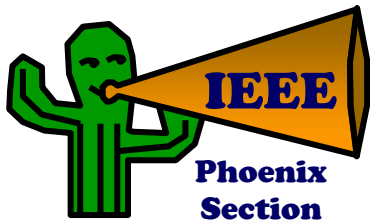


# The Valley Megaphone

Newsletter of the  
**Institute of Electrical and  
Electronics Engineers, Inc.,  
Phoenix Section**  
April 2012,  
Volume XXVI, Number 4



## Executive Committee - 2012

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### Membership

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### Student Activities

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[sdianesmith@computer.org](mailto:sdianesmith@computer.org)

### Conferences

Guoliang Xue  
480-965-6218  
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### Awards

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### Inter-Society

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### Webmaster

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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](mailto:surinder.tuli@gmail.com) and to Russ Kinner at [r.kinner@ieee.org](mailto: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

### Signal Processing & Communications

David Frakes, 480-727-9284  
[dfrakes@asu.edu](mailto:dfrakes@asu.edu)

### Computer Society

Jerry Crow  
[jerry.crow@computer.org](mailto:jerry.crow@computer.org)

### CPMT Society

Vasudeva P. Atluri  
480-227-8411  
[vpatluri@ieee.org](mailto:vpatluri@ieee.org)

### Education Chapter

Martin Reisslein, 480-965-8593  
[reisslein@asu.edu](mailto:reisslein@asu.edu)

### EMBS Chapter

TBD

### EMC Society

Harry Gaul, 480-441-5321  
[harry.gaul@ieee.org](mailto:harry.gaul@ieee.org)

### GOLD

Chaturvedi Gogineni  
[cgogineni@asu.edu](mailto:cgogineni@asu.edu)

### Power & Energy Society

Scott Freymuller 480-991-9191  
[scott@youngpower.com](mailto:scott@youngpower.com)

### Solid State Circuits

Mohamed Arafa  
[mohamed.arafa@ieee.org](mailto:mohamed.arafa@ieee.org)

### Teacher-In-Service

John Purchase  
[jpurchase@cox.net](mailto:jpurchase@cox.net)

### Waves & Devices Society

Steve Rockwell  
[steve.rockwell@ieee.org](mailto:steve.rockwell@ieee.org)

### Life Members

Barry Cummings  
[abarrycummings@gmail.com](mailto:abarrycummings@gmail.com)

### Women In Engineering

Shamala Chickamenahalli  
[shamala.chickamenahalli@intel.com](mailto:shamala.chickamenahalli@intel.com)

## **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](mailto:sdianesmith@computer.org)  
Student Activities Chair

## **Student Branches**

**ASU Main, Engineering**  
Chair: Saurabh Naik,  
480-252-0504, [svnaik@asu.edu](mailto:svnaik@asu.edu)  
Advisor: Cihan Tepedelenlioglu,  
480-965-6623, [cihan@asu.edu](mailto:cihan@asu.edu)

**ASU Main, Computer Society**  
Chair: TBD  
Advisor: Guoliang Xue  
480-965-6218, [xue@asu.edu](mailto:xue@asu.edu)

**ASU Polytechnic**  
Chair: TBD  
Advisor: TBD

**DeVry, Phoenix**  
Chair: Donovan Benedict  
[Don4ben5@gmail.com](mailto:Don4ben5@gmail.com)  
Advisor: Diane Smith  
[dsmith2@devry.edu](mailto:dsmith2@devry.edu)

**DeVry, Computer Society**  
Chair: TBD  
Advisor: Diane Smith  
[dsmith2@devry.edu](mailto:dsmith2@devry.edu)

**NAU, Engineering**  
Chair: TBD  
Advisor: Niranjana Venkatraman  
[v.niranjana@ieee.org](mailto:v.niranjana@ieee.org)

**Embry-Riddle, Prescott**  
Chair: Tim Lemm  
[timothy.lemm@erau.edu](mailto:timothy.lemm@erau.edu)  
Advisor: John E. Post  
[postj@erau.edu](mailto:postj@erau.edu)

## **U – Newsbytes**

**ASU Polytechnic is currently seeking Advisor for the Student Branch. Please email Nick (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](mailto:sdianesmith@computer.org)

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



## Signal Processing & Communications Society



Thanks to all of the attendees who have made this year's technical meetings so successful. More to come in the coming months...

Please contact Chapter Chair David Frakes ([dfrakes@aso.edu](mailto:dfrakes@aso.edu)) to volunteer or propose a speaker for upcoming meetings.

