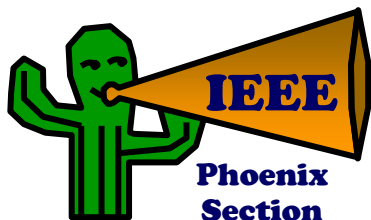


The Valley Megaphone

Newsletter of the
**Institute of Electrical and
Electronics Engineers, Inc.,
Phoenix Section**
March, 2015
Volume XXIX, Number 3



Executive Committee 2015

Chair

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

Vice Chair

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

Secretary

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

Treasurer

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

Past Chair

Barbara McMinn 602-371-6383
barbara.mcminn@aps.com

Publicity

Wei Xu, 480-296-1116
Wei.Dr.Xu@ieee.org

PACE

John Parsey, Jr.

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

Gopi Krishna 480-552-8913
gkrishnan@gmail.com

In this Issue of the Valley Megaphone: Table of Contents

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

U – News	2
Student Branches	2
IEEEmadC Contest.....	3
Upcoming Conferences.....	5
MTS Call for Papers.....	7
IMS-2015.....	8
CPMT Phoenix Chapter.....	9
Communication Society.....	11
Computer Society.....	12
Power & Energy Society.....	14
Waves & Devices	15
Life Member Affinity Group.....	19
IEEE Phoenix Section News	21
Phoenix Section Executive Committee Meeting.....	21
Phoenix Section LinkdIn Group.....	22
Phoenix Section on Social Media.....	22
IEEE Membership Grade Advancement	23
IEEE Member's Benefit.....	23

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

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

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: Phoebe Henson
480-888-6396,
pghenson@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: : Dr. John M. Parsey, Jr.,
John.Parsey@asu.edu

DeVry, Phoenix

Chair: Zak Burgess
burgess.zak@gmail.com
Advisor: TBD

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

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://ieemadc.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 [IEEE Xtreme](#) 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 IEEEemadC 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

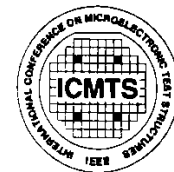
We are also planning on having exhibits for the attendees to learn about new companies, products, and to meet other people. The booths will be reasonably priced, and if anyone is interested, please contact me at the email listed in the lines above.



Call for Papers

28th International Conference on Microelectronic Test Structures

March 23-26, 2015, Phoenix, Arizona USA



General Chair:

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



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



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!



THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

IEEE COMPONENTS, PACKAGING AND
MANUFACTURING TECHNOLOGY SOCIETY

IEEE Components, Packaging and Manufacturing Technology Society Phoenix Chapter

2015 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. Rao Bonda	(480) 786-7749	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

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



THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.



IEEE COMPONENTS, PACKAGING AND
MANUFACTURING TECHNOLOGY SOCIETY

IEEE Components, Packaging and Manufacturing Technology Society Phoenix Chapter

High Spatial Resolution Strain Mapping in Transmission Electron Microscope Using Precession Electron Diffraction

Amith Darbal

Application Scientist

AppFive LLC

Tempe, AZ 85281 USA

amith@appfive.com

ABSTRACT

Strain silicon technology is ubiquitous in modern transistors as it is a cost effective and efficient way to improve device performance. Accurate strain mapping of devices that employ strain Si technology is critical for process optimization. Recently, a new method of strain measurement using precession electron diffraction in the transmission electron microscope has been developed which can provide accurate strain maps with nanometer spatial resolution. Using this technique several examples of strain mapping in devices will be shown.

BIOGRAPHY

Dr. Amith Darbal received his M.S. and Ph.D. in Materials Science from Carnegie Mellon University. Dr. Darbal's area of research is focused on electron diffraction, instrument automation and image processing for electron microscopy. He co-developed a method to measure strain using precession electron diffraction in the Transmission Electron Microscope (TEM). This automated technique is called *Topspin Strain Mapping* for which Dr. Darbal received the prestigious 2014 Microscopy Today Innovation award. He has also received the Distinguished Scholar Award from the Microbeam Analysis Society for his work on orientation mapping in TEM during his graduate studies. Dr. Darbal is now with AppFive as an Application Scientist in developing next generation microscopy.

Date: Wednesday, March 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**.

