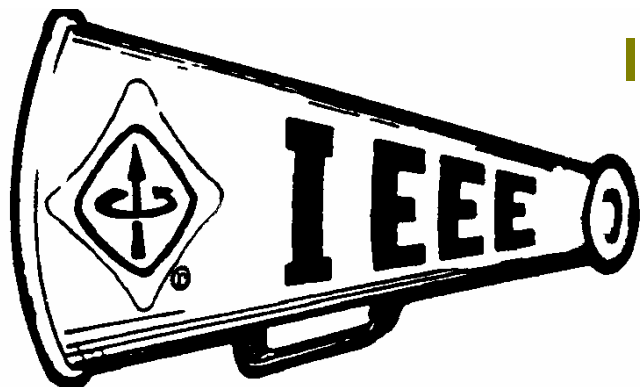


# The Valley Megaphone



Newsletter of the  
**IEEE – Institute of Electrical and  
Electronics Engineers, Inc.**  
**Phoenix Section**  
February 2004, Volume XVIII, Number 2

## Executive Committee

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## *This Issue of Valley Megaphone Features: Contacts and Links*

*Executive Committee (page 1)*

*Chapters and Branches (pages 1 and 2)*

*Student Branches (page 2)*

*The contacts are under updates due to section and  
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## Executive Committee contd..

### Awards

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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, September through June. The publication reaches about 4000 members. Submit articles, advertisements, and announcements to Dongming He 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, 1/2 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://www.ieee.org/phoenix>



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# IEEE ANNOUNCEMENTS

Contd.. from page 1

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#### **ASU East, Technology**

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#### **DeVry, Phoenix**

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Advisor: Dion Benes  
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#### **DeVry, Computer Society**

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#### **NAU, Computer Society**

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#### **Embry-Riddle, Prescott**

#### **Embry-Riddle Computer Society**

Advisor: Susan Gerhart, (928) 777-3882  
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### **Volunteer Needed for IEEE Phoenix Section Conference Coordinator**

IEEE Phoenix Section is seeking a volunteer to sever as conference coordinator. Please contact current conference coordinator Rao Thallam, 602-236-5481 [rsthalla@srpnet.com](mailto:rsthalla@srpnet.com) or section chair George Karady, 480-965-6569 [Karady@asu.edu](mailto:Karady@asu.edu).

### **IEEE Senior Member and Fellow Grades**

All IEEE Phoenix Section Members interested in getting nominated to Senior Member or Fellow Grade, please contact Vasu Atluri by telephone at (480) 554-0360 or by email at [vpatluri@ieee.org](mailto:vpatluri@ieee.org). Please refer to [www.ieee.org](http://www.ieee.org) for more information related to senior member and fellow grades.

### **PACN Announcement: Requirements and Procedures for Professional Engineer (PE) Certification by LaVern Douglas**

The next meeting of the IEEE Phoenix Area Consultants Network will be held on February 12<sup>th</sup> at Monti's La Casa Vieja at the southwest corner of Mill Ave and Rio Salado Parkway in Tempe. Networking and the social hour begin at 6:30 with dinner starting about 7 PM. The program will follow at about 8. Our speaker will be LaVern Douglas from the State of Arizona Board of Technical Registration. Ms. Douglas is a certified public manager and serves as the Deputy Director for the Licensing Department. In that capacity, she oversees the licensing and examining functions, and she serves as the board's Personnel Director. Ms. Douglas will speak on the requirements and procedures for obtaining a certification as a Professional Engineer (PE) in Arizona. Whether or not we are planning to earn a PE certification, this should be a very interesting program. Come at 8 for the program if you would like to pass on Monti's fine cuisine and the twenty dollar bill that comes with it or come earlier and pass on dinner. This talk will be well worth your time to say nothing of the fine fellowship you will enjoy by spending an hour or so in our company. Visitors are always welcome.



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# IEEE ANNOUNCEMENTS



## EMC Society Meeting Announcement

**Date:** Thursday, February 19th

**Place:** Marriott Mountain Shadows

**Address:** 5641 East Lincoln Drive

**Address:** Scottsdale, Arizona 85253

**Time:** 5:30PM Social No-Host Bar, 6PM Hors d'oeuvres Reception, 7:15PM Presentation

**Title:** Reverberation Chambers, How To Conduct Electromagnetic Effects Testing Using A Microwave Oven And A Pair Of Dice, Or, A Statistical Approach For Conducting System Electromagnetic Vulnerability Assessments

**Speaker:** Michael O. Hatfield, Naval Surface Warfare Center Dahlgren Division (NSWCDD)

**Abstract:** Techniques currently used to perform electromagnetic vulnerability assessments are rooted in deterministic descriptions of fields interacting with systems. There is no argument about the validity of these techniques when properly implemented. However the resource commitment associated with properly implementing these techniques is significant. As a result, typical applications of deterministic testing to vulnerability assessments produce dubious results. The goal of typical compliance testing is repeatability, not accurate characterization of system responses. Recently, extensive testing of a few systems has demonstrated that typical compliance tests can yield results with large and seemingly unpredictable uncertainties. The apparent options for vulnerability assessments are: 1) we live with potentially unreliable results; 2) we significantly expand the current assessment techniques at a substantial increase in costs; or, 3) we find new vulnerability assessment methods. This presentation will review past and current test techniques and examine the possibility of using statistical electromagnetic techniques to form the basis for an integrated vulnerability assessment methodology. This methodology would contain the tools needed to assess the effects of EM environments of systems from design through deployment.