## CPMT- Packaging and Manufacturing Technology Society



THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.



IEEE Components, Packaging and Manufacturing Technology Society

### CPMT Phoenix Chapter

Wednesday, April 18<sup>th</sup>, 2012 at 6 PM

#### Thermal Considerations during Packaging and Test

Dr. Ashish Gupta

Manager Thermals and Fluids Core Competency at Intel Corporation Chandler AZ 85226

#### ABSTRACT:

Thermal management of microprocessors is considered a strategic area of focus and is typically exacerbated by non-uniform heat generation due to different levels of activity on the die at different functional entities. The design goal for micro-electronics cooling is to maintain the highest thermal density locations on the die below the specified temperature values to ensure performance and reliability. Since the thermal impedance near the die gets exaggerated by the non-uniformity, any reduction in the local package impedance results in larger reduction in total resistance. Hence to extend the thermal envelope of design and also for cost considerations, it becomes important to maximize the performance gain margin from existing stackup via intelligent usage of modeling, metrologies and statistics. At the same time, research efforts continue to be focused on developing novel efficient cooling solutions integrated in the package. In this presentation, technical merits/challenges of both of engineering optimization methods and technologies are discussed.

Product health and specifications compliance testing is a critical process before shipment. Once packaging is complete, the product performance is tested and here packaging has direct impact thermal control during test. Poor temperature control during test may impact the producer with low yield. Automatic thermal control is the process by which a system is able to self resolve some amount of uncertainty and conform itself to a desired state. It is very important for functional test thermal solution to comprehend the system transients during the design and characterization phase. This presentation will also touch upon some of these important considerations and how they can impact the overall system behavior.

#### BIOGRAPHY:

Dr. Ashish Gupta manages the Thermals and Fluids Core Competency Team in Intel's Assembly and Test Technology Development (ATTD) Group in Chandler, Arizona. He holds a Ph.D. degree in Mechanical Engineering from Purdue University. His group is responsible for the thermal design, assembly and technology of IC packages and associated components during the discovery, definition and development stages of technology maturity. His team also focuses on thermal solutions for meeting increased demands for novel solutions across all market segments ranging from hand held devices and small form factor packages with constrained physical and thermal environments to higher power server products.

---

**Date:** Wednesday, April 18<sup>th</sup>, 2012

**Location:** Group Conference Room, Freescale Semiconductor, Inc., 2100 E. Elliot Rd. Tempe, AZ. Enter the facility through 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 during remaining of 2012. 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](mailto:vpatluri@ieee.org).

## Power & Energy Society



### IEEE Power and Energy Society Phoenix Chapter

<http://ewh.ieee.org/soc/pes/phoenix/>



### News and Announcements:

- At the IEEE Phoenix Section Annual Award Banquet, the Phoenix PES Chapter was named the [Outstanding Chapter](#) for 2011. 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, see the [Section website](#).
- Want to know more about IEEE Power and Energy Society? Watch this video:
  - [http://www.youtube.com/watch?v=BRKM4lpo\\_tk](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](http://www.ieee.org/membership_services/membership/senior/index.html)



## Joint ASU & IEEE PES Phoenix Chapter Distinguished Speaker + Luncheon

**Date: Friday, April 20<sup>th</sup>, 2012**

**Time:** 10:30am-11am: Registration  
11am: Seminar  
12pm: Lunch

**Location:** Arizona State University, Tempe Campus  
Memorial Union, Arizona Ballroom – Room 221 (2<sup>nd</sup> Floor)

**Speaker:** **Dr. John Undrill**

**Topic:** **Operating the Power System in 2045?**

**Bio:** Dr. John Undrill is now at ASU after many years with PTI and GE. He has aged along with the evolution of power system simulations. Dr. Undrill is a member of the National Academy of Engineering.

