# The Valley Megaphone

Newsletter of the
Institute of Electrical and Electronics Engineers, Inc.,
Phoenix Section
October 2014,
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## Executive Committee 2014

**Chair**
Bruce Ladewig, 480-620-9291
bruceladewig@ieee.org

**Vice Chair**
Bruce Ladewig, 480-620-9291
bruceladewig@ieee.org

**Secretary**
Surinder Tuli, 480-287-1437
Surinder.tuli@gmail.com

**Treasurer**
Vivek Gupta, 480-734-0266
vmgupta@msn.com

**Past Chair**
Charles Weitzel, 480-292-0531
c.weitzel@ieee.org

**Publicity**
Mahesh Shah, 480-544-9438
mkshah@ieee.org

**PACE**
Vivek Gupta, 480-734-0266
vmgupta@msn.com

**Membership**
Vasudeva P. Atluri,
480-227-8411
vpatluri@ieee.org

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

**Conferences**
Brad Morantz, 480-348-5945
Phx.Conf@yahoo.com

**Awards**
Vasudeva P. Atluri,
480-227-8411
vpatluri@ieee.org

**Inter-Society**
Mike Andrews, 480-991-1619
m.andrews@ieee.org

**Webmaster**
Krishna Bharath 480-552-8913
kbharath@ieee.org

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**(Please Click on the heading below to go directly to that page)**



**IEEE Phoenix Section on-line updates can be found at http://sites.ieee.org/phoenix/ and on LinkedIn at:http://www.linkedin.com/groups?gid=2765918 and on Facebook at: https://www.facebook.com/IEEEPhoenixSection**

**Please send announcements for the *Valley Megaphone* to Mahesh Shah at mkshah@ieee.org for inclusion in the Section Calendar.**

**All meetings announced in the Phoenix Section Megaphone or on the Phoenix Section Calendar are open to everyone (IEEE members and non-Members)**

**IEEE Phoenix Section 2014 Annual Banquet pictures are available to view and download at**
http://sites.ieee.org/phoenix/2014/03/03/pictures-from-the-2014-annual-banquet/

## Chapters

**Signal Processing & Communications**
Pavan Turaga
pturaga@asu.edu

**Computer Society**
Jerry Crow
jerry.crow@computer.org

**CPMT Society**
Mahesh Shah
480-544-9438
mkshah@ieee.org

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

**EMBS Chapter**
TBD

**EMC Society**
Brett Gassaway, 480-926-3100
brettg@compliancetesting.com

**Power & Energy Society**
Craig Smith
craig.smith@aps.com

**Solid State Circuits**
Mirembe Musisi-Nkambwe
Mirembe@ieee.org

**Teacher-In-Service**
Rickie Currens
Rickie.Currens@att.net

**Waves & Devices Society**
Steve Rockwell
steve.rockwell@ieee.org

**Life Members**
Les Daviet II
lesdavietii@cs.com

**Women In Engineering**
Shamala Chickamenahalli
shamala.chickamenahalli@intel.com

**Young Professionals**
Shafiul "Jacky" Islam 520-245-9010
shafiul.islam@intel.com

The Valley Megaphone is the newsletter of the Phoenix Section of the Institute of Electrical and Electronics Engineers. It is published monthly and reaches about 4000 members. Submit articles, advertisements, and announcements to Surinder Tuli at the above email address. Deadline for announcements and advertisements is the third Friday of the month prior to publication. Advertising Rates: Full page: $200, 3/4page: $125, 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://sites.ieee.org/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: Nick Spirakus
480-789-9867,
nmspirak@asu.edu
Advisor: Cihan Tepedelenlioglu,
480-965-6623, **cihan@asu.edu**

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

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

**DeVry, Phoenix**
Chair: Lori Renaldi
**lorirenaldi@computer.org**
Advisor: Diane Smith
**dsmith2@devry.edu**

**DeVry, Computer Society**
Chair: TBD
Advisor: Diane Smith
**dsmith2@devry.edu**

**NAU, Engineering**
Chair: TBD
Advisor: Niranjan Venkatraman
**v.niranjan@ieee.org**

**Embry-Riddle, Prescott**
Chair: Lisa M. Ferguson
**FERGUSL2@my.erau.edu**
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.**

The Department of Computer, Electrical, and Software Engineering at **Embry-Riddle Aeronautical University** in Prescott, AZ invites applications for a faculty position (tenure-track or tenured) at the assistant or associate professor level. The successful candidate should have a BS degree in Electrical or Computer Engineering, and either an earned doctorate in Electrical or Computer Engineering, or a MS degree in Electrical or Computer Engineering, or equivalent, and extensive industrial experience with wireless or wireline communications, analog or power electronics, navigation systems, or avionics systems. Preferred areas of expertise for this position include extensive knowledge of electronic and wireless (both analog and digital) communications systems theory and practice as well as the ability to develop and manage senior design projects in this area. Significant industrial, entrepreneurial and/or teaching experience would strengthen a candidate's credentials, but recent graduates are encouraged to apply.

Apply online at www.erau.edu/jobs and search for positions at Prescott.
Contact Professor Cone at conec@erau.edu for further information.

