The Valley Megaphone

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

February, 2015

Volume XXIX, Number 2

Executive Committee 2015

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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)

Chapters

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Computer Society
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The Valley Megaphone is the newsletter of the Phoenix Section of the Institute of Electrical and Electronics Engineers. It is published monthly and reaches about 4000 members. Submit articles, advertisements, and announcements to Surinder Tuli at the above email address. Deadline for announcements and 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
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Embry-Riddle, Prescott
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FERGUSL2@my.erau.edu
Advisor: John E. Post
postj@erau.edu

U – Newsbytes

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 Ph.D. in Computer Science, Software Engineering, Computer Engineering or a related field at the time of employment. Preferred areas of expertise for this position include network, cyber, or computer system security and defense, computer forensics, information security, cyber-physical and trustworthy systems, and net-centric computing, embedded systems, autonomous systems, and physical computing. 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 Post at john.post@erau.edu for further information.

IEEEmadC (Mobile Application Development Contest)

IEEEmadC (Mobile Applications Development Contest) is a new international contest organized for all IEEE student members across the globe. The main goal of the IEEEmadC is to provide additional competitive activities for students in the scope of computer science. By competing, students will focus on developing their technical, social and team skills. IEEEmadC is organized in four main stages (Education, Idea, Development and Judging stage) within six months from November 2014 until April 2015. Teams of up to three students are invited to devise and develop mobile applications that could contribute to the IEEE community or apply technology for humanity. We invite all students to participate in this contest and win attractive prizes. More info is available on our official web page: http://ieeemadc.org/ or Facebook page https://www.facebook.com/IEEEmadC.

What's IEEEmadC say you?

Hi there! IEEEmadC is a new competition tailored for IEEE students exclusively. And even more, it's worldwide! Not amazed yet? There are cash and smartphone prizes! Still nothing? How about recognition as being among the best of the top engineers in the world? Now that should reckon I hope :). So…my name is Luka and I would like to introduce you to IEEEmadC and hopefully intrigue you to be a part of it.

Mad but not crazy - hear our story!

IEEEmadC is only two years old but we are already gaining huge traction in the IEEE community. Last year, the competition was organized for Region 8 (Europe, Middle East and Africa) only. Given its success, we have decided to invite all the other regions to compete this year. First iteration of IEEEmadC featured 28 applications submitted and the winner application was developed to provide mobile access to MyIEEE portal.

What distinguishes IEEEmadC from other competition of this sort are its target audience and areas of application development.

Only IEEE student members are eligible to compete in this competition. We recognized that competitive events are not that often in IEEE so we wanted to try with our own :). Main motivation for this was seeing the traction IEEEXtreme was getting while also seeing ourselves being extremely enthusiastic about being part of it.

Since IEEEmadC is contest for IEEE students, we require students to focus on the things that IEEE stands for – Advancing Technology for Humanity. Therefore, the application focus areas are mostly technological, humanitarian or scientific. Having these focus areas yielded great results in the first iteration of the competition and we are hoping to have even better and more interesting applications developed this year :).

You can read up on details on our rules page.

The competition itself is divided into two phases. In first phase (Idea stage) we are spreading the word, educating students about mobile development and accepting ideas. This stage will end on the 1st March 2015, so make sure to submit your idea by then. You can register and submit your idea here

As we collect ideas, we are constantly approving them and making sure applicants know that their idea is in compliance with our rules. Development stage follows Idea stage and it will last till the 1st April 2015.

Is IEEEmadC for you?

Shortly put – Yes.

- *You are a student but no member of IEEE?* It takes about 15 minutes to join.
- *You are a member of IEEE but no longer a student?* Competing is not the only way to be part of this competition. You can mentor a team, organize lectures and motivate your students to compete.
- *You don't know much about mobile development?* There's a ton of materials to learn from. Investment costs are next to zero and the demand for mobile development skills continues to surge. If you are still in doubt, go check our Facebook page to see what are we doing and what can you gain from competing.

Let's wrap it up

So, you are interested in mobile technologies? You have a great idea which could be implemented as mobile application? Or maybe your local IEEE community could use a more streamlined communication option? You want to contribute to IEEE's main moto – Advancing Technology for Humanity? Last but not least, you would like to be recognized as being among the best of the best in a WORLDWIDE competition of top engineering students? If any of the former applies for you, then wait no longer and apply – registrations are still open :)!

Upcoming Conferences in Region 6

Hello IEEE Student Members!

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

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

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

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

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

2015 IEEE-HKN Student Leadership Conference (SLC)

Attend the IEEE-HKN 2015 Student Leadership conference, 20 - 22 March at the University of California, Berkeley located in Berkeley, California, USA.

Program Details

Immerse yourself and your Chapter members in the best that the *Silicon Valley* has to offer:

- Keynotes from leaders in industry and academia;
- Professional development and networking opportunities with the Bay Areas top-notch technology companies;
- Leadership training led by one of IEEE-HKNs most active Chapters;
- The opportunity to meet other IEEE-HKN members from around the world;
- Professional and leadership growth from our Computer Science, Electrical Engineering, and Entrepreneurship tracks.