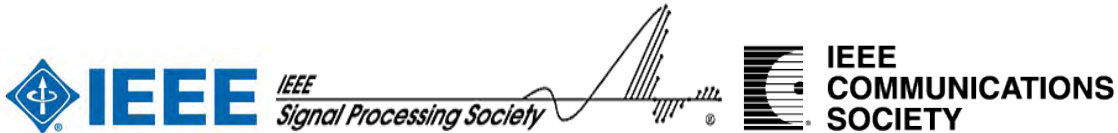
Agenda: 5:30–6:00 PM: Social/Refreshments, 6:00–7:00 PM: Presentation, 7:00 PM: Dinner
(Pizza and Soda will be provided by the IEEE Phoenix Section CPMT Society Chapter)

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



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>)**



Phoenix Chapter of the IEEE Computer Society March, 2015

News

- The chapter 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.

- The April chapter meeting will be held on Wednesday, April 1st, at the Phoenix Central campus of the ITT Technical Institute. The address of the venue is 10220 N. 25th Ave., #100, Phoenix. The campus is located between Dunlap & Peoria, just east of the I-17. Note that this is different ITT Tech campus than the one we have used in the past. The presenter at this meeting will be Mark Goldstein, a versatile presenter who has spoken to our chapter in the past. Details of his presentation are provided below. The simplest access to the ITT Tech Phoenix facility is to exit I-17 at Peoria, go east and turn right on 25th Ave at the top of the hill. The venue is on the west side of 25th Ave.

Title: Today's Gadgets & Emerging Technology Innovations

Mark Goldstein will showcase the latest and greatest new tech gadgets for business effectiveness, personal productivity, improving quality of living, and just plain fun. He'll share a forward-looking view of emerging technology innovations and analysis of what they portend for information technology professionals, evolving market opportunities, and society at large from the present on into our future. Contemporary science fiction and that of the past often influences and anticipates the technological advances we see today and what we hope and fear for tomorrow. Come share a rollicking ride through the technology roller coaster of our times.

Speaker: Mark Goldstein, President, International Research Center

Mark Goldstein is President of International Research Center (<http://www.researchedge.com/>) providing consulting, custom research, and strategic support for business, legal and public policy clients across a variety of disciplines and arenas since 1992. IRC concentrates on clients' needs in the complex worlds of telecommunications, information technology, eCommerce, eContent, eLearning, the Internet, biotechnology and other domains by harnessing global information resources for informed decision making.

Mark is a technophile and technology visionary, activist, advisor, and entrepreneur with extensive experience and connections throughout numerous technology sectors. He is involved with a number of policy, economic development, professional and trade groups, and a frequent speaker and trainer. Mark

previously worked for 18 years in electronic and computer engineering including 12 years managing engineering teams and projects for Medtronic, a Fortune 500 biomedical device manufacturer. He worked in the mid-seventies for MicroAge in R&D at the beginning of the personal computer revolution.

- The program for the June 3rd meeting has been confirmed. Details of that program will be published as the date approaches.

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	Dr. Brad Morantz	bradscientist@ieee.org
Secretary	Audrey Skidmore	askidmore@computer.org
Treasurer	Diane Smith	sdianesmith@computer.org
Webmaster	Audrey Skidmore	askidmore@computer.org



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



March 2015 Luncheon Meeting

Date: Thursday, March 19, 2015

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

Speakers: Gregory Wojak, LPL Financial

Topic: Navigating the current financial market

Cost: \$8.00 (No cost if you are a college student)

Reservations: Contact Monica at (602) 470-0400 or submit your name [here](#).

Reservations deadline is NOON on Monday, March 16, 2015.

If you have already registered for this luncheon but need to cancel, click [here](#).

Abstract:

The market is at an all-time high, but there is continued investor unrest. It is a critical time for investors to understand the economy and the market, how we reached this point in the market, and the options investors have going forward. Greg will share techniques used to make informed investment decisions, and discuss ideas on how to navigate the current market.

Biography:

Gregory Wojak has an M.S. in Engineering from NC State University, as well as holding Series 7 and Series 66 financial licenses. Greg has been an independent Financial Advisor with LPL Financial since 2008, with an additional 8 years of prior financial advising experience.