# Upcoming Conferences in Region 6

2015 IEEE/MTT-S International Microwave Symposium - MTT 2015 Will be held May 16 to 22 2015

2015 International Conference on Microelectronic Test Structures (ICMTS) will be held March 23 to 26 2015

2015 85th ARFTG Microwave Measurement Conference (ARFTG) will be held on May 22, 2015

2015 IEEE International Conference on Cloud Engineering (IC2E) will be held March 9 to 13

2015 IEEE Workshop on Automatic Speech Recognition and Understanding (ASRU) will be held Dec 13 to 16, 2015

## Metro Area Workshop

We are trying to plan an all day workshop here in Phoenix for the spring of 2015. It will be for learning and networking and will be kept affordable so that everyone who wants to attend can. We are planning on having a keynote speaker and then break into a number of classes all day, with breaks for snacks, lunch, and networking.

Anyone who would like to volunteer to help or is able to teach a class, please contact me at Phoenix.conferences@ieee.org or bradscientist@ieee.org

We are also planning on having exhibits for the attendees to learn about new companies, products, and to meet other people. The booths will be reasonably priced, and if anyone is interested, please contact me at the email listed in the lines above.

## 2014 Phoenix Tech-Security Conference

The Phoenix Tech-Security Conference will be held in Phoenix area on Thursday, November 6th, 2014, at The Hilton Phoenix-Mesa Hotel. This conference will have 12 companies speaking on various IT Security topics such as cloud security, compliance, social media security, personal devices security, network security and more, as well as a vendor exhibit area featuring more than 40 vendor exhibits. There will be numerous door prizes such as iPads, gift cards, Kindles, cash and more. Breakfast and a full lunch for our attendees will be included. This is offered to IEEE members as a complimentary VIP pass to this event. These passes are a $100.00 value and this is a great perk for our members. Members can register for free via the link in the invite below. Please feel free to contact Stephanie Lange 636-778-9495 for additional info.

# *2014 Phoenix Tech-Security Conference*

**Place:** **Hilton Phoenix Mesa**
**1011 West Holmes Avenue**
**Mesa, AZ 85210-4923**

**Date:** **Thursday, November 6th, 2014**
**8:15am-5:00pm**
*Click on the following link to register for your free VIP pass:*
***http://phoenixtechsecurity.eventbrite.com/?aff=np***

- **VIP passes include Breakfast, Lunch, Conference materials and Entrance into conference sessions and exhibit areas.**
- **This conference qualifies for CPE credits and Certificates of Attendance.**
- **Gift Cards, iPads, Kindles and many other door prizes and give aways.**
- **Featuring (11) IT Security speakers and over 30 exhibits!!**

**For full conference agenda click on:**
***http://dataconnectors.com/events/2014/11Phoenix/agenda.asp***
**or call Stephanie Lange at 636-778-9495 for more information.**
**slange@DataConnectors.com**
***To be notified of future events click on:***
***http://www.dataconnectors.com/email_list.asp***

# Call for Papers
# 28th International Conference on Microelectronic Test Structures
March 23-26, 2015, Phoenix, Arizona USA

***General Chair:***
Larg Weiland
PDF Solutions
larg.weiland@pdf.com

***Technical Chair:***
Colin McAndrew
Freescale Semiconductor, Inc.
Colin.McAndrew@freescale.com

***Tutorial Chair:***
Brad Smith
Freescale Semiconductor, Inc.
Brad.Smith@Freescale.com

***Local Arrangements:***
Colin McAndrew
Freescale Semiconductor, Inc
Colin.McAndrew@freescale.com

***Equipment Exhibition:***
Bill Verzi
Agilent/Keysight Technologies
bill_verzi@agilent.com

***Asian Representative:***
Kunihiro Asada
VLSI Design and Education Center
University of Tokyo
asada@silicon.u-tokyo.ac.jp

***European Representative:***
Anthony Walton
Scottish Microelectronic Centre
University of Edinburgh
Anthony.Walton@ee.ed.ac.uk

***USA Representative:***
Loren Linholm
linhlw@comcast.net

***Conference Manager:***
Wendy Walker
Widerkehr and Associates
wwalker@widerkehr.com

The 28th International Conference on Microelectronic Test Structures (ICMTS) will be held in Phoenix, Arizona, USA, bringing together designers and users of test structures to discuss recent developments and future directions. The conference will be held March 24-26, 2015, preceded by a one-day Tutorial Short Course on Microelectronic Test Structures on March 23. There will be an equipment exhibition relating to test structures and measurements. Original papers are solicited presenting new developments in test structures, as well as their implementation, measurement, and application, related to semiconductors, nanotechnology, and MEMS. A Best Paper award will be presented by the Technical Program Committee. The conference is sponsored by the IEEE Electron Devices Society and all published papers will be posted to IEEE Xplore®.

Topics of relevance to ICMTS include, but are not limited to:

**Material and Process Characterization:** Wafer material evaluation for SiGe, strained Si, Si-on-insulator, Ge, GaAs, GaN and other compounds. Resistivity, mobility, stress, contact resistance, dielectric, and interconnect measurements. Test structures and methods to evaluate new materials and devices, e.g. graphene and CNTs.
**Test structure design methods:** Flows for automated test structure design, generation, and verification; design-for-analysis, parameterized design, layout issues (grid, hierarchy, misalignment), switched arrays.
**Replicated Feature Metrology:** Level-to-level registration, overlay, CD uniformity and control, non-electrical characterization techniques, mask and reticle process control.
**Manufacturing of Integrated Circuits and MEMS:** Evaluation of individual and groups of integrated circuit, device, and MEMS process steps and elements: transistors, diodes, mechanical structures, device isolation, memory cells, and interconnect. Assessment of MMICs and RF components and products. Evaluation and optimization of standard cell macros and other circuits.
**Reliability and Product Failure Analysis:** Test structures for quality assurance, transistor, thin film, dielectric, and interconnect reliability, thermal monitoring and analysis, accelerated wafer level tests, wafer level burn-in, failure identification, reliability prediction.
**Nanotechnology, Displays, and Emerging Devices:** Test structures and methods to evaluate nanotechnology (materials and devices), displays, optoelectronic materials and devices, novel memories, and related materials.
**(BIO-)MEMS, (BIO-)Sensors, and Actuators:** Test structures for MEMS and micromachining including physical/chemical/optical/bio sensors, photonic devices, amorphous silicon films and devices.
**Device and Circuit Modeling, Parameter Extraction:** Model parameter extraction, RF device modeling, de-embedding, pulsed measurements, DC and high frequency measurement techniques and applications.
**Technology R&D, Integration, and DFM:** Test structures for FEOL or BEOL evaluation, design rule determination, process uniformity and worst-case analysis, test structures to assess integration and new technologies, switched array test chips/devices for large scale evaluations and reduced pad count.
**Test Circuits:** Novel on-wafer circuits for characterization of manufacturing technologies, variability, yield, and performance. Circuits to simplify probing, improve measurement robustness, and reduce pad count.
**Yield Enhancement, and Production Process Control:** Yield enhancement structures and methods, critical area calculation, defect estimation structures and methods, yield modeling, evaluation of design-manufacturing interactions, place and route methodology, and statistical process control. Large-scale, many-component test arrays and multiplexing techniques for technology assessment.
**Test Structure Measurement Utilization Strategy:** Test equipment, probing and programmable testing for process diagnostics, optimizing test throughput, database and data analysis methods, statistical data analysis, expert systems and related techniques, including capacitance, voltage, current, resistance, optical, and thermal measurements.
**Matching and Variability Test Structures:** Matching and variability of components (transistors, resistors, capacitors, inductors) and layout for circuit applications and their evaluation. Characterization of identically designed components. Modeling of matching and variability.

Authors are asked to submit an abstract of up to four pages in PDF format (font-embedded). The first page **must** consist of a title, a 50-words summary, author name(s), the full address, fax number, and e-mail address of the lead author, and author preference for oral or poster session presentation, if any. The body of the abstract should be three pages or less consisting of one page of text (800 to 1000 words) and up to two pages containing major figures and tables. Please visit the ICMTS 2015 official web site icmts2015.pdf.com for further information and paper submission. You may care to join the ICMTS group at www.linkedin.com.

The selection process will be based on the technical merit and will be highly weighted in favor of papers that have a high test structure content, include measured data and analysis, together with illustrations of the test structures involved. The submission deadline is **October 17, 2014**. Notice of paper acceptance, with instructions for manuscript preparation for the conference proceedings, will be sent to the authors of the papers selected for presentation by early December, 2014. The deadline for submission of the final paper will be January 20, 2015.

Details of the venue, hotel, registration, etc. will be posted at icmts2015.pdf.com as they are finalized.

For further technical information, please contact the technical chair:
Colin McAndrew, Freescale Semiconductor, Inc., Colin.McAndrew@freescale.com

# IEEE Components, Packaging and Manufacturing Technology Society Phoenix Chapter

## 2014 Executive Committee for CPMT Chapter for IEEE-Phoenix Section

| Position | Name | Phone Contact | Email Contact |
|---|---|---|---|
| Chair | Dr. Mahesh K. Shah | (480) 544-9438 | mkshah@ieee.org |
| Asst. Chair | Mr. Vivek Gupta | (480) 734-2366 | vmgupta@msn.com |
| Secretary | Dr. Devarajan Balaraman | (480) 619-0944 | iamgoinbiking@gmail.com |
| Treasurer | Dr. Vasudeva P. Atluri | (480) 227-8411 | vpatluri@ieee.org |
| Program Chair | Mr. David Dougherty | (480) 245-8099 | david.dougherty@freescale.com |
| Tutorial Chair | Dr. Ashish Gupta | (480) 554-2409 | ashish.x.gupta@intel.com |
| Asst. Tutorial Chair | Adel Elsherbini | (734) 686-2278 | a.elsherbini@gmail.com |
| Workshop Chair & Publicity | Dr. Vasudeva P. Atluri | (480) 227-8411 | vpatluri@ieee.org |
| Website Co-Chair | Huiyang Fei | | Huiyang.H.Fei@ieee.org |
| Website Co-Chair | Bharat Penmecha | (480) 552 2511 | bharat.penmecha@ieee.org |
| | | | |

### Tentative Schedule for Monthly Seminars

We are working to arrange monthly Seminars on topics of interest to our members. If you have suggestion for topics and/or speakers please contact any of the executive committee members listed above.

**October 15 – Dr. Stuart Bowden – Solar Cells**

### Additional Activities –Tutorial and Workshop

Phoenix section is planning to hold a Half Day tutorial on the topic of **Reliability Engineering** in early Fall. In addition we are working with other Society Chapters to hold a workshop on **Emerging Device and Packaging Technology** in late Spring 2015. Please wait for announcements in near future

# IEEE Components, Packaging and Manufacturing Technology Society Phoenix Chapter

**Wednesday, October 15th, 2014 at 5:30 PM**

## Present and Future of Photovoltaics

**Dr. Stuart Bowden**
**Director of Solar Power Laboratory**
School of Electrical, Computing and Energy Engineering
Arizona State University
Tempe, Arizona

## ABSTRACT

The photovoltaic industry has grown at over 30% per annum for the last two decades with present sales of $100 billion per year. As a quantum energy converter, photovoltaics has the potential to revolutionize electricity production in much the same way that solid state physics has changed industries from computing and lighting. The presentation will discuss the present state of the photovoltaic industry and why crystalline silicon continues to be the dominant technology in solar cell production. This presentation will cover all aspects of production in crystalline silicon from the present and into the future. We will delve into device physics of silicon solar cells and how the limitations in present devices can be overcome for both higher efficiency and higher throughput. The various aspects of production will also be covered: from crystallization to wafering, through cell production and finishing with module design and testing.

