



# Education and Student Activities Committee (ESAC)

*Bob Nelson, Associate Editor, Chairman of the ESAC*

*Bob Nelson, ESAC Chair, (standing) led the annual meeting of the ESAC, and is supported by able Vice Chair, Randy Jost.*

Change and transition are key words describing the IEEE Education and Student Activities Committee (ESAC). After faithfully serving for eight years, Dr. Maqsood Mohd (Sverdrup Technology, Inc.) has stepped down as Chair of ESAC. The IEEE EMC Society and ESAC in particular are very grateful to Maqsood for many years of fine leadership, motivational example, and enthusiasm. In addition to serving as ESAC Chair from 1998 to 2006, and Vice-Chair before that, the EMC Society gratefully acknowledges that Maqsood has been the prime mover for the popular EMC Tutorial Sessions held annually at the past 13 EMC Symposia. Thanks to Maqsood's vision and his ability to organize and coordinate this important annual event, thousands (literally!) of attendees have had the pleasure of hearing from the world's experts on a wide variety of important, yet fundamental, topics in the area of EMC. Nine years ago, Maqsood also helped initiate the Student Paper Contest. Through this popular contest, students from around the world are encouraged to share the fruits of their research with the rest of the EMC Society. As we think back over the years of Maqsood's leadership it is amazing to see the changes that have occurred within ESAC and the IEEE EMC Society. Events we have come to take for granted (the Tutorial Sessions, the Student Paper Contest, the Student Design Contest, the Experiment/Demonstration/Simulation sessions, the University Grant program, and many more) have either been initiated or have flourished under Maqsood's leadership. As he often noted, "Knowledge is power. And indeed education is the means to get the knowledge. To seek knowledge is a birth right of every human being. EMC professionals are included in this. It is never too late to

learn and seek education." (Reference: IEEE EMC Newsletter, Fall 2004.) Thank you very much, Maqsood, for all your hard work, vision, and leadership!

Part of the transition and change in ESAC includes electing several new officers and committee chairs. In particular, Bob Nelson (North Dakota State University) moved from Vice-Chair to Chair, Randy Jost (Utah State University) moved from Secretary to Vice-Chair, and Larry Cohen (Naval Research Labs) is the new Secretary. Larry has a long-standing commitment to EMC education and we are delighted that he stepped forward to serve in this capacity. Welcome aboard, Larry! New committee chairs include Tom Jerse (The Citadel) as our new Grant Committee Chair, Daryl Beetner (University of Missouri-Rolla) as our new Tutorials Chair, Aziz Inan (University of Portland) and Jim Whalen (State University of New York at Buffalo) as our new co-chairs of the Student Paper Contest committee. Welcome, gentlemen! You join a great cadre of folks who are involved in a wide range of activities, as will be discussed below. Let's turn now to see what is happening in some of the areas the ESAC is involved in.

## NARTE Activities

The National Association of Radio and Telecommunications Engineers (NARTE) is the organization responsible for certifying EMC engineers and technicians. Each year a NARTE exam is given during the EMC Symposium, and is typically administered on Friday. To help EMC engineers and technicians prepare for the exam, a workshop is conducted early in the week (typically on Monday). Jim Whalen and others have faithfully conducted the workshop for many years, and did so again this year. Together they

helped prepare several folks who took that exam on Friday. Thanks, Jim and all the volunteers who helped with this important effort!

## 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 additional experiments, are available via the ESAC website at <http://www.ewh.ieee.org/soc/emcs/edu/eduresources.htm>. 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

Andy Drozd (ANDRO Computational Solutions) has led this very popular activity for many years, and it seems to get better every year! This year, Patrick André (André Consulting, Inc.), Gary Town (Hewlett-Packard) and Bruce Archambeault (IBM) helped Andy put together a fantastic slate of hardware and software demonstrations that were held throughout the week in the Exhibits area. If my count is correct, there were eleven hardware demonstrations, provided by Lothar (Bud) Hoelt (Electromagnetic Effects), Jim Whalen (State University of New York at Buffalo), Michael Foegelle (ETS-Lindgren), Mark DeBattista (Harley-Davidson Motor Company), Ken Wyatt (Agilent Technologies), Clayton R. Paul (Mercer University), Jasper van der Graaff (Thales, The Netherlands), John Horner and Paul

Zdanowicz (Fair-Rite Products Corporation), Tom Holmes (Agilent Technologies) and Candace Suriano (Suriano Solutions), Daryl Beetner (University of Missouri – Rolla), and Michael Eckert and Simon Vilela (Wurth Electronics). We also had nine software demonstrations, provided by Xin Wu (Fluent, Inc.), Shaofeng (Tony) Luan, Jin Zhao and Raymond Chen (Sigrity, Inc.), Bruce Archambeault (IBM), Irina P. Kasperovich and Andrew L. Drozd (ANDRO Computational Solutions), and Robert Kellerman and C. J. Reddy (EM Software & Systems), Juan J. Jerez, Luis Nuño and Juan V. Balbastre (Universidad Politécnica de Valencia in Valencia, Spain), Fabrizio Zanella and Antonio Ciccomancini Scogna (CST of America, Inc.), George Kunkel (Spira Manufacturing Corporation), and Mohamed Ramdani (ESEO in Angers, France). John Norgard (US Air Force Research Laboratory and the Air Force Academy) also provided a demonstration that involved both hardware and software. Many thanks to all of you!