Registration

Registration for this exclusive event is free for IEEE-HKN members and limited to the first 200 students.

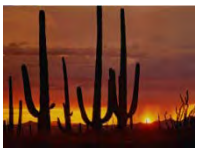
Registration is now open.

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.



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

General Chair:
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Technical Chair:
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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

International Microwave Symposium
IEEE 17 – 22 May 2015 Phoenix, AZ MTT-S

IMS

Come join us in Phoenix and enjoy the flagship Microwave Theory and Techniques Society (MTT-S) Conference

The IEEE Microwave Theory and Techniques Society's 2015 International Microwave Symposium (IMS2015) will be held **17 - 22 May 2015** at the Convention Center in Phoenix, Arizona as the centerpiece of Microwave Week 2015. IMS2015 offers technical sessions, interactive forums, plenary and panel sessions, workshops, short courses, industrial exhibits, application seminars, historical exhibits, and a wide variety of other technical and social activities including a guest program. As usual, the Microwave Week 2015 technical program also comprises the RFIC symposium (www.rfic2015.org) and the ARFTG conference (www.arftg.org). Unique to Microwave Week in 2015, a High School Science and Engineering Invitational will be held.

With over 9,000 participants and 800 industrial exhibits of state-of-the-art microwave products, Microwave Week is the world's largest gathering of Radio Frequency (RF) and microwave professionals and the most important forum for the latest research advances in the field.

Call for Papers
Authors are invited to submit technical papers describing original work on Radio-Frequency, microwave, millimeter-wave, and terahertz (THz) theory and techniques. The deadline for submission is **8 December 2014.** Please refer to the IMS2015 website (www.ims2015.org) for detailed instructions concerning paper submission. **Please don't wait** until the last day to start using the paper submission process. Those unfamiliar with the process may encounter paper formatting or clearance issues that may take time to resolve. The Symposium proceedings will be recorded on electronic media and archived in IEEE-Xplore. Authors of accepted papers should consider submitting an extended version of their symposium paper for possible publication in the *IEEE Transactions on Microwave Theory and Techniques.*

Emerging technical areas:
IMS2015 enthusiastically invites submission of papers that report state-of-the-art progress in technical areas that are outside the scope of those specifically listed in this Call for Papers, or that may be new to the symposium, but are of interest to our attendees.

Student paper and student design competitions:
Eligible students are encouraged to submit papers for the student paper competitions. In addition, eligible students or student teams are invited to consider taking part in student design competitions during the IMS2015, which are organized and sponsored by various Technical Committees (TC) of the MTT-S Technical Coordination Committee (TCC). Please visit the IMS2015 web site for full details.

MicroApps:
The Microwave Application Seminars serve as a forum for exhibitors at the IMS to present the technology behind their commercial products and their special capabilities. The presentations are open to all conference and exhibit attendees. All submissions must be made through email to microapps@ims2015.org. Please refer to the IMS2015 website for more information on submitting MicroApps technical papers.

We are looking forward to meeting you in Phoenix and sharing some of the hottest new microwave ideas under the sun!

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
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Secretary	Dr. Rao Bonda		r.bonda@ieee.org
Treasurer	Dr. Vasudeva P. Atluri	(480) 227-8411	vpatluri@ieee.org
Program Chair	Mr. David Dougherty	(480) 245-8099	david.dougherty@freescale.com
Asst. Program Chair			
Tutorial Chair	Dr. Shawn Shi	480-929-5614	Songhua.Shi.2011@ieee.org
Asst. Tutorial Chair			
Workshop Chair & Publicity	Dr. Vasudeva P. Atluri	(480) 227-8411	vpatluri@ieee.org
Website Co-Chair	Bharat Penmecha	(480) 552 2511	bharat.penmecha@ieee.org
Website Co-Chair	Huiyang Fei		Huiyang.H.Fei@ieee.org

2015 Executive Committee

Based on the responses received, we have been able to fill some of the positions on the Executive Committee. If you are IEEE & CPMT member and are willing to serve please contact any of the EC members listed above. We need volunteers to keep the Society Activities going.

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.

CPMT Society Website Development

IEEE is using Word Press to develop and support their webpages. If you are familiar with creating webpage using Word Press, and would like to volunteer your time for the helping Phoenix Chapter have its own web page tied to Phoenix Section website as well as main CPMT society website, please contact Mahesh Shah at mkshah@ieee.org

Additional Activities –Tutorial and Workshop

Phoenix section is planning to hold a **Half Day Tutorial** in 2015. In addition we are working with other Society Chapters to hold a workshop on **Emerging Device and Packaging Technology** also in 2015. Please wait for announcements in near future. If you are interested to volunteer your time to organize the tutorial, please contact Mahesh Shah at mkshah@ieee.org

IEEE Components, Packaging and Manufacturing Technology Society Phoenix Chapter

Wednesday, February 18th, 2015 at 5:30 PM

Packaging and Failure Analysis Challenges in Advanced 3D Packages

Deepak Goyal
Purushotham Kaushik Muthur Srinath

Intel Corporation
Assembly & Test Technology Development (ATTD) FA Labs
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ABSTRACT