**Cost:** **FREE!**

**Reservations:** **REQUIRED! Must Register by Friday, April 13<sup>th</sup>**  
Register Online at:  
<http://ewh.ieee.org/soc/pes/phoenix/lunch1204.php>

More information regarding the PES Phoenix Chapter can be found at:  
<http://ewh.ieee.org/soc/pes/phoenix/>

### Sponsored by:



# Solid State Circuits Society



INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS



**Meeting Free & Open to Non-IEEE Members**  
**4:00pm to 5:30pm, Tuesday, Mar 27<sup>th</sup>, 2012**  
**Arizona State University- GWC 487 ([map](#))**

## **"Why Ohm's Law Isn't" or "Why There is a Lot More to Resistors than You Were Taught in School"**

*Dr. Colin McAndrew, Freescale Semiconductor*

### **Abstract:**

In school we are all taught Ohm's law:  $V=I \cdot R$ . Besides the fact that in the real world and the world of SPICE  $I=G \cdot V$  is a more convenient form, the biggest problem with this "law" is that the conductance  $G=1/R$  is not constant but is a function of  $V$ , and for semiconductor resistors is also a function of the voltage applied to the region (well or substrate) a resistor sits in (for diffused resistors) or above (for poly resistors), so in reality  $I=G(V, V_{tub}) \cdot V$ . For precision analog design (e.g. distortion simulation) a resistor model must accurately capture the nonlinearities of real resistors: depletion pinching and self-heating for both diffused and poly resistors, and in addition velocity saturation for diffused resistors. This talk gives details of the R3 3-terminal resistor model, including a physical analysis and description of each of these three nonlinearities and how they affect resistor characteristics, including the frequency dependence of self-heating. Examples of how measured  $I(V)$  data can be analyzed to isolate the individual effects will be presented. Several key points will be emphasized: that velocity saturation and self-heating are not just "short" device effects but affect the linearity of resistors of lengths greater than 50 microns; that self-heating can be the dominant cause of nonlinearity even in high sheet resistance diffused resistors; and that the local temperature rise in poly resistors from self-heating can be surprisingly high, several hundreds of degrees C.

### **Biography**

Dr. Colin McAndrew received the B.E. degree in Electrical Engineering from Monash University, Victoria, Australia and the M.A.Sc. and Ph.D. degrees in Systems Design Engineering from the University of Waterloo, Ontario, Canada. From 1987 to 1995 he was at AT&T Bell Laboratories, Allentown PA. Since 1995 he has been with Freescale Semiconductor (formerly Motorola Semiconductor Products Sector), in Tempe AZ, involved in compact and statistical modeling of semiconductor devices. He received the Bipolar Circuits and Technology Meeting (BCTM) Award in 2005, the Semiconductor Research Corporation Mahboob Khan Outstanding Mentor Award in 2007, and best paper awards from the International Conference on Microelectronic Test Structures (ICMTS) in 1993 and the Custom Integrated Circuits Conference (CICC) in 2002. He is Fellow of the IEEE, was an editor of IEEE Transactions on Electron Devices from 2001-2010, and is or has been on the technical program committees for the IEEE BCTM, ICMTS, CICC, and Behavioral Modeling and Simulation conferences.

SSCS-PHX Chapter Website: [http://www.ieee.org/go/sscs\\_phx](http://www.ieee.org/go/sscs_phx)  
Contact: Rackar Cynidi-RP0115 <rp0115@freescale.com>



# Life Member Affinity Group



## 2012 May Technical Meeting

**Topic:** "What High School Seniors have not learned and how Choice Theory can help students decide to learn"

This presentation reports results of original research that supports Glasser's claims that over half of the students in even our best schools do only the minimum required to get by. It then summarizes Choice Theory, Glasser's take on WHY we do WHAT we do. Glasser was a Chemical Engineer before he earned his MD as a Psychiatrist and has written 20+ books in the areas of Quality Schools, Lead Management, and Personal Relationships.

**Speaker:** **Les Holland** earned a BSEE (Electrical Engineering) from the University of Illinois in 1966 where he had worked on the Illiac II (the world's fastest computer for ~10 years) and PLATO (Programmed Logic for Automatic Teaching Operations), the world's first computer based educational system. He is a member of HKN (Eta Kappa Nu), TBP (Tau Beta Pi), and Mensa. Les worked at Motorola Government and Semiconductor operations for 25 years in computer programming and engineering management. Les selected, installed, and trained users on multiple generations of commercial interactive graphics systems used in the semiconductor industry. Les has been a board member of the IAA (Inventors Association of Inventors) since 2009. In 2011 he received the CT/RTC (Choice Theory / Reality Therapy Certification) from the William Glasser Institute ([www.wglasser.com](http://www.wglasser.com)).