WAVES AND DEVICES

PHOENIX CHAPTER

<http://ewh.ieee.org/r6/phoenix/wad/>
2015 Event Calendar



Chapter Chair: Steve Rockwell steve.rockwell@ieee.org
 Chapter Vice-Chair: Trevor Thornton t.thornton@asu.edu

<u>Date</u>	<u>Location</u>	<u>Topic / Title</u>	<u>Speaker</u>	<u>Affiliation</u>	<u>IEEE Society</u>
25-Feb	ASU	Thermal Challenges in Mobile Devices and Potential Solutions	Mulugeta Berhe	Henkel	Electron Devices
26-Feb	ASU	Impact of Be-doping on the material properties of InAs/InAsSb type-II superlattices for infrared detection	Elizabeth Steenberger	Wright-Patterson Air Force Base	Photonics
27-Mar	ASU	Advanced Antenna Systems for Satellite Communication Payloads	Sudhakar Rao	Northrop Grumman	Antennas
TBD	Freescale	Power Amplifier Techniques	Joe Staudinger	Freescale	Microwaves
20-Apr	TBD	SAW Filters	Richard Gruenwald	Vectron	Ultrasonics
22-May	TBD	Microwave and Millimeter Wave Power Amplifiers	Jim Komiak	BAE	Microwaves
Aug					
Sept					
Oct		Modern Methods for Microwave Filter Synthesis	Richard Cameron	MTT Dist. Lecturer	Microwaves

For more information, contact:

Steve Rockwell (WAD Chapter Chair) (480) 241-9891
 Curtis Scott (WAD Chapter Publicity) (623) 703-9177

steve.rockwell@ieee.org
curtiscott@gmail.com

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
WAVES AND DEVICES - Phoenix Chapter



Meeting Free & Open to Non-IEEE Members

6:30 to 8:00PM, Friday, March 27, 2015

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



Antenna Systems for 21st Century Satellite Communication Payloads

Sudhakar Rao, Ph.D.
Technical Fellow, Grumman

Abstract

21st century has so far seen several new satellite services such as local-channel broadcast for direct broadcast satellite service (DBS), high capacity K/Ka-band personal communication satellite (PCS) service, hosted payloads, mobile satellite services using very large deployable reflectors, high power hybrid satellites etc. All these satellite services are driven by the operators need to reduce the cost of satellite and pack more capability into the satellite. Antenna sub-system design, mechanical packaging on the spacecraft, and RF performance become very critical for these satellites. This talk will cover recent developments in the areas of antenna systems for FSS, BSS, PCS, & MSS satellite communications. System requirements that drive the antenna designs will be presented initially with brief introduction to satellite communications. Typical block-diagrams of the satellite payload including antenna and repeater will be presented.

Advanced antenna system designs for contoured beams, multiple beams, and reconfigurable beams will be presented. Contoured beam antennas using dual-gridded reflectors, shaped single reflectors, and shaped Gregorian reflectors will be discussed. The figure of merit of these antennas using gain-area-product (GAP) will be addressed. Multiple beam antenna (MBA) concepts and their advantages compared to conventional contoured beams will be introduced. Various designs of the MBA for DBS, PCS, and MSS services will be discussed along with practical examples. Recent advances in feed technology and reflector technology will be addressed and few examples. Advances in multi-band antennas covering multiple bands will be presented. Reconfigurable antennas, phased array systems, and lens antennas will be discussed. Topics such as antenna designs for high capacity satellites, large deployable mesh reflector designs, low PIM designs, and power handling issues will be included. Introduction to remote sensing antennas with examples will be included in the talk. Advanced high power test methods for the satellite payloads will be addressed. Brief introductions to TT&C antennas, passive inter modulation products (PIM) and multipaction for satellite payloads will be given. Antenna test ranges and software tools required for test and design of 21st century satellite antennas will be presented. Future trends in the satellite antennas will be discussed. At the end of this talk, engineers and researchers will be exposed to typical requirements, designs, hardware, software, and test methods for various satellite antennas.

