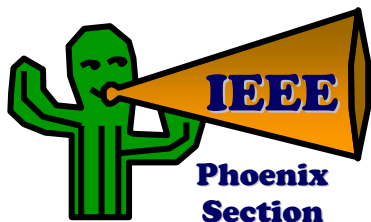


# The Valley Megaphone

Newsletter of the  
**Institute of Electrical and  
Electronics Engineers, Inc.,  
Phoenix Section**  
March 2012,  
Volume XXVI, Number 3



## Executive Committee - 2012

### Chair

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

### Vice Chair

Charles Weitzel, 480-292-0531  
[c.weitzel@ieee.org](mailto:c.weitzel@ieee.org)

### Secretary

Barbara McMinn 602-371-6383  
[barbara.mcminn@aps.com](mailto:barbara.mcminn@aps.com)

### Treasurer

Bruce Ladewig, 480-620-9291  
[bruceladewig@ieee.org](mailto:bruceladewig@ieee.org)

### Past Chair

Jim Hudson, 480-855-8987  
[jim.hudson@srpnet.com](mailto:jim.hudson@srpnet.com)

### Publicity

Surinder Tuli, 480-554-8275  
[Surinder.tuli@gmail.com](mailto:Surinder.tuli@gmail.com)

### PACE

Mike Andrews, 602-682-5440  
[m.andrews@ieee.org](mailto:m.andrews@ieee.org)

### Membership

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

### Student Activities

S. Diane Smith  
602-749-4601  
[sdianesmith@computer.org](mailto:sdianesmith@computer.org)

### Conferences

Guoliang Xue  
480-965-6218  
[xue@asu.edu](mailto:xue@asu.edu)

### Awards

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

### Inter-Society

Mike Andrews, 480-991-1619  
[m.andrews@ieee.org](mailto:m.andrews@ieee.org)

### Webmaster

Henning Braunisch  
480-552-0844  
[braunisch@ieee.org](mailto:braunisch@ieee.org)

## In this Issue of the Valley Megaphone:

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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  
[cogogineni@asu.edu](mailto:cogogineni@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)

### **Scholarship Applications Deadline is January 15, 2012**

Applications due: January 15, 2012 with Awardees to be recognized at the IEEE Phoenix Section Annual Banquet on February 11, 2012. Awards apply to full-time graduate and undergraduate students who are IEEE members in EE, CSE, EET, CET, and CS majors. The application form can be found at the following website:  
<http://ewh.ieee.org/r6/phoenix/Scholarships.htm>



## Phoenix Chapter of IEEE Signal Processing Society and 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 ([dfraakes@asu.edu](mailto:dfraakes@asu.edu)) to volunteer or propose a speaker for upcoming meetings.



THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.



IEEE COMPONENTS, PACKAGING AND  
MANUFACTURING TECHNOLOGY SOCIETY

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).

***Update on Next Workshop Coming Soon***



## 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)

### March 2012 Luncheon Meeting:

Date: Thursday, March 22nd, 2012  
Time: 11:30 am - 11:45 noon: Registration  
11:45 noon: Lunch  
12:15 pm: Program  
Location: Radisson Hotel Phoenix Airport North ([map](#))  
427 North 44<sup>th</sup> Street  
Phoenix, AZ  
Speaker: Carl L. Benner, PE. Senior Research Engineer  
Assistant Director, Power System Automation Laboratory  
Department of Electrical and Computer Engineering  
Texas A&M University  
Topic: Bringing Visibility to Power Distribution System Operations and Engineering  
Cost: \$5.00 (No cost if you are a college student)  
Reservations: Please make your reservation no later than Sunday, March 18<sup>th</sup>, by contacting Nancy or Stacy at (480) 991-9191 (Ext 10 or Ext 16) or by using this link:  
<http://ewh.ieee.org/soc/pes/phoenix/lunch.php>

### Presentation Abstract:

Electric power distribution feeders consist of miles of wire, plus transformers, switches, clamps, voltage regulators, capacitor banks, and numerous other apparatus, all operating for decades in a hostile

physical environment. Apparatus failures cause outages, and sometimes worse. Many components operate in run-to-failure mode, because no practical means exists to provide visibility, or awareness, of the health of these multitudinous line components. Smart grid technologies, such as self-healing switching systems, can limit the extent and duration of extended outages, but still come into play only after a failure causes an outage. High-fidelity electrical waveforms reflect feeder activity, and sophisticated signal processing, pattern matching, and other software techniques can analyze those waveforms to detect and characterize feeder activity. For the past decade, the Electric Power Research Institute (EPRI) has sponsored Texas A&M research to identify specific waveform characteristics that can diagnose and even predict failures and outages. The resulting technology, now known as DFA technology, uses on-line algorithms to analyze high-fidelity waveforms and report apparatus failures, incipient failures, and other operational problems. To minimize data overload, researchers have implemented the algorithms to analyze the data in near real-time, without human intervention, to deliver actionable intelligence to utility engineering and operations staff. Multiple utilities currently have active pilots to evaluate the use of the technology on their systems. This presentation will provide a brief review of the technology's development and then focus on specific examples illustrating application on operating utility systems.