**When:** Tuesday, May 15, 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., 1/2 mile south of McDowell Road

**RSVP:** Please respond to Program Chair, Ronald Sprague by email:  
[rsprague@q.com](mailto:rsprague@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 [rsprague@q.com](mailto:rsprague@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](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, May 15, 2012 SRP PERA CLUB
- Tuesday, October 16, 2012 SRP PERA CLUB
- Tuesday, December 4, 2012 SRP PERA CLUB

**Officers:**

|               |                         |  |
|---------------|-------------------------|--|
| Chair         | A. Barry Cummings       | <a href="mailto:Barry.Cummings@srpnet.com">Barry.Cummings@srpnet.com</a>           |
| Vice Chair    | Michel Ebertin          | <a href="mailto:Michel@ebertin.net">Michel@ebertin.net</a>                         |
| Secretary     | Tom Lundquist           | Tom.Lundquist@ieee.org   |
| Treasurer     | Leslie Daviet II        | <a href="mailto:lesdavietii@cs.com">lesdavietii@cs.com</a>                         |
| Program Chair | Ronald L. Sprague, P.E. | <a href="mailto:rlsprague@q.com">rlsprague@q.com</a>                               |
| Past Chair    | C Bruce Johnson         | <a href="mailto:cbj@johnsonscientificgroup.com">cbj@johnsonscientificgroup.com</a> |

## Women in Engineering Affinity Group



IEEE Phoenix Section  
Women in Engineering  
Affinity Group



In February, the IEEE Phoenix Section **Women in Engineering (WIE) Affinity Group (AG)** welcomed two outstanding speakers to Arizona State University for an insightful and educational evening. Twenty WIE AG members and guests attended the event. The first speaker was Dr. Ramalatha Marimuthu, who is the 2011 IEEE WIE International Committee Chair. Dr. Marimuthu has been teaching engineering for 25 years and is a very active volunteer who often speaks on the topic of "humanitarian technology."

Our second speaker for the evening was Kathryn Murphy. Ms. Murphy has a B.S. and M.S. in engineering from Rensselaer Polytechnic Institute and over 30 years of business experience, including serving as President and CEO of Corning Gilbert, a wholly owned subsidiary of Corning, Inc. Ms. Murphy is presently a consultant specializing in development of business strategies and plans. Her comments focused on entrepreneurial start-up companies and non-profits.

The next meeting of the Phoenix WIE AG will be in mid April 2012 at Maggie's Place in Phoenix ([www.maggiesplace.org](http://www.maggiesplace.org)). Maggie's Place is a non-profit organization that provides a community for expectant mothers who are alone or are living on the streets. WIE will be hosting a career development workshop to help the women at Maggie's Place learn how to successfully navigate the junior/community college application process. We will also discuss tips for performing meaningful job searches in order to increase interviews and successfully land the right job. Please join us for this meaningful event by contacting any of the officers listed below for more information.

The Phoenix WIE AG will also be hosting an event in early May. More details will be coming 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](mailto: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 organizing committee members:

Chair: Shamala Chickamenahalli ([shamala@ieee.org](mailto:shamala@ieee.org))  
Vice-Chair: Joy Harris ([jharris@exponent.com](mailto:jharris@exponent.com))  
Secretary / Publicity: Diane Watkins ([diane.watkins@srpnet.com](mailto:diane.watkins@srpnet.com))  
Treasurer: Diane Smith ([diane@web-oasis.com](mailto:diane@web-oasis.com))  
Web Master: Audrey Skidmore ([ASkidmore@azmag.gov](mailto:ASkidmore@azmag.gov))  
Membership: Lesley Polka ([lesley.a.polka@intel.com](mailto:lesley.a.polka@intel.com))  
Region 6 Liaison: Barbara McMinn ([barbara.mcminn@aps.com](mailto: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](http://www.ieee.org/membership_services/membership/women/women_about.html).

# Computer Society



## Phoenix Chapter of the IEEE Computer Society April, 2012

### News

- The March meeting on optical media was lightly attended, but the presentation was excellent. Paul Crowley gave those present a comprehensive tutorial on optical media.
- We continue to build our program schedule for the remainder of the year. We have a confirmed speaker for May (see below) and a tentative program for July.
- We are considering scheduling a chapter picnic in the fall as our November meeting. More details as this develops. The picnic would be during the day on a Saturday.

### Future Events

- May 2 – Chapter meeting, DeVry University; speaker Ryan Meuth, PhD, University of Advancing Technology, “**ROS - The Robot Operating System**”

Historically one of the major problems in robotics research is that of fragmentation. Every laboratory had their own custom-built robot, running custom built code that they would test their algorithms on. This made it very difficult to share code, as everything had to be re-written from scratch or required significant modification to transfer between platforms. ROS provides a common framework for robotics researchers to share their methods, making it much easier to develop and evaluate new algorithms. This presentation provides a short history of ROS, explanations of its capabilities, how it works, and a demonstration.