Advanced 3D packaging is a key enabler in driving form factor reduction, performance benefits and package cost reduction especially in the fast paced mobility and ultraportable consumer electronics segments. The high level of functional integration and the complex package architecture poses a significant challenge for conventional Fault Isolation (FI) and Failure analysis (FA) methods. Innovative FI / FA tools and techniques are required to tackle the technical and throughput challenges. In this presentation, 3D packaging architectures such as, Package on Package (PoP) and Stacked die / Through Silicon Via (TSV) will be discussed along with the key FI / FA challenges. Application of FI / FA techniques such as Electro Optical Terahertz Pulsed Reflectometry (EOTPR) and 3D X-ray will be presented, along with novel physical sample preparation methods will be presented.

BIOGRAPHY

Deepak Goyal graduated from State University of New York, Stony Brook and joined Intel as Failure analysis engineer. He is currently the Manager of the Assembly & Test Technology Development Failure Analysis Labs at Intel. His group supports the materials and failure analysis of assembly technology development and development of innovative next generation analytical tools and techniques to meet the challenges of performing FI/FA on these next generation packages. He is the current chair of the PIFAC sponsored by the Sematech. He is a senior member of the IEEE.

Date: Wednesday, February 18th, 2015

Location: Group Conference Room, Freescale Semiconductor, Inc., Discovery Business Center, 2100 E. Elliot Rd. Tempe, AZ. Enter the facility through the Main (South) Lobby in building 94 and sign in with Security (*Photo ID required*) **BEFORE 6:00 PM**. You will be escorted to the meeting room. The presentation promptly starts at **6:00 PM**.

Agenda: 5:30–6:00 PM: Social/Refreshments, 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.

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

Vasu Atluri	(480) 227-8411	Rao Bonda		David Dougherty (480) 413-6923
Vivek Gupta	(480) 734-0266	Mahesh Shah	(480) 544-9438	Shawn Shi (480) 929-5614
Huiyang Fei		Bharat Penmecha	(480) 552-2511	

March Meeting – March 18, 2015 – Strain Measurements for Semiconductors by Amith Darbal

SP-COM Phoenix Chapter

Please join our Google Group!

Please join our increasingly popular Google group to get the most up-to-date information about the society's activities. We have now over 50 members who are availing of this facility. Email traffic is thin, and used only to send meeting notices. No spam !

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

In addition, we continue to post meeting notices on IEEE vtools at (https://meetings.vtools.ieee.org/main)

Upcoming Talks

Hamid Krim, IEEE Signal Processing Society Distinguished Lecturer

IEEE Fellow, Professor, North Carolina State University, on Feb 16th 2015.

Title: "Shape Analysis and Modeling in Video Applications: Activity Analysis"

February 16, 2015, 3:00 PM / Room: GWC 487 (ASU campus)

Abstract: Shape analysis is playing an increasingly important role in many applications where object classification and understanding are of interest. Solutions to many existing as well as new emerging applied problems (e.g, object recognition, biometrics etc.) crucially depend on object modeling and their parsimonious representation. Modeling an active silhouette in a video sequence provides a good solution for activity surveillance. We pose this problem as one of tracking a flow of shapes as entities on a curved space. We first propose a stochastic model for a flow on a manifold to carry out classification of different processes. We then exploit this insight to develop a tracking filter of these shapes and subsequently propose a generative model useful in a variety of applications. We subsequently propose a generative model for human activity. We provide substantiating illustrations.

Phoenix Chapter of the IEEE Computer Society

February, 2015

News

- We have decided to switch from odd-numbered months to even-numbered months for our meetings. The chapter meetings will still be held on the first Wednesday of the month at the usual time. The meetings for the remainder of 2015 will be on

    - April 1st
    - June 3rd
    - August 5th
    - October 7th
    - December 2nd

Note that the next meeting will be in April. All dates are Wednesday. Meetings will be held from 6:00 pm to 9:00 pm. We will publish the venue for each of these meetings as soon as it is known.

- We expect the April 1st meeting to be held at the ITT Tech facility at 10220 N 25th Avenue, #100, Phoenix. Note that this venue is located between Northern and Peoria on the east side of I-17 just across the freeway from MetroCentre. We are working to confirm a program for this meeting. When all the details are in place, the meeting location will be confirmed and the program details published.

- We are still working on establishing a venue location in the east valley area. More to come on that subject. We expect that at least two of the meetings this year will be in the east valley.

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 Phoenix EMC/MTT/AP Joint Chapter Meeting Announcement

New EMC Measurement Techniques for Efficient and Compliant Antenna Calibration and Test Site Validation

Complemented by Live Demonstrations

This is a free half-day workshop, but you must register IN ADVANCE no later than February 23 to assure your space.