## BIOGRAPHY

**Dr Stuart Bowden** presently heads the silicon section of Arizona State University's Solar Power Laboratory.. Dr Bowden has extensive experience in the characterization of silicon materials for photovoltaic applications. He is author of the Photovoltaics CDROM (*http://www.pveducation.org/pvcdrom*) that is used extensively as an educational tool in industry and academia, throughout the world. In 2005, he was awarded an R&D 100 award for his contributions to the Quasi-steady-state photoconductance system. Dr. Bowden's post graduate studies included transferring the buried contact solar cell technology from UNSW to Samsung Advanced Institute of Technology (SAIT). In 1998, he joined the Inter-University Micro Electronics Centre (IMEC) in Belgium where he demonstrated rear surface passivation of multicrystalline silicon wafers using boron diffusions and inversion layers created by silicon nitride. From 2004 – 2008 he led the effort at the Institute of Energy Conversion at the University of Delaware, to develop advanced silicon solar cell structures based around super-passivation and induced junctions and the cell manufacturing processes. Dr Bowden received his Ph.D. from the University of New South Wales (UNSW) in Australia for work on static concentrators using silicon solar cells.

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**Date:** Wednesday, October 15th, 2014

**Location:** Group Conference Room, Freescale Semiconductor, Inc., 2100 E. Elliot Rd. Tempe, AZ. There are new signs on the property (Discovery Business Center). Enter the facility through the Main (South) Lobby in building 94 and sign in with Security (*Photo ID required*). You will be escorted to the meeting room.

**Agenda:** 5:30–6:00 PM: Social/Refreshments, promptly 6:00–7:00 PM: Presentation, 7:00 PM: Dinner
(Pizza and Soda will be provided by the IEEE Phoenix Section CPMT Society Chapter)

IEEE members and non-members are all welcome to attend.
**Please arrive at the facility entrance no later than 5:45 PM.**

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

| | | | | | |
|---|---|---|---|---|---|
| Vasu Atluri | (480) 227-8411 | Devrajan Balaraman | (480) 619-0944 | David Dougherty | (480) 413-6923 |
| Adel Elsherbini | (734) 686-2278 | Ashish Gupta | (480) 554-2409 | Vivek Gupta | (480) 734-0266 |
| Mahesh Shah | (480) 544-9438 | Huiyang Fei | | Bharat Penmecha | (480) 552-2511 |



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# SP-COM Phoenix Chapter

## Please join our Google Group!

**We have recently started a google group to be able to send you more timely announcements via email for upcoming events and talks. Please sign up for timely email announcements at the below link**

**https://groups.google.com/d/forum/ieee-sp-com-phoenix-chapter**

**We are limiting member permissions only to receiving emails posted by the group owner - the SP-COM chapter chair.**

**Technical Co-Sponsorship by the IEEE Signal Processing and Communications Chapter, Phoenix Section**

**We continue to post meeting notices on IEEE vtools at (https://meetings.vtools.ieee.org/main)**

# Phoenix Chapter of the IEEE Computer Society

## October, 2014

### News

- Our September meeting featured an excellent presentation on artificial intelligence delivered by Dr. Brad Morantz, the vice-chair of the chapter. It was reportedly well received.

### Future Events

- On November 19th Hal Berghel, our presenter in March, will return to provide us a presentation on "Digital Money Laundering". More details regarding this presentation will be forthcoming. Note that this date is later in the month than our usual date.

- At the November meeting we will hold chapter elections for the 2015 calendar year. Anyone interesting in standing for any chapter office should contact one of the individuals listed below.

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, (a mile east of I-17 on Dunlap).

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:

| | |
|---|---|
| Chair: | Jerry Crow (jerry.crow@computer.org) |
| Vice-chair: | Brad Morantz (bradscientist@ieee.org) |
| Secretary/Webmaster: | Audrey Skidmore (askidmore@computer.org) |
| Treasurer: | Diane Smith (sdianesmith@computer.org) |

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

## October 2014 Luncheon Meeting

*Date:* Thursday, October 16, 2014

*Time:* 11:30 - 11:45 am: Registration
11:45 am: Lunch
12:00 pm: Program

*Location:* SRP PERA Club (map)
1 E Continental Dr
Tempe, AZ

*Speaker:* Lesly Swanson, Senior Environmental Scientist, Salt River Project

*Topic:* Utility Avian Protection Programs

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

*Reservations:* Contact Gorman Company at (602) 470-0400 or submit your name here.
Reservations deadline is NOON on Monday, October 13, 2014.
*If you have already registered for this luncheon but need to cancel, click here.*

***Abstract:***

The utility industry often deals with birds and a variety of bird related issues. Birds by nature are attracted to tall structures from which they can hunt, eat or nest. Large bodied birds can get into trouble on utility equipment and at utility facilities. Bird deaths due to utilities have been receiving publicity for years. Many of the birds that use utility equipment are protected. There are three federal statutes that afford protection to nearly all native bird species. Penalties under these laws can be civil, (felony, misdemeanor) or criminal. Additionally, a number of states also have laws protecting particular birds. This means a company can be in violation of one or all of these laws if birds are killed on their infrastructure or at their facilities.