Ryan Meuth is a Professor of Robotics and Embedded Systems at UAT. He received his Ph.D. in Computer Engineering from Missouri University of Science and Technology in 2009. He enjoys teaching Digital Logic, Microcontrollers, Autonomous Systems and Mechatronics courses at UAT, and mentoring student projects. His research interests include biologically inspired algorithm development, with applications in robotics and intelligent machines.

- July 11 – Chapter meeting, DeVry University, speaker TBD
- September 12 – Chapter meeting, DeVry University, speaker TBD
- November 7 – 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](mailto:jerry.crow@computer.org))  
Brad Morantz ([bradscientist@ieee.org](mailto:bradscientist@ieee.org))  
Audrey Skidmore ([askidmore@computer.org](mailto:askidmore@computer.org))  
Diane Smith ([sdianesmith@computer.org](mailto:sdianesmith@computer.org))

# Wave and Devices



IEEE Phoenix Waves and Devices Chapter  
2012 Technical Workshop on



## Millimeter Wave to Terahertz Devices and Technologies

### Call for Papers

This one-day workshop will focus on devices and technologies for emerging applications in the upper millimeter wave and lower terahertz (submillimeter) electromagnetic spectrum, and will include invited experts from industry and academia as well as submitted contributions. Abstracts are requested for consideration on any of the represented topics.

### Workshop Topics

**April 27, 2012**  
**8:00 am to 5:00 pm**  
**University Club**  
**Arizona State University**

General Co-Chair:  
Steve Rockwell  
steve.rockwell@ieee.org  
General Co-Chair:  
Robert Anderson  
robert.j.anderson@q.com

Phoenix IEEE Waves & Devices Chapter:  
<http://ewh.ieee.org/r6/phoenix/wad/>

- DEVICES
  - Semiconductors
  - Vacuum Tubes
  - Simulation & Modeling
- PACKAGING
  - Waveguide
  - Integrated
  - Interconnects
- SYSTEMS
  - Antennas
  - Architectures
  - Spectrum

**Abstract Submissions:** Two pages (topic, summary of significant results and conclusions – WORD or PDF files only). Abstract must include author names, affiliations, addresses, and e-mail address of lead author.

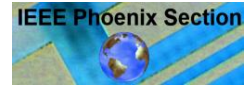
|                          |                        |
|--------------------------|------------------------|
| Submission Deadline:     | February 17, 2012      |
| Submitting Address:      | Michael.Goryll@asu.edu |
| Acceptance Notification: | March 5, 2012          |
| Final Presentation Due:  | April 13, 2012         |



*(Continued on next page)*



IEEE Phoenix Waves and Devices Chapter  
2012 Technical Workshop on



# Millimeter Wave to Terahertz Devices and Technologies

Friday, April 27, 2012

8:00 am to 5:00 pm

University Club, Arizona State University

**REGISTRATION:**

- IEEE Member ..... \$30
  - Non-IEEE Member ..... \$60
  - IEEE Student ..... \$20
  - non-IEEE Student ..... \$40
  - Sponsor (7 registrations) .... \$350
  - Vendor (1 table, 2 reg's) .....\$350
- [http://www.ieee.org/go/mmw\\_thz](http://www.ieee.org/go/mmw_thz)

**Abstract:** This one-day workshop will focus on devices and technologies for emerging applications in the upper millimeter wave and lower terahertz (submillimeter) electromagnetic spectrum, bringing together invited experts from industry and academia for a full day of stimulating discussion and insight.

**General Co-Chair:**

Steve Rockwell, General Dynamics  
[steve.rockwell@ieee.org](mailto:steve.rockwell@ieee.org)  
480-241-9891

**General Co-Chair:**

Rudy Emrick, Orbital Sciences  
[rudyemrick@ieee.org](mailto:rudyemrick@ieee.org)