Date: **Wednesday, February 25, 2015**

Time:

1:00 pm – 2:00 pm	**Registration, complimentary lunch**
2:00 pm – 4:30 pm	Presentations, including a break between speakers
4:30 pm – 5:30 pm	Demonstrations and facility tour

Speakers: Doug Kramer, Lab Manager - Wireless, EMC and Calibration, ETS-Lindgren
Zhong Chen, Product Manager - RF Materials, ETS-Lindgren

Location: **Compliance Testing, LLC**
1724 S. Nevada Way, Mesa, AZ 85204
Phone 480.926.1775
www.compliancetesting.com

RSVP: Contact Daryl Gerke at dgerke@emiguru.com or Glen Gassaway at glen@southwestemi.com for more information and to RSVP. SPACE IS LIMITED – RESERVE EARLY TO SAVE YOUR SPACE!!!

Demos: Real-world demonstrations of Time Domain Site VSWR measurements for test site validation will follow the presentations.

TECHNICAL PROGRAM

Presentation 1: Introduction to Antenna Calibration Methods: An overview of new antenna developments, related standards, calibration and what you need to know for efficient and compliant EMC testing

By Doug Kramer, Lab Manager – Wireless, EMC and Calibration, ETS-Lindgren

Abstract: This presentation will provide an overview on antenna calibration, what it means to calibrate an antenna and why you should care. The set of operations for an antenna calibration that establish the relationship between values of quantities indicated by a measuring instrument and a reference standard will be explained. Essential concepts will be reviewed, such as metrology, verification, validation, and accreditation. Case studies will be provided on these concepts to provide practical examples of the concepts as applicable in the real-world. Finally, traceability and measurement uncertainty will be discussed according to standards such as ANSI C63.5, SAE ERP 958, IEEE 291, and CISPR 16-1-6. The presentation will conclude with a review of new antenna developments, including tips on which antenna to use for what measurement application, trade-offs in evaluating different antennas, and the new "balance test" for biconilog antennas.

Presentation 2: CISPR sVSWR versus ANSI C63® Time Domain sVSWR: A review of current and future measurement techniques for faster and more accurate test site validation

By Zhong Chen, Product Manager, RF Materials, ETS-Lindgren

Abstract: This presentation reviews the recent advances in the theory and measurement of the time domain site VSWR (TD sVSWR) method. The test setup of the TD sVSWR method resembles those included in the CISPR sVSWR method, including the antenna height, locations, and polarizations. The TD sVSWR method obviates the need to move the antennas to six positions along a 40 cm line. Instead, it uses the time domain transformation of the frequency domain data to separate the direct antenna response from the reflections in a chamber. The sVSWR can then be calculated from that data. Recent measurements have shown that the TD sVSWR method results are closely correlated to the CISPR sVSWR method results. Background information on the development of the method will be presented, as well as actual data collected from several EMC commercial test labs showing the sVSWR using both the time domain and the CISPR methods. Extensive data analyses will be presented showing the benefits of the TD sVSWR method, including faster testing ($1/6^{th}$ of the test time), better repeatability, greater accuracy in determining defects, and lower measurement uncertainties. The TD sVSWR method is expected to be included in the latest draft version of the ANSI C63.25 standard on test site validation. Following the presentation, live demonstrations of the technique will be conducted in the semi-anechoic EMC chamber at Compliance Testing. This will provide a real-world example of the material presented and further enhance the understanding of the time domain measurement technique.

SPEAKER BIOGRAPHIES

Doug Kramer is the Manager of the Calibration/EMC/Wireless Labs for ETS-Lindgren in Cedar Park, Texas. He has over 12 years of experience in managing a commercial test laboratory and providing test solutions to a variety of customers. He holds BSEE and MSEE degrees in Electrical Engineering from the University of Nebraska-Lincoln and is the outgoing Chair of TC1 of the IEEE EMC Society. Doug supports the technical staff at ETS-Lindgren, many of whom are active contributors to the leading wireless industry organizations, including the WiMAX Forum®, CTIA – The Wireless Association®, 3GPP, and the Wi-Fi Alliance®. Prior to joining ETS-Lindgren, Doug was the General Manager for the Nebraska Center for Excellence in Electronics (NCEE), the only full service EMC, environmental and safety product testing facility in Nebraska. He is a contract Senior Assessor to ISO/IEC 17025 and is an iNARTE certified EMC Engineer, a member of the CISPR B working group and Vice Chair of the ANSI C63.5 working group. He can be reached at douglas.kramer@ets-lindgren.com.

Zhong Chen is the Product Manager, RF Materials at ETS-Lindgren, located in Cedar Park, Texas. He has more than 19 years of experience in RF testing as well as EMC antenna and field probe design and measurements. He is an active member of the ANSI ASC C63® parent committee and chairman of its Subcommittee 1 which is responsible for the antenna calibration and test site validation standards, including ANSI C63.4, C63.5 and the new C63.25. He is chairman of the IEEE 1309 committee for developing calibration standards for field probes. Zhong Chen received his M.S.E.E. degree in electromagnetics from the Ohio State University at Columbus. He may be reached at zhong.chen@ets-lindgren.com.