Biography

Sudhakar K. Rao received B.Tech degree in electronics & communications from Regional Engineering College, Warangal in 1974, M.Tech in Radar Systems Engineering from Indian Institute of Technology, Kharagpur in 1976, and Ph. D in Electrical Engineering from Indian Institute of Technology, Madras in 1980. During the period 1976-1977 he worked as a Technical officer at Electronics Corporation of India Limited, Hyderabad on large reflector antennas for LOS and TRPO microwave links, and during the period 1980-1981 he worked in the

Electronics and Radar Development Establishment, Bangalore as a Senior Scientist and developed phased array antennas for airborne applications. He worked as a post-doctoral fellow at University of Trondheim, Norway during 1981-1982 and then as a research associate at University of Manitoba during 1982-1983. During 1983-1996, he worked at Spar Aerospace Limited (now MDA), Montreal, Canada, as Staff Scientist and developed advanced antennas for several satellite communications. From 1996-2003 he worked as Chief Scientist/Technical Fellow at Hughes/Boeing Satellite Systems and developed multiple beam antennas and reconfigurable beam payloads for commercial and military applications. During the period 2003-2010, he worked as a Corporate Senior Fellow at Lockheed Martin Space Systems and developed antenna payloads for fixed satellite, broadcast satellite, and personal communication satellite services. He invented novel high power TVAC test methods for satellite payloads using “pick-up horn absorber loads” that have about 8 times cost and schedule savings which has become a standard method at Lockheed Martin and used successfully on last 10 satellite payloads. He is currently a Technical Fellow at Northrop Grumman Aerospace Systems, Redondo Beach, CA working on advanced antenna systems for space and aircraft applications.

Dr. Rao developed antenna payloads for more than 65 satellites including first mobile satellite M-Sat and pioneered development of first Direct Broadcast Satellite with local channels (DirecTV-4S). His work on development of radiation templates for complex radiation patterns of satellite antennas for interference analysis was adopted and recommended by the International Telecommunication Union (ITU)/CCIR in 1992 as the world-wide standard for satellite manufacturers and operators. He authored over 165 technical papers and has 41 U.S patents. He authored and co-edited three text book volumes on “Handbook of Reflector Antennas and Feed Systems” that are published in June 2013 by the Artech House.

Dr. Rao became an IEEE Fellow in 2006 and a Fellow of IETE in 2009. He received several awards and recognitions that include 2002 Boeing’s Special Invention Award for series of patents on satellite antenna payloads, 2003 Boeings’ technical achievement award, Lockheed Martin’s Inventor of Technology award in 2005 & 2007, IEEE Benjamin Franklin Key Award in 2006, Delaware Valley Engineer of the Year in 2008, and Asian American Engineer of the year award in 2008. He received IEEE Judith Resnik Technical Field Award in 2009 for pioneering work in aerospace engineering. Dr. Rao is appointed as the Distinguished Lecturer by the IEEE APS for a three year period (2014-2016). He is the Chair for the IEEE APS “Industry Initiatives Committee” with 12 international members, Associate Editor for the IEEE Antennas & Propagation Magazine’s “Antenna Applications Corner”, Special Session Organizer/Chair for the last six IEEE APS/URSI Symposia, Technical Program Committee member for IEEE APS/URSI Symposia from last 10 years, and reviewer for the IEEE AP Transactions, WPL, IEE etc. Dr. Rao mentored more than 50 engineers in his career who are now in key technical and management positions throughout the aerospace industry.

For more information, contact:

Steve Rockwell (WAD Chapter Chair) (480) 241-9891
Curtis Scott (WAD Chapter Publicity) (623) 703-9177