This presentation will focus on utility Avian Protection Programs, including the legal implications and basic issues and concerns related to birds and the utility industry. Key parts of SRP's Avian Protection Program will be explained in more detail. Liberty Wildlife, a local non-profit which focuses on native wildlife rehabilitation and education, will also be part of the presentation. Liberty Wildlife volunteers will bring avian ambassadors, which are non-releasable birds. Attendees will be able to see many of the birds that utilities in AZ regularly encounter.

***Biography:***

Lesly Swanson is a Senior Environmental Scientist for Salt River Project (SRP), one of the nation's largest public power utilities and a major water provider for central Arizona. Lesly oversees programs which protect flora and fauna and safeguard natural resources such as central Arizona's water supply. She began her SRP career supporting habitat conservation plans for Theodore Roosevelt, Horseshoe and Bartlett lakes, encompassing 2,000-plus acres of critical riparian habitat reserved as wildlife preserves. Lesly also coordinates education efforts with local, state and federal agencies in an effort to prevent invasive quagga mussels from spreading in Arizona waters. As supervisor of the Avian Protection Program, she helps ensure that power

facilities are raptor-friendly. Lesly has supported SRP's Avian Protection Program for nine years and supervised it for three years.

Lesly has a bachelor's in biological sciences from California Polytechnic State University, San Luis Obispo. She studied abroad at Columbia University's Biosphere 2 Center and also worked with the Mason Audubon Center in Tucson. She obtained a master of business administration from Arizona State University's W.P. Carey School of Business. Lesly is a graduate of Leadership West Class 18 and sits on the board of the Southwest Valley Chamber of Commerce.

# 57th ANNUAL IEEE-PES FUNDRAISING GOLF TOURNAMENT


## NOVEMBER 15, 2014

**Be sure to join us at Rio Verde Golf Club, located at 18731 E 4 Peaks Blvd, Rio Verde, AZ 85263, for a 12:45 PM Shotgun Start. The course is located 10 Minutes north of Fountain Hills. (480) 471-9420 http://www.rioverdecc.com/Map**

**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 place, second place, and third to last place teams. There will also be a Raffle, Skills Games, and Giveaways Galore.**

**Use this sheet to sign up either individually or for your team. You can either:**

- **Print out and complete, then mail the form with your payment**
- **Return this form electronically (distribution@gorman-co.com) and then send your payment.**
- **Send payments to: IEEE-PES**
  **c/o Gorman Company**
  **4819 35th Street**
  **Phoenix AZ 85040**

You will be notified via email that your payment has been received and you are registered to participate. If you have any questions, please feel free to call us at (602) 470-0400.

**Please provide all requested information, including email addresses for all team members.**

**TEAM/SPONSOR**_____

**Player** _____ **Dinner?** _____

**Email** _____

**Player** _____ **Dinner?** _____

**Email** _____

**Player** _____ **Dinner?** _____

**Email** _____

**Player** _____ **Dinner?** _____

**Email** _____

**Player** _____ **Dinner?** _____

**Email** _____

**Additional Dinner Guests:** _____

**To minimize waste and extra costs, we would like your help getting an accurate dinner count.**

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

# WAVES AND DEVICES

## PHOENIX CHAPTER

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

## *2014 Calendar*

| Date | Location | Topic / Title | Speaker | Affiliation | IEEE Society |
|---|---|---|---|---|---|
| 29-Jan | ASU Brickyard | Expanding your knowledge of Laser Fusion and Optical Accelerators | Ken Barat | Consultant | Photonics |
| 6-Mar | ASU Goldwater | Embrace Circuit Nonlinearity to get Transmitter Linearity and Energy Efficiency | Earl McCune | MTT DML | MTTS |
| 4-Apr | Agilent | Current and Future Trends in Photovoltaics Technologies | Christina Honsburg | ASU | EDS |
| 25-Apr | Freescale | Bio Medical Devices | Jennifer Christen | ASU | EDSs |
| 1-May | ASU | Software Defined Radio | Hossein Hashemi | USC | MTTS/ EDS |
| 22-May | ASU | Antennas | Kathleen L. Melde | UofA | Antennas |
| Sept 24 | Freescale | How Really Smart Engineers Make Really Dumb Mistakes | Colin McAndrew | Freescale | MTTS/ EDS |
| **Oct, 29** | **TBD** | **Choosing Circuit Materials for Millimeter Wave Applications** | **John Coonrod** | **Rogers Corp** | **MTTS** |
| **Nov, 19** | **ASU** | **Radomes and Rotor Blade Modulation** | **Ron Lavin** | **Boeing Corp.** | **Antennas** |

**INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS**

# WAVES AND DEVICES - Phoenix Chapter

***Meeting Free & Open to Non-IEEE Members***

***6:30 to 8:00PM, Wednesday, Oct 29, 2014***
***Arizona State University***
***Goldwater Center, GWC487***
***650 E. Tyler Mall, Tempe, AZ***

# PCB Material Considerations for Millimeter-Wave Applications

***John Coonrod***
***Sr. Market Development Engineer, Rogers Corporation***

## Abstract

Printed circuit board (PCB) applications at millimeter-wave frequencies have many challenges. In order to minimize potential issues in the design stage, it is necessary to understand the material performance at these frequencies. Designers of PCB millimeter-wave applications need to consider radiation loss, dispersion, unwanted resonances and the impact of normal PCB fabrication variables. The high frequency circuit materials used to fabricate the PCB have attributes which can affect these issues.
This presentation will give an overview of material properties related to dispersion and insertion loss at microwave and millimeter-wave frequencies. The loss discussion will examine the components of insertion loss such as dielectric, conductor and radiation loss in regards to PCB material properties and variables. Some basic concepts will be shared with corresponding measured data. Additionally, loss concerns with different transmission line structures will be shown with some comparisons between circuits tested with bare copper to circuits having plated finish (such as ENIG or silver).