2015 IEEE Phoenix Waves and Devices Chapter Officers

Position	2015
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WAD Website: http://ewh.ieee.org/r6/phoenix/wad/

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

WAVES AND DEVICES - Phoenix Chapter

Meeting Free & Open to Non-IEEE Members

6:30 to 8:00PM, Wednesday, Feb 25, 2015

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

Thermal Challenges in Mobile Devices and Potential Solutions

Mulugete Berhe, Ph.D.
Henkel Corporation

Abstract

Mobile devices have now become part of our daily lives. Internet of things is upon us. Devices are getting smaller and thinner but handling more and more computing tasks. Whereas the processing power generally exists to handle the computing needs of the day, thermal issues pose significant challenges due to junction temperature and/or skin (enclosure) temperature limitations.

Mobile devices such as smartphones are generally small. Depending on the external surface area, the extent of power they can dissipate passively is limited. For example, the maximum power the average smartphone can dissipate at 25°C ambient temperature is 3W. Exceeding this limit on a sustained basis can trigger throttling (voltage/frequency scaling) or even total shutdown. This normally happens when the skin temperature limit is violated or when the junction temperature limit is exceeded for key components, such as the processor. While the skin temperature limit is normally exceeded after sustained usage, lasting several minutes, the junction temperature limit can be violated in a matter of seconds, during periods of large power surges.

To overcome these limitations, thermal engineers have been looking for solutions beyond traditional cooling methods that include heat spreaders, heat pipes, active cooling devices, thermal interface materials, etc. Heat spreaders of various types have been used extensively for some time. However, their use is limited in that they do not store or expel large quantity of heat. Active cooling, using air movers, can remove larger amounts of heat, but is not suitable in many applications for a number of reasons, including venting requirements and space limitations. Energy conversion schemes of various types have been (and continue to be) investigated, but no viable solution has yet emerged.

One of the latest thermal solutions to hit the market is phase-change materials, also known as PCM. PCM solutions are used as temporary energy storage vehicles. The PCM melts when the power dissipation (and hence the temperature) is high and freeze when the power is low. By doing so, the PCM moderates the temperature swings of key components, such as the processor, and help minimize the need for throttling. Combined with robust heat spreaders, such solutions can be used effectively in mobile devices where space, venting, and other limitations exist.

In this presentation we will discuss, in some depth, the main thermal issues prevailing in modern mobile devices and potential solutions that can be used to address these issues.

Biography

Dr. Mulugeta Berhe is Director of Thermal Engineering at Henkel Corporation. He manages a team of thermal engineers and is responsible for the development of innovative thermal solutions for mobile devices, including Thermal Absorber Films (TAF), Advanced Heat Spreaders, and Thermal Interface Materials (TIM). Duties of his team include guiding product development from concept to production, and conducting thermal analysis, testing, customer support, sampling and consulting for various products.

Dr. Mulugeta Berhe joined Henkel Corporation in November 2013. He came to Henkel with over 20 years of experience in thermal management of electronics. Before joining Henkel, he worked at Qualcomm as Advanced Thermal Specialist for mobile devices. Prior to that, he worked at both Microsoft and Intel Corporation as a thermal specialist in charge of thermal design and management for various electronic systems. This included mobile devices such as smartphones, tablets and wearable devices. He also worked at Fluent/Ansys Inc as lead thermal engineer during the development of Icepak, a popular thermal modeling software, which is currently being used in much of the electronics industry. He started his career in Canada at the Atomic Energy of Canada and later at Ontario Hydro in Toronto as thermal specialist for nuclear and fossil power plant systems.

Dr. Mulugeta Berhe obtained Ph.D. in Mechanical Engineering from the University of Minnesota, M.A.Sc. degree from the University of Toronto, Canada, in Mechanical Engineering, and B.Tech from Calicut University in Kerala, India.

For more information, contact:

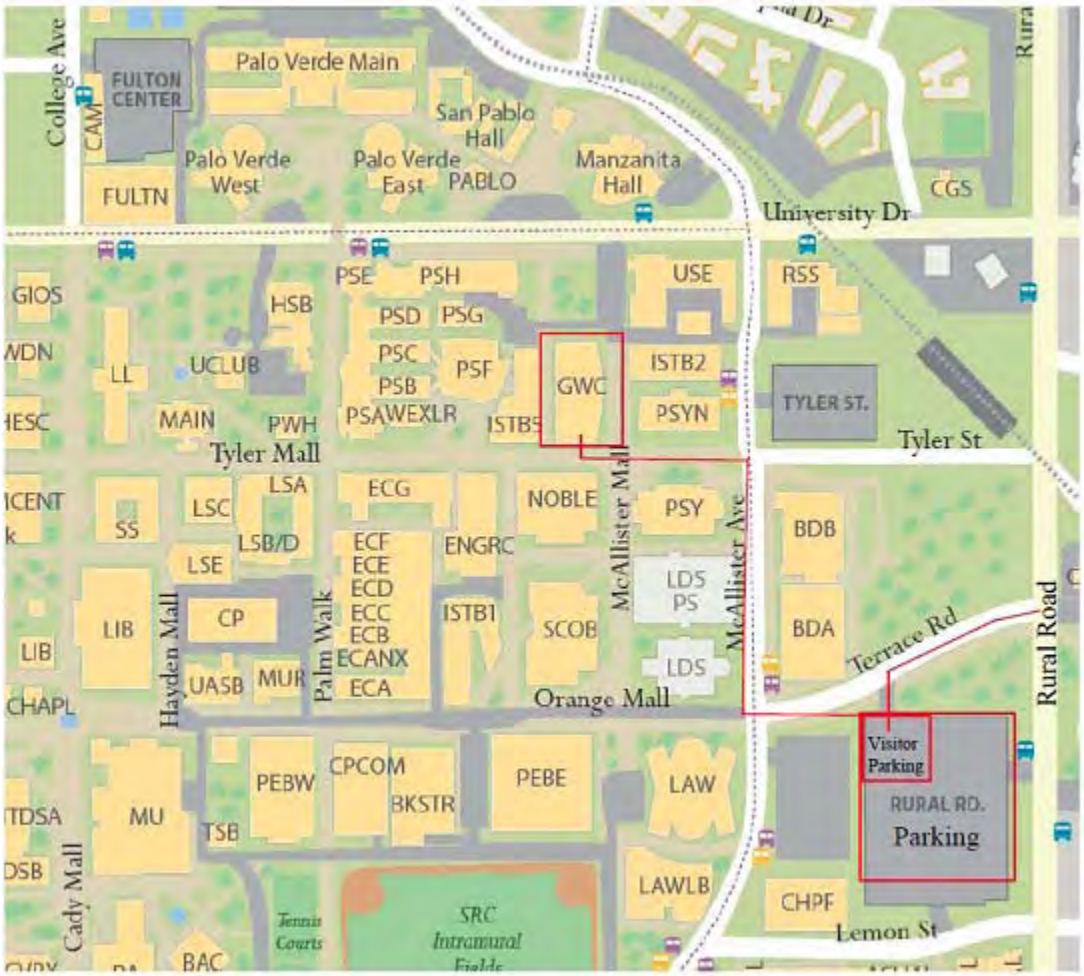
Steve Rockwell (WAD Chapter Chair)	(480) 241-9891	steve.rockwell@ieee.org
Curtis Scott (WAD Chapter Publicity)	(623) 703-9177	curtiscott@gmail.com

Date: **Wednesday, Feb 25, 2015**

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

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



Phoenix Section Life Member Affinity Group

Technical & Administrative

Meeting February 17, 2015

Program Presentation: Quantum Energy and Sustainable Solar Technology Engineering Research Center (QESST)

QESST is an Engineering Research Center (ERC) sponsored by the National Science Foundation (NSF) and the U.S. Department of Energy (DOE) that focuses on advancing photovoltaic science, technology and education in order to address one of society's greatest challenges: sustainably transforming electricity generation to meet the growing demand for energy.

Presenter: John Mitchell

John is the Director of Corporate Engagement for the Global Outreach and Extended Education Group and the Industrial Liaison Officer for the QESST at Arizona State University. During his tenure at Motorola, John helped build and manage Motorola's international wireless joint ventures in Brazil, Chile, Egypt, and Mexico. At KPMG Consulting (now Bearing Point), John managed the Cisco / KPMG Sales Channel. At Openwave Systems, John helped Openwave build a worldwide sales and channels organization from the ground up. More recently, John founded, grew and sold South Mountain Inc. a Recruiting Software (Applicant Tracking Systems) company based in Phoenix. John has a B.S. in Computer Science, a MBA from Kellogg and holds two software patents.

NOTE MEETING STARTS AT 11 AM

Meeting Agenda:

11AM: Attendee introductions
11:15 AM: Program Presentation
New officer's responsibility & introductions.
Program chairs will review the results of survey taken to determine LM interests for technical presentations.
Continued discussion of LMAG program for student assistance and possible scholarship program for HS students.
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, **February 17, 2015 - 11:00am – 1:00pm**, Registration fee is $15. This fee will include lunch provided by the PERA Club.

Lunch: Chicken Caesar Pasta Casserole, with Garlic Toast, Ratatouille, Mixed Greens salad with assorted dressings, and Carrot Cake for the desert.

RSVP: Please advise Ronald Sprague r.sprague@ieee.org if you plan to attend so accounting for lunch is possible.

Technical Presentations: The Program Chairs are seeking suggestion from members for future presentations. Any ideas of interest to LM are open for consideration. Please contact Ronald Sprague or Barry Perlman Program Chairs at r.sprague@ieee.org and/or barry.perlman@gmail.com.

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 the 3rd Tuesday of 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 the meetings.

