STEM subjects!

John F. Purchase
Executive Director
Arizona Science Lab

Future Rocket Scientist Seeks Experience



Yours!

An Invitation to Engineers, Scientists and Science Enthusiasts

Dozens of engineers, scientists and amateur science enthusiasts with an aptitude for hands-on experiments are working to make a difference for Phoenix and Maricopa County 4th through 9th grade students at the IEEE Arizona Science Lab.

Come join us. Just a few hours can change a child's life – and yours!

Help us spark an interest in science and engineering careers.

Volunteers are needed to teach or help students perform the experiments and construct projects that will make science come alive for them.

Comprehensive volunteer training and orientation are provided.

The IEEE Arizona Science Lab has excellent equipment and a spacious facility, and is located at the Meyer School facility, 2615 S. Dorsey Lane, Tempe, AZ.

To RSVP or ask for more details, please contact:

Jane von Schilling, ASL Director of Volunteer Recruitment

(623) 256-8294 or jvonschilling@gmail.com

THE ARIZONA SCIENCE LAB

www.arizonasciencelab.org

2012 IEEE Phoenix Section Calendar

The calendar is updated by the Vice Chair on a rolling basis.
TBD

You may access the IEEE Phoenix Section Calendar of Events at:

http://ewh.ieee.org/r6/phoenix/Calendar.htm

For inputs and updates to the Calendar, please contact the IEEE Phoenix Section Charles Weitzel, 480-292-0531 c.weitzel@ieee.org

- October 2012
  - Announcement of Student Paper Contest: Deadline TBD
  - Announcement of Student Scholarships: Submission Deadline January 15th
  - Call for nominations for awards: Young Engineer/GOLD, Engineer, Company, Educator
  - Southwest Area Fall meeting: October 5-6 at Biosphere2 north of Tucson

- November 2012

  - Election of new officers
  - 2013 budget proposal
  - Start ad for Student Paper Contest and Scholarships
  - Student Industry Mixer: TBD

Executive Committee Meeting

Phoenix Section

Venue: Phoenix Airport Hilton 2435 S 47th St, Phoenix, AZ, 85034 (map)
Tel.: 480-804-6017

More Info: Meetings are held on the first Tuesday of the month, 6–8 PM.

All interested IEEE members are welcome to attend.

Contact: Ralph Hogan, 480-774-8227
rhogan@ieee.org

Please note change in the Timing

November Meeting Starts at 5:30PM

IEEE Membership Grade Advancement

IEEE Phoenix Section Executive Committee encourages all to apply for advancement in membership grade to Senior Member and Fellow Grade. Please review the requirements at www.ieee.org. Please contact IEEE Phoenix Section Membership Development Chair, Dr. Vasudeva P. Atluri, at vpatluri@ieee.org for additional information.

Enhanced Senior Member Application Launched

Effective 29 July 2011, IEEE Admission and Advancement launched a new Senior Member Application. The new application includes numerous enhancements, based on feedback from volunteers and members, including:

- New user friendly format / design
- Secure environment (need IEEE Web account)
- Ability to save application in "draft" form
- Ability to upload resume or Curriculum Vitae (up to 3 MB)
- Applicant can view application online
- Applicant can view status of requested reference forms
- References will be notified by email to provide applicant reference
- References will have the ability to view their completed reference form(s)
- Real time application status

The goal is to provide prospective Senior Members with an easy to use and intuitive interface, while streamlining internal operations at the same time. View the new Senior Member application.