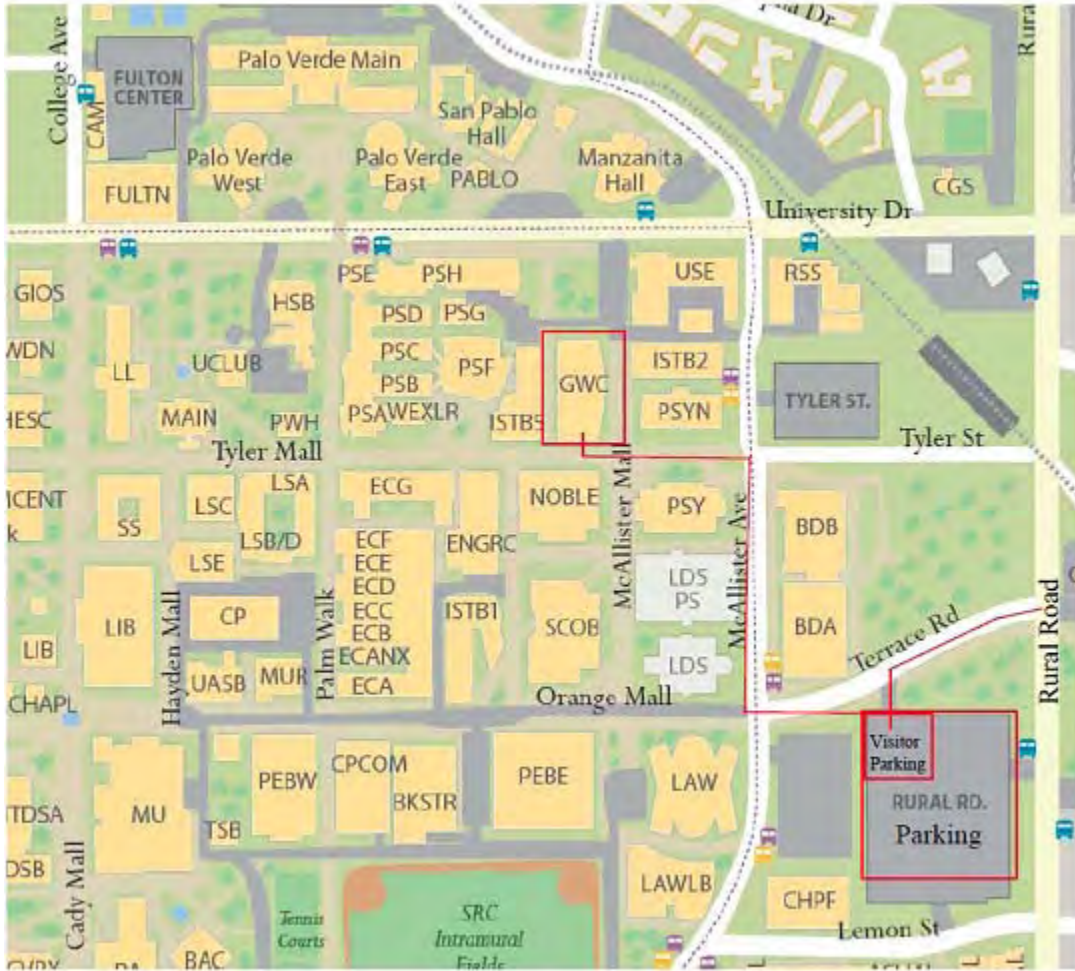
steve.rockwell@ieee.org
curtiscott@gmail.com

Date: Friday, March 27, 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 May 19, 2015

Program Presentation: DIGITAL ARRAY RADAR (DAR)

Digital phased arrays, where signals are digitized at each element, have become increasingly ubiquitous in recent years because of the raw flexibility and multi-functionality they stand to offer. At the same time, any new phased array system must contend with increasing demands on system-level performance, spectrum utilization, and, most significantly, cost. This presentation will highlight the work done over the last decade during and following the development of the Army Digital Array Radar (DAR) Demonstrator at Purdue University to help pave the way towards a low-cost digital phased array solution. The overall system concept, arrayed aspects of low-cost transceivers, and integration of high-power GaN devices within an antenna panel will all be discussed, along with more recent work in making use of the DAR to address the antenna, system, and calibration-related challenges associated with the use of these low-cost arrays in the important emerging application area of Multifunction Phased Array Radar (MPAR). Finally, the talk will summarize current efforts at the University of Oklahoma's Advanced Radar Research Center to take the DAR concept to the next level using recent advances in low-cost transceiver technologies and the onward march of Moore's Law.

Presenter: Dr. Caleb Fulton

Dr. Fulton received the B.S. and Ph.D. degrees in electrical and computer engineering from Purdue University, West Lafayette, IN, USA, in 2006 and 2011, respectively. He and is now an Assistant Professor in Electrical and Computer Engineering at the Advanced Radar Research Center, University of Oklahoma, Norman, OK, USA. His work focuses on antenna design, digital phased array calibration and compensation for transceiver errors, calibration for high-quality polarimetric radar measurements, panel-level integration of direct-conversion transceivers and high-power GaN devices, and advanced digital beamforming design considerations. Dr. Fulton is a member of the IEEE Antennas and Propagation and Microwave Theory and Techniques Societies. He was the recipient of the Purdue University Eaton Alumni Award for Design Excellence in 2009 for his work on the Army Digital Array Radar (DAR) Project, as well as the Meritorious Paper Award for a summary of these efforts at the 2010 Government Microcircuit Applications and Critical Technologies Conference. He is currently working on a number of digital phased array research projects.