- Tuesday, February 17, 2015
- Tuesday May 19, 2015
- Tuesday October 20, 2015
- Tuesday December 15, 2015

Officers:

Chair	**Leslie Daviet II**	**lesdavietii@cs.com**
Vice Chair	**Jim Tang**	**JFTANG@cox.net**
Secretary	**Tom Lundquist**	**tom.lundquist@ieee.org**
Treasurer	**Leslie Daviet II**	**lesdavietii@cs.com**
Membership	**Rao Thallam**	**Rao.Thallam@gmail.com**
Program	**Ron Spraque**	**r.sprague@ieee.org**
	Barry Perlman	**barry.perlman@gmail.com**
Volunteer	**Gary Frere**	**gary.frere@gmail.com**
Past Chair	**Barry Cummings**	**abarrycummings@gmail.com**

IEEE youngprofessionals

IEEE Young Professionals Phoenix Section Executive Board 2015

Chair: Jennifer Taggart (jennifer.taggart@asu.edu)

Vice Chair: Nick Spirakus (nmspirak@asu.edu)

Secretary/Webmaster: Harshad Surdi

Treasurer: George Chen (gchen32@asu.edu)

Past Chair: Shafiul "Jacky" Islam (shafiul.islam@intel.com)

Member: Joseph Caglio (joseph.m.caglio@intel.com)

January 2-4, 2015, IEEE Rising Stars Conference

Members and officers from IEEE Phoenix Young Professionals and IEEE / IEEE-HKN ASU groups attended the 2015 IEEE Rising Stars Conference in Las Vegas. We learned from the speakers on various topics, we had networking opportunities, and we also had some social activities. Some of us also attended Storage Visions conference and the CES.

January 29, 2015, IEEE Phoenix Young Professionals Board Meeting with IEEE / IEEE-HKN ASU

Shafiul "Jacky" Islam (meeting chair), Jennifer Taggart (meeting organizer), Nick Spirakus, George Chen, Harshad Surdi, and Phoebe Henson attended the meeting from 8:00pm to 9:30pm over Google Hangouts. We elected YP executive board officers and appointed board member. We also had high level discussions about 2015 financial plans, event plans, and board member shared responsibilities.

Notes / additional information: Ashley Meredith is unable to volunteer for YP this year. Shafiul "Jacky" Islam accepted IEEE R6 Southwest Area Awards Chair position.

Upcoming Events

February 2015, 2nd Career Mixer with IEEE Phoenix Young Professionals with IEEE / IEEE-HKN ASU

We are planning our second Career Mixer in February. We will announce additional information about the event as we make more progress and as our plans stabilize.

Event Co-Chairs: Jennifer Taggart (jennifer.taggart@asu.edu), George Chen (gchen32@asu.edu), and Phoebe Henson (pghenson@asu.edu)

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.

2015 Executive Committee

Chair:	Bruce Ladewig
Vice Chair:	Surinder Tuli
Secretary:	Vivek Gupta
Treasurer:	Mahesh Shah
Past Chair:	Barbara McMinn

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-Phoenix Section Annual Banquet 2015 Photos will be Posted soon.

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.

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

eBook Classics for IEEE Members

Twenty-three new titles were added for the 2015 membership year. IEEE members now have access to 299 eBooks from the IEEE Press collection through IEEE *Xplore*, at no additional cost.

The eBook collection spans a number of today's technologies across 15 different content areas, and includes:

- Practical handbooks;
- Introductory and advanced texts;
- Reference works; and
- Professional books.

New eBooks will be added every year.

Finding IEEE eBook Classics

1. Sign in to IEEE *Xplore* using your IEEE Account.
2. Under the "Browse" heading in the left-hand navigation, click on "Books."
3. Select the "Classics" tab from the top of the page. Under this tab you will find a listing of all the free titles.

-- or --

1. Sign in to IEEE *Xplore* using your IEEE Account.
2. Under the "Browse" heading in the left-hand navigation, click on "Books."
3. On this page, you can browse alphabetically by book title, or if you prefer, browse by keyword, such as "software."
4. If the title is included in the IEEE eBook Classics, you will see an orange "FREE" icon to the right of the books title, and individual chapters will have live links.

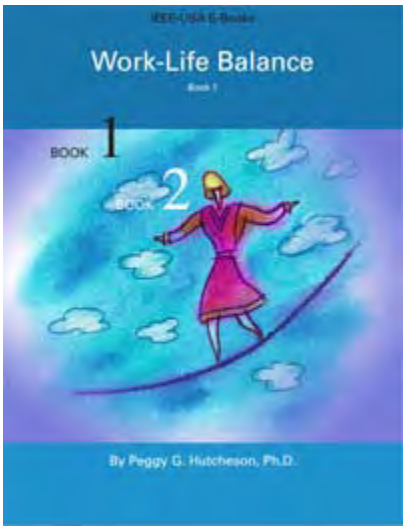
IEEE-USA Webinar: Resume Development

On 11 February 2015, IEEE-USA will provide training to help you prepare your resume. The webinar *Resume Development* will present efficient techniques in developing resumes in order to better present your skills and talents. Dr. Tarek Lahdhiri will be the presenter at this webinar. Dr. Lahdhiri is a licensed Professional Engineer (PE) in the State of Michigan, USA, licensed Project Management Professional (PMP) by the Project Management Institute (PMI), and a member of the IEEE-USA Employment & Career Service (ECS) Committee.

Join us on 11 February.

