



## Education and Student Activities Committee (ESAC)

By Randy Jost, Vice Chairman of the ESAC

This was quite the event! Getting around in Motor City was relatively easy, thanks to the proximity of the Convention Hotel and the Cobo Center - assuming you could figure out how to get out of the Marriott hotel. If you couldn't find something to keep you interested 24/7 during the symposium week, you must have been asleep. At the very least, there were plenty of activities for those associated with the Education and Student Activities Committee. One event requires special recognition. Our current Chairman, Robert Nelson has decided to step down as chair and pass the reins on to another. Bob was unable to make the symposium this year, due to a grand convergence of his son's wedding and even more momentous, a move from North Dakota State University in frigid Fargo, North Dakota to the University of Wisconsin - Stout, in memorable Menomonie, Wisconsin. Bob has been part of the bedrock of the ESAC leadership for many years, and we hope he will continue to take part in providing his insight to the committee. Be sure to take a moment and send Bob your thanks at [r.m.nelson@ieee.org](mailto:r.m.nelson@ieee.org).

### iNARTE Activities

What used to be known as the National Association of Radio and Telecommunications Engineers (NARTE) is now known as iNARTE - the International Association for Radio, Telecommunications and Electromagnetics. While the name has been changed to reflect a much broader charter, it is still the organization responsible for certifying EMC engineers and technicians. Each year an exam is given during the EMC Symposium, and an Exam Preparation Session is given earlier in the week. This year, the Examination Preparation Tutorial was held on Monday. During that session attendees were advised as to the format of the two part examination, and were also provided

with working examples of typical exam questions and hints of what might be the best approach to ensure success on the exam. The actual iNARTE Exam was given on Friday this year, culminating a very full and exhilarating week. Also, during the ESAC meeting, Brian Lawrence (iNARTE Executive Director) outlined the organization's vision for expanding iNARTE's reach into the secondary schools, providing pre-professional training and education opportunities for these students. This activity is very much in line with ESAC's desire to foster educational opportunities for future EMC practitioners across the educational spectrum. We plan to discuss these additional ESAC activities more fully in a future article. We thank Brian for heading up these important activities.

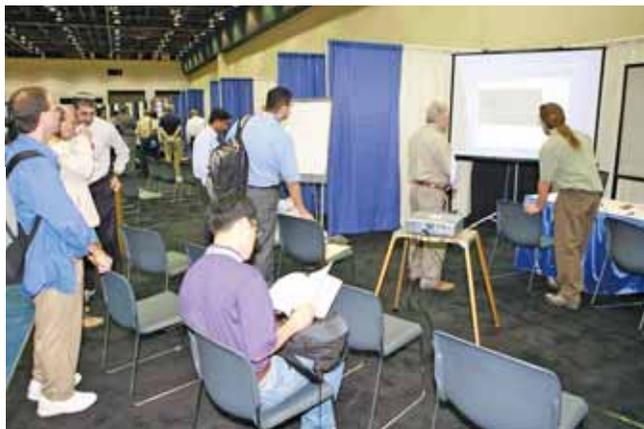
### Experiments Manual

Ed Wheeler (Rose-Hulman Institute of Technology) continues to lead ESAC in the area of the experiments manual. The original experiments manual, along with several other experiments, are available via the ESAC website at <http://www.ewh.ieee.org/soc/emcs/edu/eduresources.htm>. We encourage folks to download these and use them! In addition, new submissions are always welcome! Instructions for submitting new experiments are available via a link at <http://www.ewh.ieee.org/soc/emcs/edu/exper.htm>. Ed also welcomes inquiries and can be contacted at [e.wheeler@ieee.org](mailto:e.wheeler@ieee.org). Thanks, Ed!

### Hardware and Software Demonstrations

For the sixteenth consecutive year, this activity has provided interesting, hands-on illustrations of EMC-related phenomena. This year, Co-Chairs Bruce Archambeault, Andy Drozd, William Goodwin and Edward Wheeler did a phenomenal job of putting together a slate of great demonstrations. There were nine hardware demonstrations, provided by Doug Smith (D.C Smith Consultants); David Seabury (ETS-Lindgren); Tom Holmes (Agilent Technologies) and Candace Suriano (Suriano Solutions); Keith Hoover (Rose-Hulman Institute of Technology); James Muccioli (Jastech EMC Consultants); Bogdan Adamczyk (Grand Valley State University) and Jim Teune (Gentex Corporation); Orin Laney (Atwood Research), Lee Hill and Randal Vaughn (Silent Solutions); and Vino Pathmanathan (TRW) and Tom Holmes (Agilent Technologies).