NOTE MEETING STARTS AT 11 AM

Meeting Agenda:

11AM: Attendee introductions

11:15 AM: Program Presentation

New officer's report.

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, **May 19, 2015 - 11:00am – 1:00pm**, Registration fee is \$15. This fee will include lunch provided by the PERA Club.

Lunch: TBD

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 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 Program	Rao Thallam	Rao.Thallam@gmail.com
	Ron Sprague	r.sprague@ieee.org
	Barry Perlman	barry.perlman@gmail.com
Volunteer	Gary Frere	gary.frere@gmail.com
Past Chair	Barry Cummings	abarrycummings@gmail.com



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 LinkedIn 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 you 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

Refer a Colleague, Get Great Merchandise!

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:

Cooler backpack	Computer backpack
Portable solar battery charger	Tablet case
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 first-year membership dues, and will receive benefits through 31 December.

- Your referral will provide your IEEE member number when he or she joins.
- 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!](#)

IEEE-USA Webinar: Job Interviews and Leadership

On 11 March 2015 at 2:00 PM EST IEEE-USA will provide training to help you prepare for your job interview. This webinar, *Job Interviews*, presents efficient interview processes, what to expect, and how you present yourself. The Presenter Dr. Tarek Lahdhiri will also focus on the different interview types, what really matters during the interview and topics to avoid.

On 13 March 2015, at 1:00 PM EST, Elizabeth Lions, author and renowned speaker will address the topic of "Leadership" in the second of a three-part webinar series. In this three-part series, Ms. Lions will address what is appropriate for new leaders, anyone contemplating a move into a leadership role, and visionary process for defining goals for your team. She will examine the criteria by which leaders are measured: team assessment, training, hiring, firing and building a workflow plan.

[Join IEEE-USA for two more great installments to its webinar program.](#)

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

As a special benefit of IEEE Membership for the month of March, IEEE-USA is offering a free eBook, *Technical Presentations – Book 4: Effective Visual Aids*, by Nita K. Patel.

In *Technical Presentations – Book 4*, Patel shares that, "given that individuals gather, learn and retain information differently, presenters need to incorporate multiple methods of communicating information during a presentation." She quotes John Medina, author of *Brain Rule*, who wrote that we receive 83% of our information through sight, 11 percent from sound, and less than six percent through our other senses. So, Patel writes, "To keep your presentation on target, you must use visual aids. Visual aids can provide strong visual tools and increase the audience's retention of your core message." In *Technical Presentations – Book 4: Effective Visual Aids*, Patel gives readers guidance in how to supplement their presentations with effective PowerPoint slides, or other visual aids.



Topics included in Book 4 are:

- Value of Visual Aids
- Types of Visual Aids
- Using PowerPoint Slides
- Use of Visual Aids

Book 4 also includes a chart of Pros/Cons of Visual Aids and Visual Aid Ideas that will prove useful to the presenter.

Technical Presentations – Book 4 is the last eBook in the Technical Presentation series - written to help engineers create effective technical presentations. The other eBooks in this series are:

- *Book 1: Strategy-Preparation & Planning*
- *Book 2: Structure – Anatomy of a Successful Presentation*
- *Book 3: Style – Dynamic Delivery Techniques*



Members can download *Technical Presentations – Book 4* for free through 31 March 2015. Non-member price is US\$9.99.

In April, the IEEE-USA free eBook will be *Starting Your Start-up – Book 3: Competitive Analysis*, written by Tanya Candia. This eBook is for engineers or entrepreneurs who have a great product or service idea, but no real marketing expertise. It gives advice on how to map out the competitive landscape; discern the product's compelling value; and sell against any and all competitors.

IEEE Mentoring Program

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.

[Access IEEE MentorCentre](#)

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.