IEEE USA E Book on Transition

IEEE-USA E-Book E-Books to Members in September and October Feature Career Survival and Writing for Success: IEEE-USA is offering two free e-books to IEEE members the next two months as a special benefit of IEEE membership. In September members can receive "The Best of IEEE-USA Today's Engineer on Career Survival." In October, the free featured publication will be "Writing for Success -- An Engineer's Guide, Volume 1: Designing for Success." "The Best of Today's Engineer on Career Survival" is a compilation of career-focused articles from "IEEE-USA Today's Engineer" that can help you find success in a challenging job market. We all need the ability to survive in a changing world, and engineers need a better awareness about the evolving business ecosystem and what those changes mean. The articles in this e-book will help to increase your situational awareness of the marketplace, which in turn, can help you with career planning and developing sustainable job skills. You'll also learn how to assess the market and yourself, how to stay competitive, and what steps to take to thrive in the job market. "The Best of Today's Engineer on Career Survival" can be downloaded at http://www.ieeeusa.org/communications/ebooks/files/wisao2sf/Best-of-TE-On-Career-Survival-V1.pdf for free to IEEE members. The nonmember price is $5.99. The purpose of "Writing for Success -- An Engineer's Guide, Volume 1: Designing for Success" is to inspire and help engineers to approach their writing tasks with the same confidence and skill they take to the technical problems that confront them -- so that emails, reports, test-plans, and other documents they write are as useful, successful and valued as their engineering efforts. "Writing for Success – An Engineer's Guide, Volume 1: Designing for Success" will be available for members to download in October.

EEE-USA Government Fellowships:

2013-2014 IEEE-USA Government Fellowships

Each year, IEEE-USA sponsors three qualified IEEE members to serve as government fellows: one Engineering & Diplomacy Fellow and two Congressional fellows. The fellows spend a year in Washington – from September to August each year – serving as advisers to the U.S. Congress or key U.S. Department of State decision-makers. IEEE-USA's Government Fellowships link engineers with government, providing a mechanism for IEEE-USA members to learn firsthand about the public policy process through personal involvement.

The congressional fellowship consists of an appointment to the personal staff of a U.S. Senator or Congressman, or to the professional staff of a Congressional Committee. For an application Kit for the 2013-2014 Congressional Fellowship Program, visit: http://ieeeusa.org/policy/govfel/congfel.asp

The State Department fellowship offers an opportunity for an engineer to provide technical expertise to the State Department, and help raise awareness of the value of engineering input while learning about and contributing to the foreign policy process. For an application Kit for the 2013-2014 Engineering & Diplomacy (State Department) Fellowship Program, visit: http://ieeeusa.org/policy/govfel/state.asp

The postmark application deadline for 2013-2014 Fellowships is 8 February 2013. For more information, visit: http://ieeeusa.org/policy/govfel/congfel.asp

Phoenix Section Annual Banquet 2013

IEEE Phoenix Section Annual Banquet 2013 IEEE Phoenix Section is holding an Annual Banquet on Saturday, February 9th, 2013, from 6:00 PM to 10:00 PM at Hilton Phoenix Arizona Grand Ballroom located at 2435 S. 47th Street, Phoenix, Arizona – 85034 (Tel: 480-894-1600). The focus of annual banquet is to 1. Showcase IEEE and Phoenix Section Activities, 2. Provide a forum for member networking, 3. Recognize contributions of members, non-members, faculty, students, and corporations by presenting awards and 4. Acknowledge the work of section officers and volunteers.

The scope and purpose of the Section Awards program is to plan, promote and implement award and recognition programs that recognize outstanding performance in furthering the objectives and professional aims of the IEEE Phoenix Section, the IEEE and the IEEE-USA, and to stimulate others to pursue such achievements of excellence. All members are encouraged to block their calendars to attend the annual banquet to be held on Saturday, February 9th, 2013.

Guests and non-members are also encouraged to attend. Nominate peers and others for recognition at the annual banquet by accessing nomination forms and student scholarship applications at

http://www.ewh.ieee.org/r6/phoenix/

. Access banquet registration forms at the website.

For additional questions and inquiries, contact Dr. Vasudeva P. Atluri, Annual Banquet 2013 Chair, at (480) 227-8411 (Cell) and by email at vpatluri@ieee.org

or Dr. Charles E. Weitzel, Annual Banquet 2013 Vice Chair, at (480) 292-0531 (Cell) and by email at c.weitzel@ieee.org

Phoenix Section LinkedIn Group

If you are interested in professional networking and shared Section related updates & discussions join the IEEE Phoenix Section Group on LinkedIn. Signing up only takes minutes and is free. A job board is available as well.