## Biography

John Coonrod is a Sr. Market Development Engineer for Rogers Corporation, Advanced Circuit Materials Division. John has been involved with the Printed Circuit Board industry for 27 years. The initial 11 years was spent in the Flexible Printed Circuit Board industry responsible for circuit design, applications, processing and materials engineering. Following this experience John supported the High Frequency Rigid Printed Circuit Board materials made by Rogers in regards to circuit fabrication, application support and electrical characterization studies of these materials. John is the Vice Chair on the IPC D24C High Frequency Task Group and holds a degree from Arizona State University in Bachelor of Science, Electrical Engineering.

**Date:** **Wednesday, Oct. 29, 2014**

**Time:** **6:30-8:00 PM Presentations (Pizza will be served following the Seminar)**

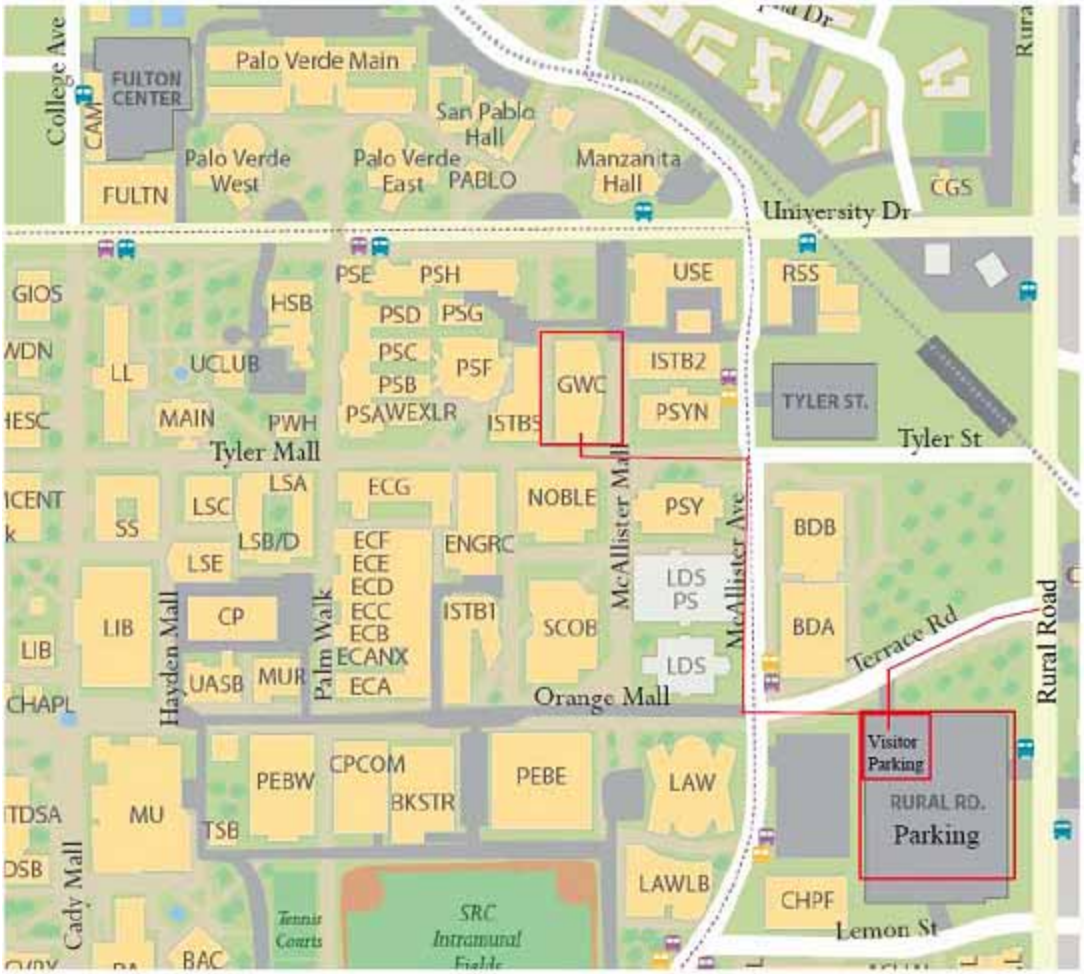
**Location:** Goldwater Center, GWC487, Arizona State University, 650 E. Tyler Mall, Tempe, AZ

For more information, contact:

| | | |
|---|---|---|
| Steve Rockwell (WAD Chapter Chair) | (480) 241-9891 | steve.rockwell@ieee.org |
| Curtis Scott (Chapter Publicity) | (623) 703-9177 | curtiscott@gmail.com |

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

**Goldwater Center – GWC – Room 487**
**Building is across from Noble Science Library**



# IEEE Phoenix Section Life Member Affinity Group

Celebrating 125 Years of Engineering the Future

**Technical & Administrative**

**Meeting October 14, 2014**

**Program Presentation:** Tentative Speaker will discuss the Central Arizona Project (CAP). How much water, where does it go, how CAP fits into AZ water systems, and questions.

**Meeting Agenda:**

Attendee introductions
Program Presentation
Continued discussion of LMAG program for student assistance and possible scholarship program for HS students.
Start acceptance of officers nominations for elections at December meeting.
Administration Meeting.