**Technical Committee:**

Michael Goryll, Arizona State University  
Mel Miller, Freescale

**Publicity/Website Committee:**  
Peter Aaen, Freescale

Sergio Pacheco, Freescale

**Registration/Finance Committee:**

Adel Elsherbini, Intel

Sayfe Kiaei, Arizona State University

**Phoenix IEEE Waves & Devices Chapter:**

<http://ewh.ieee.org/r6/phoenix/wad/>

| Start    | Title   | Speaker            | Affiliation   |
|----------|---|--------------------|---------------|
| 8:00 AM  | <b>Intro/Opening</b>  |                    |               |
| 8:30 AM  | GHz and THz Spectrum Policy Issues – Coexisting With Scientific Uses                | Michael Marcus     | FCC (retired) |
| 9:15 AM  | Trends In Millimeter Wave Point-to-Point Radio Technology and Markets               | Doug Lockie        | Endgate       |
| 9:45 AM  | WiGig: The Evolution of Multigigabit Connectivity                                   | Ali Sadri          | Intel         |
| 10:15 AM | <b>Break</b>  |                    |               |
| 10:35 AM | Advanced SiGe BiCMOS Process Technologies for Millimeter-Wave Applications          | Ed Preisler        | TowerJazz     |
| 11:05 AM | Sensing, Detection and Imaging using Millimeter-wave and THz CMOS ICs               | Bhaskar Banerjee   | UTD           |
| 11:35 AM | Recent Developments in SiGe and CMOS Phased Arrays For Millimeter-Wave Applications | Gabriel Rebeiz     | UCSD          |
| 12:05 PM | <b>Lunch</b>  |                    |               |
| 1:35 PM  | THz for Body Screening: What you see and what you don't                             | Peter Siegel       | Caltech/JPL   |
| 2:20 PM  | THz Instrumentation for Astronomy: Ground, Air, and Space                           | Chris Walker       | UofA          |
| 2:50 PM  | Terahertz Focal Plane Arrays for Astrophysics and Remote Sensing                    | Christopher Groppi | ASU           |
| 3:20 PM  | <b>Break</b>  |                    |               |
| 3:40 PM  | Terahertz Devices and Device Modeling   | Steve Goodnick     | ASU           |
| 4:10 PM  | THz Transceivers  | Michael Wanke      | Sandia        |
| 4:40 PM  | <b>Closing</b>  |                    |               |
| 4:55 PM  | <b>End</b>  |                    |               |





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## The Arizona Science Lab



DISCOVERY  
TRIANGLE



# THE ARIZONA SCIENCE LAB

[www.arizonasciencelab.org](http://www.arizonasciencelab.org)

## IEEE TISP/ASL MEMBER POSITION DESCRIPTION

For the past three years since February 2009, the Phoenix Section of the IEEE has been running a Teacher In Service Program / Arizona Science Lab (IEEE TISP/ASL) activity with the grade 5 thru' 9 schools in the Phoenix Metro area. The primary objective of the TISP/ASL is to encourage grade 5 - 9 students to become interested in science, technology, engineering and math (STEM) and to pursue studies and a career in STEM. The goal is to reverse the widely acknowledged continuous downward trend of the number of students opting for studies and careers in STEM. The secondary objective is to encourage retired engineers and scientists, employed engineers and scientists, retired teachers, university engineering students, and anyone with an interest in science and a practical aptitude to become engaged with the students and share their knowledge, expertise and passion for engineering and science with them.

To accomplish these two objectives TISP/ASL uses teams of 6 – 8 volunteers to put on fully provisioned project-based science lesson plans for grade 5 – 9 schools throughout the Phoenix metro area, with all the volunteers, equipment and supplies being provided at no cost to the teacher or school or students.

This year we teamed with the Tempe Elementary School District No. 3 and the Discovery Triangle consortium to establish a new "Arizona Science Lab" in the Meyer School facility in Tempe, where the schools now come for intensive STEM workshop lasting 4 hours in one-day instead of us going to the schools as in the past.

**See two short videos at these links:** [ASL Rockets Class November 2011 1080p - YouTube](#)  
[ASL SailAway Class November 2011 360p - YouTube](#)

### Position Description:

TISP/ASL Members are volunteers who provide academic and career support to grade 5 thru' 9 students during one day Workshops in the TISP/ASL "Arizona Science Lab." Members teach students science and help them perform experiments and construct projects that reinforce the science they have been taught. Members advise students on studies and careers in science and engineering. In each workshop there are two different positions available:

- Teacher: responsible for giving the lectures and running the demonstrations
- Supporter: responsible for working with the students on their practical construction projects

### Qualifications & Responsibilities:

- Retired or employed engineer or scientist or teacher, or university engineering or science student, or anyone with an interest in science and an aptitude for hands-on activities
- Enthusiasm for science, technology, engineering and math (STEM)
- Desire to share knowledge and experience with grade 5 thru' 9 students
- Desire to help students learn and enjoy science