Speaker Biographical Sketch:



Carl Benner (M'1988, SM'2004) holds B.S. and M.S degrees in Electrical Engineering from Texas A&M University in 1986 and 1988. He serves as Senior Research Engineer in the Department of Electrical and Computer Engineering at Texas A&M University. His work centers on the application of advanced technologies to the solution of challenging power system problems, with an emphasis on the application of computer-based monitoring and diagnostics.

Mr. Benner is a registered Professional Engineer in the State of Texas. He is a member of the IEEE Power and Energy Society and Industry Applications Society. He also serves on the Boards of Directors of Bryan Texas Utilities and of the Texas Municipal Power Agency. Contact Mr. Benner at (979) 845-6224 or at [carl.benner@tamu.edu](mailto:carl.benner@tamu.edu).



INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS



## Solid State Circuits Society - Phoenix Chapter

**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 affects 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 Cyadi-RP0115 <[rp0115@freescale.com](mailto:rp0115@freescale.com)>



## NEXT MEETING MAY 15, 2012

**Topic:** To Be Determined

**When:** Tuesday, May 15, 2012, 11:00am – 1:00pm Lunch cost 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:  
[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.

**NEWS:** The registration fee has been increased to \$15 at luncheon technical meeting because there is a net loss at every meeting and this increase should net out with no loss.

The Arizona Science Lab is seeking volunteers to help with their program introducing students to science and engineering, If you have an interest or want more information please contact [michel@ebertin.net](mailto:michel@ebertin.net) or look at the web site [www.AZsciencelab.org](http://www.AZsciencelab.org).

### 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	<a href="mailto:Tom-LCS@COX.NET">Tom-LCS@COX.NET</a>
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>

---



IEEE Phoenix Section  
Women in Engineering  
Affinity Group



The next meeting of the IEEE Phoenix Section **Women in Engineering (WIE) Affinity Group (AG)**

***Update on Next Workshop Coming Soon***

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## Phoenix Chapter of the IEEE Computer Society

March, 2012

### News

- We continue to build our program schedule for the remainder of the year. We have a confirmed speaker for May 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

- March 7 – Chapter meeting, DeVry University; speaker Paul Crowley, “Advanced Topics on Optical Media”

Paul Crowley is President and Founder of InfinaDyne, a Chandler-based consulting enterprise focused on optical media issues. Paul is a computer professional with over 25 years experience in programming computers of all types producing commercial products for embedded systems, mainframe and PC's. Since 1994, Paul has focused on PC and embedded system software development, specifically related to CD and DVD technology. This has included CD recording, accessing CD-ROM data for PC and Playstation games and in-vehicle navigation systems. InfinaDyne also performs optical media forensic work for law enforcement nationwide. Paul is an expert on all aspects of optical media and will discuss various topics including optical media physical characteristics, reading marginal discs, and reading cracked/broken discs.

- May 2 – Chapter meeting, DeVry University, speaker TBD
- 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))



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

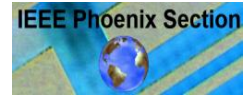
**Abstract Submissions:** Two pages (topic, summary of significant results and conclusions – WORD or PDF files only). Abstract must include author names, affiliations, addresses, and e-mail address of lead author.

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





*IEEE Phoenix Waves and Devices Chapter  
2012 Technical Workshop on*



# Millimeter Wave to Terahertz Devices and Technologies

**REGISTRATION:**

[https://meetings.vtools.ieee.org/meeting\\_view/list\\_meeting/9117](https://meetings.vtools.ieee.org/meeting_view/list_meeting/9117)

- 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

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  
Mel Miller, Freescale

Publicity/Website Committee:

Peter Aaen, Freescale

Registration/Finance Committee:

Sergio Pacheco, Freescale  
Haolu Xie, Fujitsu

Phoenix IEEE Waves & Devices Chapter:

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

**Friday, April 27, 2012**

**8:00 am to 5:00 pm**

**University Club, Arizona State University**

PRELIMINARY PROGRAM

INVITED SPEAKER	AFFILIATION	TOPIC / TITLE
Dr. Peter Siegel	Jet Propulsion Laboratory	THz for body screening: What you see and what you don't
Dr. Gabriel Rebeiz	University of California San Diego	RF MEMs for MM-Wave & Terahertz ICs
Dr. Stephen Goodnick	Arizona State University	Sub millimeter Wave Device Modeling
Dr. Ali Sadri	Intel Corp; WiGig Alliance	WiGig: The Evolution of Multigigabit Connectivity
Dr. Chris Walker	University of Arizona	THz Instrumentation for Astronomy
Dr. Ed Preisler	TowerJazz	Advanced SiGe BiCMOS Process Technologies for MM-Wave Applications
Dr. Michael Wanke	Sandia National Laboratories	Terahertz Radio Transceivers
Dr. Doug Lockie	GigaBeam	MM-Wave Long Range PTP Radios and Markets
Dr. Bhaskar Banerjee	University of Texas at Dallas	CMOS MM-Wave & Terahertz IC Design
Dr. Christopher Groppi	Arizona State University	Millimeter and Terahertz Device Development





INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS  
**WAVES AND DEVICES - Phoenix Chapter**



“Antennas & Propagation” and “Microwave Theory & Techniques” Societies Meeting  
*Meeting Free & Open to Non-IEEE Members*

4:00 PM, Wednesday, March 7<sup>th</sup>, 2012

**Arizona State University Brickyard on Mill, Room BYeng-660**  
*Brickyard 6<sup>th</sup> Floor*

**TRANSMISSION-LINE METAMATERIALS AND RELATED STRUCTURES:  
 FUNDAMENTALS & APPLICATIONS**

**Prof. George V. Eleftheriades**

Department of Electrical and Computer Engineering, University of Toronto, Canada

**Abstract**

Over the past decade there has been intense interest in artificial materials with unusual electromagnetic properties that cannot be found in nature. Therefore these materials are referred to as “metamaterials” (meta means beyond in Greek). The most representative metamaterial is characterized by a negative index of refraction. The feasibility of media which simultaneously exhibit negative permittivity and negative permeability, hence a negative refractive index, has been known since the sixties. However it is only recently that people invented ways to realize them. In this seminar, we will describe the fundamentals of transmission-line metamaterials (MTMs). Both isotropic and anisotropic transmission-line metamaterials will be discussed. We will then present a number of applications of transmission-line metamaterials including super-lensing in free space, multi-band/broadband passive and active RF/microwave components, small multi-functional MTM-inspired antennas, non-Foster antennas, reduced mutual-coupling antennas for MIMO, and broadband cloaking. We will also introduce the concepts of the “metascreen” and “super-oscillation array” and describe their sub-wavelength imaging properties.

**Biography**

George V. Eleftheriades earned his Ph.D. and M.S.E.E. degrees in Electrical Engineering from the University of Michigan, Ann Arbor, in 1993 and 1989 respectively. Currently he is a Professor in the Department of Electrical and Computer Engineering at the University of Toronto where he holds the Canada Research/Velma M. Rogers Graham Chair in Engineering. Eleftheriades introduced the concept of utilizing transmission lines to realize negative-index metamaterials in 2002. Together with his graduate students he has produced the first experimental demonstration of focusing beyond the diffraction limit with a Veselago-Pendry lens and invented a number of novel and practical antenna/microwave devices. Eleftheriades is the recipient of the 2008 IEEE Kiyo Tomiyasu Technical Field Award. He is an IEEE Fellow and has been elected Fellow of the Royal Society of Canada in 2009. He has been the general chair of the 2010 IEEE Intl. Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting which was held in Toronto, Canada July 11-17, 2010.

**Date:** **Wednesday, Mar. 7<sup>th</sup>, 2012**

**Location:** Arizona State University, Brickyard on Mill, 6<sup>th</sup> Floor, Room BYeng-660  
 Best parking is underground. Take elevator at west end of parking area.