We also had nine software demonstrations, provided by Zed Tang (Ansoft Corporation); Matt Comments (Ansoft Corporation); Jun Fan (Missouri University of Science and Technology), Alex Packard and Edward Wheeler (Rose-Hulman Institute of Technology) and James Drewniak (Missouri University of Science and Technology); J. Alan Roden (The Aerospace Corporation); Charles F. Bunting (Oklahoma State University); C.J. Reddy (EM Software & Systems - USA); Haixin Ke and Todd Hubing (Clemson University); Colin Brech (Southwest



Friedrich Kirk (far right) of California State University, Chico is shown in action presenting his student design in the exhibit hall at EMC 2008.

PHOTOS BY KEN WYATT



*The Education and Student Activities Committee (ESAC) held a meeting during EMC 2008 that attracted several people interested in EMC education. Randy Jost (second from right with back to camera) chaired the meeting in the absence of Chair Bob Nelson.*

Research Institute). Joe Tannehill (ETS-Lindgren) and David Guzman (RFTEK) also provided a demonstration that involved both hardware and software. Many thanks to all of you!

## Tutorials

Attendees at this year's Symposium were provided with a large number of tutorial sessions that covered a very broad range of topics. In addition to the Fundamentals of EMC tutorial hosted by the Education and Student Activities Committee, additional tutorial sessions were held on many other topics of interest, including "Introduction to EMI Modeling Techniques," Charles Bunting (Oklahoma State University); "Guide to Accreditation of EMC Laboratories in the US", Werner Schaefer (Cisco Systems); "Automotive EMC High Power and Field Level Immunity Testing," Janet O'Neil and Vince Rodriguez (ETS-Lindgren); "Basic Antenna and Probe Use in EMC," Candace Suriano (Suriano Solutions); "EMC and Wireless Devices," Dan Hoolihan (Hoolihan EMC Consulting); "Limitations of Simulation Techniques and Proper Model Validation



*Friedrich Kirk (left) of California State University, Chico won the Best Student Design award for the design, "EMI Reduction in a Switch Mode Power Supply." He received the award from EMC Society President Elya Joffe.*

for Both Signal Integrity and EMC," Bruce Archambeault (IBM); "Basic EMC Measurements" Don Heirman (Don HEIRMAN Consultants); "Advanced Topics for Antennas and Field Probes in Radiated Measurements," Zhong Chen and Janet O'Neil, (ETS-Lindgren); "EMC and Modern Power Electronic Systems," Firuz Zare, (Queensland University of Technology); "Fundamentals of Signal Integrity," Tzong-Lin Wu (National Taiwan University) and Jim Drewniak (Missouri University of Science and Technology); "Aerospace Lightning Protection," Fred Heather (JSF JPO EEE Lead); "Basic to Advanced EMI Failure Analysis," David Pommerenke (Missouri University of Science and Technology); "Automotive EMC," Todd Hubing (Clemson University); "Module Level EMI Measurements and Estimation," H. R. Hofmann (Hofmann EMC Engineering) and Hiroshi Yamane (NTT/VCCI, NTT Energy and Environment Systems Laboratories); "The European EMC Directive 2004/108/EC," Chris Marshman (York EMC Services Ltd); "The State of Electromagnetic Environments (EME)," Dave Southworth (ANSI ASC C63®); "Practical EMI Filter Design," Alexander Gerfer (Wurth Elec-



*Ali Alaeldine (left) of ESEO Angers in Lattis, France received the Best Student Paper award from EMC Society President Elya Joffe for his paper, "Modeling of the Substrate Coupling Path for Direct Power Injection in Integrated Circuits."*



*Valerio De Santis (left) of the University of L'Aquila, Italy received the Leo L. Beranek Anechoic Chamber Student Travel Grant to present the paper "Effects of Thermoregulatory Mechanisms on the Eye Thermal Elevation Produced by Intense RF Exposures."*



*Wilfred Ghonsalves (left) and Tian He (right), California State University, Chico received the Leo L. Beranek Anchoic Chamber Student Travel Grant to present the results of their Student Design Competition. President Elya Joffe was happy to present this award.*

tronics-Midcom Inc.); "Aircraft EMP Hardening Specifications and Measurement Methods," William D. Prather (Air Force Research Laboratory, Directed Energy Directorate); "Carbon Nanotube Technology for Next Generation Nanointerconnects," Professor Maria Sabrina Sarto (University of Rome).