**Where:** SRP's **PERA Club** Bighorn Room,
1 East Continental Drive, Tempe, AZ
Continental is West of 68th St., ½ mile south of McDowell Road
Enter the Private PERA Club and follow drive to large parking lot. Big Horn Room is the most South east building off parking.

**When:** Tuesday, October 14, 2014, 11:00am – 1:00pm, Registration fee is $15. This fee will include lunch provided by the PERA Club. Lunch will be: BBQ Chicken salad, desert, Iced Tea, and Lemonade.

**RSVP:**
The Program Chair is seeking suggestion from members for future presentations. Any ideas of interest to LM are open for consideration. Please contact Ronald Sprague Program Chair at r.sprague@ieee.org 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.

***Activities:*** Technical meetings scheduled in February, May, October, and December. Elections are held at the December meeting.
***Future Technical Meetings***: All meeting are scheduled at the SRP PERA CLUB. It is suggested you put these dates on your calendar to attend our meetings.

- Tuesday, October 14, 2014
- Tuesday, December 9, 2014

**Officers:**

| | | |
|---|---|---|
| Chair | Leslie Daviet II | lesdavietii@cs.com |
| Vice Chair | Position is Vacant | |
| Secretary | Tom Lundquist | Tom.Lundquist@ieee.org |
| Treasurer | Leslie Daviet II | lesdavietii@cs.com |
| Program | Ronald L. Sprague, | r.sprague@ieee.org |
| Past Chair | A. Barry Cummings | abarrycummings@gmail.com |

IEEE youngprofessionals

**IEEE Young Professionals (formerly GOLD) Phoenix Section Executive Board**

- Chairman: Shafiul "Jacky" Islam (shafiul.islam@intel.com)
- Vice Chair: Jennifer Taggart (jennifer.taggart@asu.edu)
- Secretary/Webmaster: Joseph Caglio (joseph.m.caglio@intel.com)
- Treasurer: Ashley Kelly (Meredith) (ashley.kelly@aps.com)

**September 26, 2014, On-Chip Antennas for Multi-Chip RF Data Transmission [todo]**

IEEE Phoenix Young Professionals in alliance with IEEE Phoenix Women in Engineering, and IEEE / IEEE-HKN ASU organized this technical talk / lecture by Professor Kathleen L. Melde.
When: September 26, 2014 6:00pm Where: ERC 490, ASU Tempe Campus, 551 E. Tyler Mall Tempe, AZ 85281
We had about 15 attendees at the event. For more information please visit: https://meetings.vtools.ieee.org/m/28319
Organizers: Shafiul "Jacky" Islam (shafiul.islam@intel.com) and Nick Spirakus (nmspirak@asu.edu)

**September 30, 2014, and October 2, 2014, Board Meetings**

Jacky (meeting chair), Ashley, Jennifer, and Nick met over Google Hangouts (from 8:00pm to 9:00pm on 09/30) primarily for financial planning for the Career Mixer. We also planned for the event agenda, check-in / registration, name tags, security, and additional event promotion. Jacky (meeting chair), Ashley, and Nick met over Google Hangouts (from 8:00pm to 9:00pm on 10/02) for last moment planning for Career Mixer. We primarily planned for taking pictures, check-in / registration, placards for sponsors, AV setup, and our arrival times.

**October 3, 2014, 1st Annual Career Mixer with IEEE Phoenix Young Professionals, Women in Engineering, and IEEE / IEEE-HKN ASU groups**

IEEE Phoenix Young Professionals in alliance with Women in Engineering and IEEE/IEEE-HKN ASU groups organized first annual career mixer for fundraising, networking, and recruitment.
When: October 3, 2014 4:30-7:30pm Where: Old Main @ ASU, 400 East Tyler Mall, Tempe, AZ 85287
For more information (including organizing committee) please visit: https://meetings.vtools.ieee.org/m/28127
We had sponsorships from APS, Chrysler, Electron International Incorporated, Intel Corporation, Kimley-Horn, and Texas Instruments. This event was very successful where we had about 180 attendees and many students were recruited. This was one of the largest event as part of IEEE GOLD (now Young Professionals) Strategic Alliance proposed by Shafiul "Jacky" Islam at Southwest Area Meeting on August 24, 2013 in Phoenix, Arizona. We look forward to continue as a strategic alliance to hold our upcoming events.

For more information and registration please visit: https://meetings.vtools.ieee.org/m/28127

# 2014 IEEE Phoenix Section News

## Executive Committee Meeting

**No meeting of Executive Committee in July & August**

Normal meetings are on first Tuesday of the month from 6:00 PM to 8:00 PM
The Airport Hilton Phoenix,
2435 S 47th St. Phoenix, AZ 85034, (480) 894-1600.

## 2014 Executive Committee

| | |
|---|---|
| Chair: | Bruce Ladewig |
| Vice Chair: | Bruce Ladewig |
| Secretary: | Surinder Tuli |
| Treasurer: | Vivek Gupta |
| Past Chair: | Charles Weitzel |

## Executive Committee Meetings

**Date:** First Tuesday of every month, except July and August
**Time:** 6:00 – 8:00 p.m.
**Location:** Hilton Phoenix Airport, 2435 South 47th Street, Phoenix, AZ 85034

**IEEE Phoenix Section Annual Banquet 2014 Photos are Posted at:**
http://sites.ieee.org/phoenix/2014/03/03/pictures-from-the-2014-annual-banquet/

**IEEE Senior Member and Fellow Grade**

IEEE Phoenix Section Membership Development would like to nominate eligible IEEE Members from the Section to Senior Member and Fellow Grades. Please review the requirements at www.ieee.org for eligibility.