**Time:** **4:00 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](mailto:steve.rockwell@ieee.org)  
 Adel Elsherbini (Publicity Chair) (734) 686-2278 [a.elsherbini@gmail.com](mailto:a.elsherbini@gmail.com)

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



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# IEEE Communications Society

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New York, NY 10016 USA  
Tel: +1 212 705 8900  
Fax: +1 212 705 8999  
society@comsoc.org  
www.comsoc.org

**Singapore Office**  
Fanny Su Bah Noi, Manager  
No. 1, Fusionopolis Walk,  
#04-07, South Tower, Solaris  
138628 SINGAPORE  
Tel: +65 778 2873  
Fax: +65 778 9723  
isaepo@pacific.net.sg

**China Office**  
Ning Hua, Chief Representative  
Rm 1503, South Tower  
Raycom Info Tech Park C  
Haidian District  
Beijing, 100190, China  
Tel: +86 10 8286 2250  
Fax: +86 10 8262 2135  
n.hua@ieee.org

**India Office**  
Prestige Meridian-II  
Unit No. S-306,  
Block-2, Level-3  
Mahatma Gandhi Road  
Bangalore -560001,  
Karnataka, India  
+91 90 4147 0592  
+91 90 4147 0593

**IEEE Member Services**  
IEEE Operations Center  
445 Hoos Lane,  
Piscataway NJ 08854 USA  
Tel: +1 908 679 IEEE (4333)  
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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

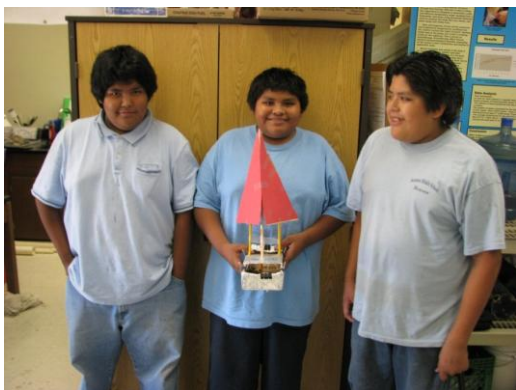
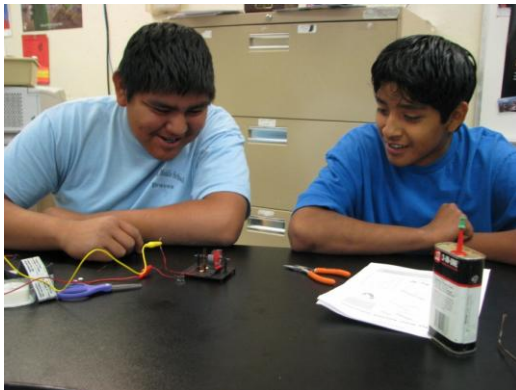
**Locations for Workshops:**

- 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**



**Contact Information:**

**John Purchase**

**ASL Group Leader**

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

**Michel Ebertin** ASL Volunteer Coordinator

[michel@ebertin.net](mailto:michel@ebertin.net)

**Tom Innes**

**ASL Metrics Manager**

[tom.innes@att.net](mailto:tom.innes@att.net)



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



## **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, March 6, 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.

The agenda for the meeting is below.

Regards,  
Ralph Hogan  
Chair, IEEE Phoenix Section

## 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 Tepedelenioglu]

## 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](#).

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## **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>

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## **Build Real Relationships Using Video Marketing**

If you're in business today, chances are you've either started using video in your marketing or know you should be.

### **Why?**

- Because YouTube is the 2nd largest search engine behind Google
- Because over 40% of consumers watch online videos on a weekly basis
- Because quite frankly, if you can't connect with someone live and in-person, video is the next best thing to being there.

### **So what's the problem?**

- With everyone hopping on the video bandwagon, it's hard to know how to stand out among the noise
- Being on camera can bring out your inner critic, and prevent you from feeling like 'yourself' when communicating through video
- How do you know what to say and how to say it (when you're not talking to a 'real' person?)

### **The Solution?**

Featured as part of the Arizona Sci-Tech Festival and hosted by the Microsoft Store, **THRIVE!** is a fun, FREE and interactive event designed to help you build your business in 2012 through authentic relationships and video marketing.

Thrive! was created to change the conversation - from 'Who is your competition' to 'Who can we collaborate with?' It was created to connect with other like-minded professionals in our community and ask 'Who are you and how can I help?' instead of 'What do you do?'

**When: Thursday, March 15<sup>th</sup>, 2012 7-8:30pm**

**Where: The Microsoft Store @Fashion Square**

**To RSVP & for More Details: Please go to <http://thrive-the-event.eventbrite.com>**

**Questions: Contact Jenn Kaye at 480.442.5433 or [jenn@lifeheadon.com](mailto:jenn@lifeheadon.com)**

## **Washington Internships for Students of Engineering (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

Erica R. Wissolik  
Program Manager, Government Relations  
IEEE-USA  
2001 L Street, NW, Suite 700  
Washington, DC 20036  
202 530 8347 direct | 202 785 0835 fax  
[e.wissolik@ieee.org](mailto:e.wissolik@ieee.org) | [www.ieeeusa.org](http://www.ieeeusa.org)

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## **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?"

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## **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.