The annual Fundamentals of EMC Tutorial was chaired by Daryl Beetner (Missouri University of Science and Technology) and featured sessions by Elya Joffe (K.T.M. Project Engineering) "Current, If Not Obstructed, Will Always Flow in the 'Path of Least ...' ", Daryl Beetner (Missouri University of Science and Technology) "Inductance and Capacitance In Electrical System Design," Clayton Paul (Mercer University) "What is Partial Inductance?", and Todd Hubing (Clemson University) "Automotive EMC". Many thanks to Daryl Beetner for organizing this great session.

As you can see from the above topics, there is something for everyone in the tutorial sessions, ranging from introductory topics to cutting edge issues. When we meet next year in Austin, Texas, don't hesitate to take advantage of this great educational opportunity, which is included in your symposium registration fee.

## University Grant

The winner of the 2008 University Grant Award is Dr. Omar M. Ramahi of the University of Waterloo, in Waterloo, Ontario, Canada. We encourage you to submit your proposals for future awards. Details can be obtained from Dr. Tom Jerse (jerset@citadel.edu) or from the ESAC website (<http://www.ewh.ieee.org/soc/emcs/edu/index.html>).

## Student Paper Contest

The annual student paper contest provides an opportunity for graduate and undergraduate students to share the results of their research with the EMC community. This is a venue for exposing students to the EMC Society and encourages them to consider a career related to EMC. Jim Whalen (University of Buffalo) and Aziz Inan (University of Portland), Co-Chairs of this activity, were assisted in the paper selection by this year's

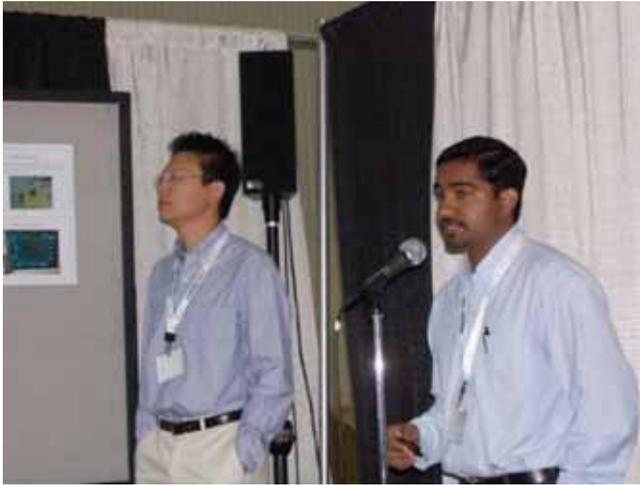
Symposium Technical committee which was Co-Chaired by Mark Steffka (General Motors Corporation) and Tom Jerse (The Citadel). This year's student winner was Ali Alaedine, ESEO Angers - Lattis France for the paper entitled "Modeling of the Substrate Coupling Path for Direct Power Injection in Integrated Circuits," which he co-authored with Richard Perdriau, Mohamed Ramdani, Etienne Sicard, M'hamed Drissi and Ali M. Haidar. Congratulations to all of you on a very nice paper!

## Student Design Competition

The annual student design competition provides Electrical and Computer Engineering students an opportunity to apply their knowledge of EMC and gain hands-on experience. The objective of the contest is to develop the best solution to a standardized broadband electromagnetic interference (EMI) problem. Each contestant receives a standardized "design kit", complete with sample circuit diagram and electronic components. Using this as the starting point, the students design, construct, evaluate, and document the EMI mitigation techniques they employ to reduce radiated and conducted emissions. The completed kits are evaluated by impartial judges using the following criteria: satisfaction of the intended operation of the circuit; EMC performance of the circuit (i.e., the radiated and/or conducted emissions levels); cost associated with the mitigation techniques employed; the proposed solution's practicality and ease of manufacture; expression and clarity of the report; design rationale for implemented EMI mitigation technique(s) as described in the report; and adherence to competition rules and requirements. Harold Rudnick (Nonin Medical, Inc.) and Ahmad Fallah (Cisco Systems) head up this activity. Bob Hericks and Dennis Swanson of Lockheed Martin Maritime Systems and Sensors assisted ESAC by arranging for and conducting all emissions measurements. This year's winner was Friedrich Kirk, California State University, Chico. Congratulations to you on a job well done! The Design contest is now "open for business" for next year! Please check the ESAC website (<http://www.ewh.ieee.org/soc/emcs/edu/index.html> or <http://www.ewh.ieee.org/soc/emcs/edu/student-design-comp.htm>) to download the contest rules and request a kit!