Eligible candidates are requested to send in their resumes to Dr. Vasudeva P. Atluri, Membership Development Coordinator, at vpatluri@ieee.org and Dr. Charles E. Weitzel, Section Chair, at c.weitzel@ieee.org for consideration.

# IEEE Phoenix Section Nomination of Officers

The IEEE Phoenix Section is seeking nominations for the following elected Section officer positions for the 2015 term:

- Chair
- Vice Chair
- Secretary
- Treasurer

Additionally, the Nominating Committee is seeking candidates for some of the following non-elected appointed standing committee Chair positions for the 2015 term:

- Publicity
- Membership
- Student Activities
- Conferences
- Awards
- Inter-Society
- PACE (Professional Activities Committees for Engineers)
- TISP (Teacher In-Service Program)
- Web Master

Section officers must be IEEE members. Self-nominations are acceptable.

Please send nominations or any questions to any member of the Nomination Committee:

**Chuck Weitzel (Chair):** **c.weitzel@cox.net**
**Trevor Thornton:** **t.thornton@asu.edu**
**Les Daviet II:** **lesdavietii@cs.com**

## Deadline for Nominations is November 15, 2014.

# 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.

You can also go to IEEE Phoenix Section LinkdIn page by clicking button on the IEEE Phoenix Section home page

# IEEE Phoenix Section Ventures into Social Media

You can access the web page three ways:
Use the URL: https://www.facebook.com/IEEEPhoenixSection

Click on the Facebook logo link from IEEE Phoenix section home page.
Search for IEEE Phoenix Section from your Facebook page.

We need following help.

1. Each of you access the IEEE Phoenix Section Web page and click on "Like" hyperlink.
2. Go on the Friends section of the page and "Invite Your Friends." Once your click on Invite button, it will get your email contact list. Your facebook contact list will already be populated with your Facebook friends and you can simply click the Invite button next to their name. Please invite as many friends as you can.
3. Provide me the contents for posting on a regular basis - meeting/ event announcements, Event pictures, Videos.
4. Start some discussion topics under - Status section.

# 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 Member's Benefits

IEEE-USA Offering Survivor Planning E-book Free to IEEE Members

**October Free E-Book**

In October, IEEE-USA will offer "The Best of Backscatter from Today's Engineer -- Volume 2" free to IEEE members.

Compiled from 12 original IEEE-USA Today's Engineer columns, author and IEEE Fellow Donald Christiansen continues to tackle topics that affect engineers today with wit, wisdom, humor, and his own unique perspective.

In "About the MBA," Christiansen writes that many engineers have earned MBAs as a follow-up to their baccalaureate or master's degrees in engineering, confirming that pairing an engineering and business education makes good sense. However, those who follow a research career path believe that time spent furthering their education might be better devoted to specialty studies in a technical area.

In “Engineers, Mere Mercenaries?,” Christiansen discusses the many projects engineers and engineering schools have undertaken to “employ technology for the public good, often on a volunteer basis.”

In “Ghosts,” the former IEEE Spectrum editor recalls with fondness many of the places where engineers once labored. One of the most well-known, Bell Laboratories in Holmdel, N.J., is where many of the world’s leading information- and communication-centric technologies were developed. Known as “The Idea Factory,” Bell Labs now exists within Alcatel-Lucent.

“The Best of Backscatter from Today’s Engineer -- Volume 2” can be downloaded at http://www.ieeeusa.org/communications/ebooks/files/nov14/00vmn2i/The-Best-of-Backscatter-Volume-2.pdf for free to IEEE members. $9.99 for non-members.

**November Free E-Book**

IEEE-USA will offer “Writing for Success - An Engineers Guide -- Volume 2: The Road to Excellence” by Tom Moran.

Call for Authors

IEEE-USA E-books seek authors to write an e-book, or an e-book series, on career guidance and development topics. If you have an e-book idea that will benefit members on a particular topic of expertise, email your proposal to IEEE-USA Publishing Manager Georgia C. Stelluto at g.stelluto@ieee.org and IEEE-USA Communications Committee Chair Gus Gaynor at g.gaynor@ieee.org.

IEEE-USA serves the public good and promotes the careers and public policy interests of more than 200,000 engineering, computing and technology professionals who are U.S. members of IEEE.

Web: www.ieeeusa.org
Facebook: www.facebook.com/ieeeusa
Twitter: www.twitter.com/ieeeusa
Join IEEE: www.ieee.org/join

Contact: Sharon C. Richardson, Coordinator
IEEE-USA Communications & Publishing
Phone: 1 202 530 8363
E-mail: s.richardson@ieee.org

## GoogleApps@IEEE Now Available to IEEE Members

GoogleApps@IEEE is a suite of products offered to IEEE members to enhance peer-to-peer communications and collaboration. The suite of applications includes e-mail, calendaring, contacts, and document sharing along with other collaborative tools. 30G of available cloud storage memory is available for these applications. Learn more about http://www.ieee.org/googleapps

GoogleApps@IEEE is available to members at no additional cost, bringing access to:

- A unique IEEE e-mail address (e.g., John.A.Doe@ieee.org);
- Mail forwarding or e-mail inbox (Gmail);
- 30-gigabytes of shared storage (Gmail and Google Drive);
- 99.9 percent up time guaranteed by Google;
- Advertisement-free Gmail;
- Files stored in the cloud for easy sharing and access from anywhere via Google Drive.