**About The Speaker:** Mike has been with the Naval Surface Warfare Center Dahlgren Division (NSWCDD), Dahlgren, VA, since receiving his B.S. degree in Electrical Engineering from the West Virginia Institute of Technology in 1979. He was assigned to the Electromagnetic Performance of Aircraft and Ship Systems (EMPASS) project until 1982. Since 1982 he has been in the Systems Electromagnetic Effects Branch where he is in charge of development and operation of the NSWC Reverberation Chamber Facility. He is a member of the IEEE EMC Society Board of Directors and has been actively publishing articles about Reverberation Chambers in the EMC Transactions and at the EMC Symposia since 1988. The Navy awarded Mike the Haislmair Award in 1997 for his work in Electromagnetic Environmental Effects. The IEEE EMC Society awarded Mike the Richard R. Stoddard Award in 1995 and the Laurence G. Cumming Award in 1997 for his work with Reverberation Chambers. Mike works in the Electromagnetic Effects Division of NSWCDD, which addresses and resolves electromagnetic compatibility problems for the U.S. Navy. Mike is also a member of the Science and Technology Panel that reviews research and development efforts at NSWCDD. Mike is a member of International Electrotechnical Commission (IEC) SC/77B Working Group 10 and is the U.S. Representative to and Convener for IEC standard 61000-4-21 on Reverberation Chambers.

**RESERVATIONS:** This will be a joint meeting with the EMC Society Board of Directors. The Phoenix Chapter and the EMC BoD will be sponsoring the buffet reception with heavy hors d'oeuvres so we'd like to get a fairly accurate headcount. Please call Daryl or Mary at Kimmel Gerke Associates in Mesa AZ at 480-755-0080. (If no answer, please leave a voice mail.) You may also register by email at [dgerke@emiguru.com](mailto:dgerke@emiguru.com).



IEEE

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# IEEE ANNOUNCEMENTS



## Large-Signal Operation of SiC and Nitride-Based Microwave Field-Effect Transistors

**R.J. Trew**

ECE Department, North Carolina State University, Raleigh, NC 27695-7911

### **Abstract**

Wide bandgap semiconductors show great promise for advancing the state-of-the-art for high power microwave electronic devices. Primarily due to low breakdown voltage it has not been possible to design and fabricate solid-state transistors that can yield RF output power on the order of 100's to 1000's of watts necessary to compete with microwave vacuum tubes. Recent improvements in wide bandgap semiconductor materials technology provide the opportunity to now design and fabricate microwave transistors that demonstrate performance previously available only from microwave tubes. The most promising electronic devices for these applications are MESFET's fabricated from the 4H-SiC polytype and HFET's fabricated using the AlGaN/GaN heterojunction. These devices can sustain bias voltages significantly in excess of what can be applied to standard semiconductor devices. When biased with drain voltages in the range of 40-50 v the wide bandgap semiconductor transistors can provide RF output power on the order of 5-6 W/mm and 10-12 W/mm of gate periphery, respectively, and AlGaN/GaN HFET's have produced RF output power density on the order of 20 W/mm when biased with drain voltages in the range of 80-90v. Microwave power amplifiers in the kW range should be possible with power combining technology using a low number of devices, thereby simplifying the circuitry and improving power combining efficiency. This presentation will focus upon the large-signal operation of SiC and nitride-based microwave field-effect transistors, with an emphasis upon the physical effects associated with various charge trapping, surface, and space-charge phenomena that affect the RF performance of these devices. Engineering approaches to controlling these performance limiting effects will be discussed.

### **Biography**

Robert J. Trew received the Ph.D. degree from the University of Michigan in 1975. He is currently the Alton and Mildred Lancaster Professor of Electrical and Computer Engineering and Head of the ECE Department at North Carolina State University, Raleigh. From 2001 to 2002 he was the Willis G. Worcester Professor of Engineering and Head of the ECE Department of Virginia Tech, Blacksburg, VA. From 1997-2001 he was Director of Research for the U.S. Department of Defense. Dr. Trew is a Fellow of the IEEE, and serves on the IEEE Microwave Theory and Techniques Society Administration Committee (ADCOM) where he was Vice-President for 2003. He was Editor-in-Chief of the *IEEE Transactions on Microwave Theory and Techniques* from 1995 to 1997, and from 1999-2002 was inaugural Co-Editor-in-Chief of the award winning *IEEE Microwave Magazine*. He is also a member of the Editorial Board of the *IEEE Proceedings*. He has written over 140 publications, 15 book chapters, and has given over 300 technical and programmatic presentations. Dr. Trew has six patents.