Free IEEE-USA eBook Offered as Special Benefit to IEEE Members

As a special benefit of IEEE Membership for the month of February, IEEE-USA is offering a free eBook, ***Work-Life Balance: Book 1***, by Peggy G. Hutcheson.



Hutcheson writes that Work-life balance is a state of control, achievement and satisfaction in your life. It means that you have a sense of being able to make choices that fit for you, given your current situation and your goals. It also means that you align your choices with those things that are important to you in life, so that you are able to enjoy a sense of satisfaction from the choices you have made. Work-life balance includes more than time. It includes feeling good about your level of involvement - in both your work and non-work roles.

In Work Life Balance Book 1, Hutcheson gives a few examples of what it means to struggle with balancing those things we are committed to doing, the things we are obligated to do, and those things we really want to do - and she asks the reader, How

Balanced are You? This section of the eBook offers readers a Work-Life Balance Check-Up Chart. Once completed, the reader will have a better understanding of their work-life balance issues. Hutcheson shares that even if you are generally well-balanced in your life, it is up to you to decide just which of the choices you are making are contributing to the goal of having a sense of control, achievement, or satisfaction in life.

In the final chapter, Hutcheson gives helpful suggestions on how to Increase Work-life Balance, along with a reminder that work-life balance will not happen in a single day, and that readers should be realistic about goals, focusing on what is most important along the way.

Members can download *Work-Life Balance: Book 1* for free through 28 February 2015. Non-member price is US$5.99.

In March, the IEEE-USA free eBook will be *Technical Presentations Book 4: Effective Visual Aids*, written by Nita Patel. Given that individuals gather, learn and retain information differently, presenters need to incorporate multiple methods of communicating information during a presentation. Patel gives guidance on how to supplement your presentation with effective PowerPoint slides, or other visual aids.

Member Discounts

IEEE members can access more savings in more places for home and officeincluding group discounts on insurance, travel, home/office and technology needs. While you focus on your career, well take care of saving you money. Watch for new deals and more locations in 2015. See vendor details for terms, conditions and availability.

Find out more!

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IEEE MentorCentre is the online mentoring platform for IEEE. This is a valuable resource for IEEE members seeking a professional mentoring partnership. That means all the best practices you have come to expect from an IEEE mentoring program are in place, with ample opportunity to enter a unique mentoring partnership not found anywhere else.

What you will find with IEEE MentorCentre:

- The ability to connect with mentors based on specialized areas of practice, experience, IEEE Societal affiliation and more;

- Opportunities to give back to the profession by registering as a mentor;
- Additional fields to narrow down the preferred profile of the mentor, and;
- Improved mentor controls allowing them to control how they are viewed in the system.

Participation in the program is voluntary and open to all IEEE members above the grade of Student member.

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IEEE ResumeLab

IEEE members have a powerful tool to help gain a competitive edge in the employment process. IEEE ResumeLab is an online service that allows IEEE members to develop a resume or curriculum vitae using specialized tools tailored for each step of the job seeking process. This product is added to the list of offerings that assist members as they find jobs and develop their careers.

IEEE ResumeLab is designed with a series of modules that assist the member through the employment process. Key modules and features include:

- Resumes - Select from a wide array of templates geared toward specific industries, sectors and work experience stages.
- Letters - From cover letter to post-interview thank you letter, ensure optimal communication throughout the hiring process.
- Skills Assessment - Highlight the skills you possess, your competency in those skills, and what makes your experience with these skills unique.
- Mock Interviews - Prepare for the real thing by selecting an interviewer and the type of questions theyll ask. Choose to record your interview for evaluation and feedback.
- Video Resumes - Record custom video messages for potential employers.
- Portfolios - Upload and organize your past work to present to potential employers.
- Share Online Publish and share everything you create on a publicly viewable Web site.

Access IEEE ResumeLab

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Decisions: An Engineering and Management Perspective
Gerard H. Gaynor
ISBN: 978-0-470-16759-5, February 2015, Wiley-IEEE Press
List Price: ~~US$49.95,~~ **Member Price: US$32.47**

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In conjunction with IEEE-USA, IEEE is excited to continue this special offer for U.S. members. Refer a colleague to IEEE. If they join before the end of the membership year, they'll get a 50% discount off their first year membership, and you'll get a gift. IEEE-USA gift items you can choose from include:

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Portable speaker	Parker pen and mechanical pencil set
Parker ballpoint pen	Travel coffee mug and tumbler set
Golf balls	Baseball hat
Golf umbrella	Travel umbrella

Members remain eligible to receive incentives through the existing IEEE Member-Get-a-Member (MGM) program. How it works:

- Refer your colleague via the online form.
- Your referral will receive an e-mail inviting them to join at a 50% discount off their first-year membership dues, and will receive benefits through 31 December.
- Your referral will provide your IEEE member number as they join.
- Within 1-2 weeks after your referral joins, you will receive an e-mail confirming your recruiting success, including a link which allows you to select your IEEE-USA merchandise item.
- You will receive a separate e-mail for each new member you recruit.

Please help spread the word and share your IEEE experience - no one knows how beneficial IEEE Membership is to technical and career development better than you, the member. Refer your friends and colleagues today!

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