## Leo L. Beranek Student Travel Awards

In case you missed the explanation last year, the Leo L. Beranek Student Travel Award is an award that honors Dr. Leo L. Beranek, who was a pioneer in radio, acoustics, electroacoustics, data transmission and other IEEE related technical issues. He is a Fellow of the IEEE and a founder of Bolt, Beranek, and Newman. The awards provide assistance (partial reimbursement) for travel expenses to students traveling to the 2008 EMC Symposium to present their work (i.e., presentation of papers or design work). There were two awards given this year: (1) The first went to a team of students from California State University, Chico (consisting of Wilfred Ghonsalves and Tian He) to present the results of their Student Design, and (2) The second went to Valerio De Santis, University of L'Aquila, Italy (co-authored by Mauro Feliziani) to present their paper "Effects of Thermoregulatory Mechanisms on the Eye Thermal Elevation Produced by Intense RF Exposures." All of you did a great job!



*Tian He (left) and Wilfred Ghonsalves (right) from California State University - Chico were joint recipients of one of the two 2008 Leo L. Beranek Student Travel Grants.*

## Education and Student Activities Officers

The Education and Student Activities Committee is here to serve you, the EMC community. Please check out our website at <http://www.ewh.ieee.org/soc/emcs/edu/index.html> and/or feel free to contact any of the following individuals:

Chair: Bob Nelson ([r.m.nelson@ieee.org](mailto:r.m.nelson@ieee.org))

Vice-Chair and Webmaster: Randy Jost ([r.jost@ieee.org](mailto:r.jost@ieee.org))

Secretary: Larry Cohen ([lawrence.cohen@nrl.navy.mil](mailto:lawrence.cohen@nrl.navy.mil))

iNARTE: Jim Whalen ([jjw@eng.buffalo.edu](mailto:jjw@eng.buffalo.edu))

Experiments Manual: Ed Wheeler ([e.wheeler@ieee.org](mailto:e.wheeler@ieee.org)).

Hardware/Software Demonstrations: Andy Drozd ([a.l.drozd@ieee.org](mailto:a.l.drozd@ieee.org))

Fundamentals Tutorial: Daryl Beetner ([daryl@mst.edu](mailto:daryl@mst.edu)).

University Grant Committee: Tom Jerse ([jsert@citadel.edu](mailto:jsert@citadel.edu)).

Student Paper Contest: Jim Whalen ([jjw@eng.buffalo.edu](mailto:jjw@eng.buffalo.edu)) and Aziz Inan ([ainan@up.edu](mailto:ainan@up.edu))

Student Design Contest: Ahmad Fallah ([AhmadFallah@ieee.org](mailto:AhmadFallah@ieee.org)) and Harold Rudnick ([harold.rudnick@ieee.org](mailto:harold.rudnick@ieee.org))

Note that we have many other opportunities for you to become involved in the Education and Student Activities Committee, and we're always looking for additional assistance to improve our education efforts. At the very least, let us know what you think we need to be doing or improving. Send an email to one of our ESAC officers and we'll do what we can to address your concerns and comments.

We want to thank each of the officers, committee members, presenters, organizers, and all the other workers who volunteer their time and effort throughout the year to bring all of us the very best in EMC education. You are the ones who make it all happen. Thank you!

EMC

# IEEE EMC Society Governance Update

*By Mark Montrose, EMC Society Board Member-Governance Committee*

In accordance with IEEE procedures, changes to the Constitution and Bylaws of any Society must be first approved by the Board of Directors of the Society and the Vice President of the Technical Activities Board, the entity that oversees operations of all Societies and Councils within the IEEE. Every operational entity must adhere to legal mandates as a Not-for-Profit Corporation. After approval, notification to the membership must occur using the most widely available publication to Society members. For the EMC Society, this is our Newsletter. Unless greater than 10 percent of the membership informs the Secretary of the Society within 30 calendar days of publication of disapproval, the changes become effective.

The following bylaw amendment was approved by the IEEE EMC Society Board of Directors at its meeting on

17 August 2008.

### Existing Bylaws- Section 4.6

On or before 15 August, IEEE Headquarters will mail ballots to Society members, with the request that the ballots be returned to IEEE Headquarters by 1 October.

### Amended Bylaws - Section 4.6

On or before 15 August, IEEE Headquarters will mail ballots to Society members, with the request that the ballots be returned to IEEE Headquarters by 1 October. The official ballot and cover letter of the final nominations package shall advise voters to "VOTE FOR NO MORE THAN SIX" candidates from the approved slate of nominees.