- 1 year overall commitment preferred
- Commit one day in a week at least twice a month as a Workshop Teacher or Project Supporter
- Actively participate in ASL Group meetings to review program status, discuss issues and ideas, review lesson plans, etc.
- Complete Arizona State required criminal background check and Independently Verified Fingerprint (IVP) clearance (processing fee will be paid by TISP/ASL)

**TISP/ASL Provided Training and Orientation:**

- Understand how TISP/ASL operates
- Deepen your teaching skills
- Expand your tutoring and support techniques
- Increase your sensitivity to different cultures and age groups

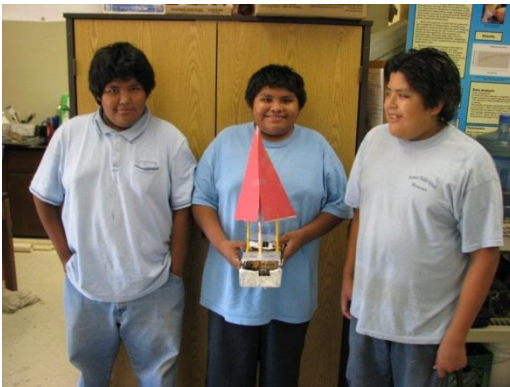
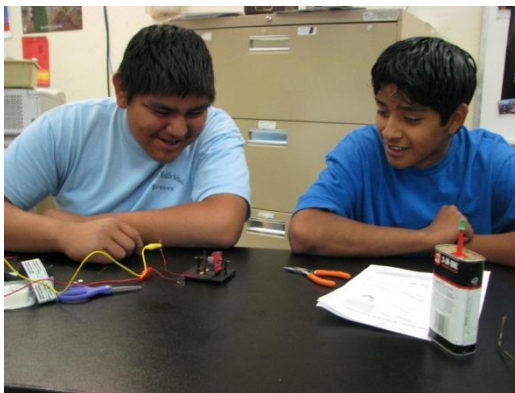
**Locations for Workshops:**

- Exclusively in the TISP/ASL “Arizona Science Lab” at the Meyer School facility in Tempe
  - 2615 South Dorsey Ln, Tempe, AZ 85282-2799

**Benefits:**

- Access to free trainings and workshops
- Opportunity to make a difference in a child’s life and in your community
- Share the excitement and "Wow Factor" the students have when they complete and test their project
- Be a small part of helping create a better world for tomorrow — students will remember these workshops and your help and advice for a very long time!

**The “Wow!” Factor In The ASL Lessons**



**“Helping Students Transfer  
What Is Learned In The  
Classroom To The World Beyond”**

|                             |                       |                           |  |
|-----------------------------|-----------------------|---------------------------|--|
| <b>Contact Information:</b> | <b>John Purchase</b>  | ASL Group Leader          | <a href="mailto:jpurchase@cox.net">jpurchase@cox.net</a>   |
|                             | <b>Michel Ebertin</b> | ASL_Volunteer Coordinator | <a href="mailto:michel@ebertin.net">michel@ebertin.net</a> |
|                             | <b>Tom Innes</b>      | ASL Metrics Manager       | <a href="mailto:tom.innes@att.net">tom.innes@att.net</a>   |

## 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](mailto:c.weitzel@ieee.org)



## Phoenix Section Executive Committee Meeting

**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.  
- Except for July & August

All interested IEEE members are welcome to attend.

**Contact:** Ralph Hogan, 480-774-8227  
[rhogan@ieee.org](mailto:rhogan@ieee.org)

## Executive Committee Meeting

Tuesday, April 3, 2012, 6–8 PM

[Hilton Phoenix Airport](#)

[2435 South 47th Street, Phoenix, AZ 85034](#)

Please attend this month's Executive Committee meeting (click on link above for map). In addition please send a brief report by e-mail to Secretary [Barbara McMinn](#) and [myself](#) before Tuesday. If you should be unable to attend this time please arrange for coverage, such as attendance by the Vice Chair.