**Date: February 25, 2004, Location: Arizona State University, Main Campus, Schwada Classroom Office Building (SCOB) Room 350**

See <http://www.asu.edu/map/b2.html> for more details.

**Time: 5:30-6:00pm Social/Refreshments, 6:00-7:00pm Presentation, 7:00pm Dinner (Pizza & soda are being provided by the WAD Phoenix Chapter)**

For more information, please call Chuck Weitzel (Chapter Chair) at (480) 413-5906.



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# IEEE ANNOUNCEMENTS



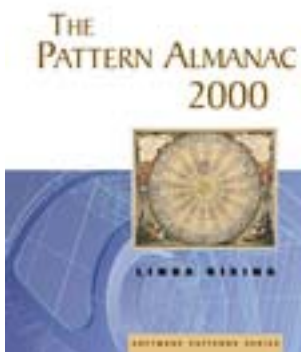
## Patterns

**SPEAKER:** Linda Rising **DATE:** 6:00 PM, Wednesday March 10

**LOCATION:** DeVry University, 2149 West Dunlap Ave, Phoenix, Az 85021 (1 mile east of I-17 on Dunlap, SE corner of 22<sup>nd</sup> Ave and Dunlap). Networking will be in the Courtyard (6-7PM with light meal), presentation at 7PM. **Free, Everyone is welcome.** Please tell others about this meeting.



The idea behind "patterns" is a simple one. It's the struggle to capture successful solutions and document them to share with others. It's essentially a form of knowledge management. For the experienced person, it's the approach of learning from the past and trying to make sense of what successful solutions have to tell us. For the novice, it's the hopeful sense that the essence of what experts know can be captured, at least to a limited extent, and held out for those who are willing to learn them. Patterns have been applied in the software community since 1994, so it's not a new approach, but the basic idea is something that developers in many domains have been doing forever. This presentation will provide a basic introduction to patterns and show what is currently being done in the industry.



Linda Rising has a Ph.D. from Arizona State University in the area of object-based design metrics. Her background includes university teaching as well as work in industry in telecommunications, avionics, and strategic weapons systems. She is the author of numerous articles and has published three books: Design Patterns in Communications, The Pattern Almanac 2000, and A Patterns Handbook. She is currently writing a book with Mary Lynn Manns, Fear Less and other patterns for introducing new ideas into organizations, to appear in 2004.

See [www.ieee.org/phoenix/compsociety](http://www.ieee.org/phoenix/compsociety), for more information.  
Contact Bob Bianca ([Bob.Bianca@Computer.Org](mailto:Bob.Bianca@Computer.Org))



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# IEEE ANNOUNCEMENTS



**SPEAKER:** Debbie Christofferson  
**DATE:** 6:00 PM, Wednesday February 11, 2004

## Certified Information Systems Security Professional Certification

**LOCATION:** DeVry University, 2149 West Dunlap Ave, Phoenix, Az 85021 (1 mile east of I-17 on Dunlap, SE corner of 22<sup>nd</sup> Ave and Dunlap). Networking will be in the Courtyard (6-7PM with light meal), presentation at 7PM. **Free, Everyone is welcome.** Please tell others about this meeting.



Debbie Christofferson will speak on CISSP (Certified Information Systems Security Professional) certification exam. CISSP is one of the premiere certification for computer security people. In Certification Magazine's recent survey, salaries for with a CISSP certification varied with experience: 1-4 years \$92K, 5-7 years \$121K, 8-11 years \$135K, 11-15 years \$148K. Debbie's will present a 7-Step Guide for Passing the CISSP Exam:

- Specific criteria you must meet to become a CISSP.
- Exactly what the CISSP exam includes.
- Tips and tricks to pass the CISSP exam in the shortest easiest way.
- Secrets of successful CISSP exam preparation.
- What works and what doesn't.
- Options to help you prepare in the way that works best for you.
- What happens after you pass the CISSP certification examination.

Debbie Christofferson, CISSP & CISM, has practiced leading edge Fortune 500 security management and consulting for 14 years, with 20 overall years in the technology field. Speaker, consultant and published author.

See [www.ieee.org/phoenix/compsociety](http://www.ieee.org/phoenix/compsociety), for more information.

Contact Bob Bianca ([Bob.Bianca@Computer.Org](mailto:Bob.Bianca@Computer.Org))

**The IEEE Phoenix Section Computer Society would like to congratulate: Phillip M. Kaiser (Computer Society) and Phuc C. Pham (Solid-States Circuits Society) on their recent elevation to IEEE Senior Members. This is a high honor bestowed on engineers who have excelled in their field by their peers.**