### Agenda

- Section Officer Reports
  - Vice Chair – Chuck Weitzel: Calendar of Activities
  - Secretary – Barbara McMinn: Meeting Minutes
    - February Meeting Minutes
  - Treasurer – Bruce Ladewig : Monthly report
    - Jan/Feb Monthly Report
  - Past Chair – Jim Hudson
- Society Chapter and Affinity Group Reports
  - Components, Packaging and Manufacturing Technology (CPMT) – Vasu Atluri
  - Computer Society (CS) – Jerry Crow
  - Education Society (EdSoc) – Martin Reisslein
  - Electromagnetic Compatibility (EMC) – Harry Gaul
  - Engineering in Medicine and Biology Society (EMBS) – TBD
    - Contact Society, invite Members, identify Interim Chair
  - Graduates of the Last Decade (GOLD) – Chaturvedi Gogineni
  - Life Members Affinity Group (LMAG) – Barry Cummings
  - Phoenix Area Consultants Network (PACN) – Ron Sprague
  - Power & Energy Society (PES) – Scott Freymuller
  - Signal Processing & Communications (SP/Com) – David Frakes
  - Solid State Circuits Society (SSCS) – Mohamed Arafa
  - Waves & Devices (WAD) – Steve Rockwell
    - EDPT Workshop update
- Student Branch Reports [Advisor]
  - Student Activities Chair – Diane Smith
    - Student paper contest dates
    - Review of SB Chairs and Advisors
    - Micro-Mouse maze repair & storage
    - Award plaques distribution
  - ASU Main, Engineering – Saurabh Naik [Cihan Tepedelenlioglu]

## 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](http://www.ieee.org). Please contact IEEE Phoenix Section Membership Development Chair, Dr. Vasudeva P. Atluri, at [vpatluri@ieee.org](mailto:vpatluri@ieee.org) for additional information.

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### 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 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, 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. The Fellow along with the Congressional sponsor and IEEE-USA, negotiates a starting date, although IEEE-USA recommends that Fellowship terms run from January 1st to December 31st. For an application Kit for the 2013 Congressional Fellowship Program, visit:

[http://ieeeusa.org/policy/govfel/documents/cfappkit13\\_000.doc](http://ieeeusa.org/policy/govfel/documents/cfappkit13_000.doc)

The State Department fellowship begins in January of each year and 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 Engineering & Diplomacy (State Department) Fellowship Program, visit: <http://ieeeusa.org/policy/govfel/documents/Stateappkit13.doc>

The postmark application deadline for 2013 Fellowships is 16 March 2012. For more information, visit: <http://www.ieeeusa.org/policy/govfel/default.asp>

## **Washington Internships for Students of Eng'g (WISE)**

SUMMER 2012 PROGRAM Monday, 4 June - Friday, 3 August:

WISE seeks applications from outstanding engineering students who display evidence of leadership skills and have a keen interest in public policy. Minority students are encouraged to apply.

Applicants should select a sponsoring society(s), fill out an application form, write two (2) brief essays in response to questions, arrange for two (2) faculty references, and forward an official transcript. The deadline for Summer 2012 applications is December 31, 2011. For more info and application forms, please visit: <http://wise-intern.org/application/index.html>

“...one of the best summers of my life. One which truly transformed my dreams and goals. ....when I left D.C. I really wanted to instill in my fellow engineers the appreciation of the interaction between public policy and engineering.” -- Marc Canellas, WISE 2011

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## **IEEE USA E Book on Transition**

IEEE-USA E-Book on Transition from School to Work to be Offered Free as Special Benefit to IEEE Members

WASHINGTON (31 October 2011) -- As a special benefit of IEEE membership for November, IEEE-USA is offering a free e-book, "Engineer's Guide to Lifelong Employability: The Transition from School to Work." This e-book, prepared by the IEEE-USA Employment and Career Services Committee, provides a road map for the student preparing to enter the job market -- what employers are looking for, how they can best find a job and what career paths are open to a new grad. Topics include:

- \* Finding a Job the Old-Fashioned Way
- \* Networking
- \* The Campus Interview
- \* Making up Your Mind
- \* Four Career Paths
- \* Business -- Big or Small?
- \* A Non-Technology Company

"Demand for new BSEEs may be soaring, but so are employer's standards and expectations," writes Jean Eason, IEEE-USA Employment and Career Services Committee member. "Good grades and technical expertise aren't enough anymore."

From Nov. 1 through Nov. 30, "Engineer's Guide to Lifelong Employability: The Transition from School to Work" can be downloaded at [www.ieeeusa.org/communications/ebooks](http://www.ieeeusa.org/communications/ebooks) for free to IEEE Members. The nonmember price is \$5.99. Members can purchase other IEEE-USA E-Books at deeply discounted prices and download other free e-books. In December the free publication will be book three in the "Engineer's Guide to Lifelong Employability" series: "What Are You Worth?"

## 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.