## Tutorials

The wonderful tradition that Maqsood initiated of having an EMC Fundamentals Tutorial session continued this year. Aziz Inan graciously agreed to lead this effort and organized a panel of outstanding speakers. In particular, over a hundred attendees came Monday morning to hear Clayton Paul (Mercer University) speak about “Transmission Lines and Signal Integrity”, Todd Hubing (Clemson University) discuss “Typical EMC Problems and Solutions”, Tom Van Doren (University of Missouri-Rolla) shed illuminating light on “Grounding for Safety and Noise Reduction”, and Doug Smith (D.C. Smith Consultants) illustrate “High Frequency Currents: Common Mode Cable Currents”. Thank you Clayton, Todd, Tom, and Doug for the great talks, and thank you, Aziz, for making this possible! As we look forward to future Symposia, Daryl Beetner (University of Missouri-Rolla) has graciously agreed to chair this effort, and will be assisted by Elya Joffe (KTM Project Engineering) and others. Although Daryl and Elya will be providing long-range leadership on this committee, they will be assisted by Randy Jost this coming year. In coordination with the



*A distinguished group of attendees at the annual ESAC meeting! Don Heirman (second from left) addresses the group as John Norgard, Elya Joffe, David Larrabee, Qiubo Ye, Dan Hoolihan, and Ralph Showers (from left) listen attentively. If you are interested in education issues, plan to attend the ESAC meeting at the 2007 EMC Symposium!*

planned Global University (GU) to be held during the 2007 EMC Symposium, ESAC plans to provide a series of tutorials that complement and supplement the GU presentations. Look for more details to come!

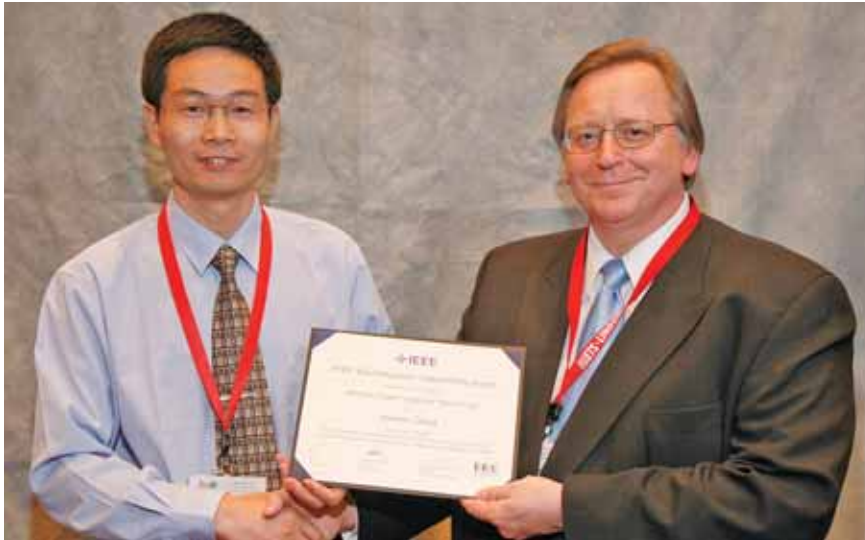
## University Grant

As mentioned earlier, ESAC welcomes Tom Jerse as the new chairman of the University Grant Committee. Tom is no stranger to ESAC or the University Grant committee. He was the winner of the 2003 University Grant Proposal, which helped him develop an EMC course at his university, The Citadel. Tom has been very active in the Grant and Student Activities committees for a number of years, and brings lots of enthusiasm and new ideas to the Grant Committee. The main vision of the Grant Committee is to help “spread the word” about EMC around the world by assisting universities establish EMC courses. A list of past winners is available via a link on the ESAC website at <http://www.ewh.ieee.org/soc/emcs/edu/univ-grant-win.htm>, where it is noted that the 2005 winner was McGill University in Montréal, Canada. Grant activity for 2006 is on-going, and we anticipate that the 2006 winner will be declared by the end of December.

## 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 encouraging them to consider a career related to EMC. As one of the many activities he was involved in, Maqsood Mohd traditionally organized this contest, recruited impartial judges and provided overall guidance for all involved. With Maqsood stepping down, Bill Strauss (Naval Air Warfare Center) and Aziz Inan (University of Portland-Portland, Oregon) coordinated this important activity in 2006, being assisted by a cadre of capable assistants and judges. This year’s winner was Jianmin Zhang from the University of Missouri-Rolla. The title of Jianmin’s paper was “Signal Link-Path Characterization Up to 20 GHz Based on a Stripline Structure”, which he co-authored with James L. Drewniak, David J. Pommerenke, Richard E. DuBroff of the University of Missouri-Rolla, along with Zhiping Yang of Apple Computer, and Wheling Cheng, John Fisher, and Sergio Camerlo of Cisco Systems. In case you missed it, the 2005 winner was Dagang Wu of the University of Houston. The title of Dagang’s paper was “Safety Evaluation of the Walk-Through Metal Detectors”, which he co-authored with Rui Qiang and Ji Chen. Congratulations to all of you on a job well done! As we prepare for the 2007 contest, Jim Whalen and Aziz Inan have graciously agreed to co-chair this activity. The call for papers for next year’s EMC 2007 Symposium is available at



*Jianmin Zhang (left) from the University of Missouri-Rolla being presented the Best Student Paper Award by IEEE EMC Society President Andy Drozd.*

<http://emc06.powweb.com/emc2007/images/callforpapers07.pdf>. Instructions for the student papers are available at that site. Prospective student authors are encouraged to check this site, and can also contact Jim at [jjw@eng.buffalo.edu](mailto:jjw@eng.buffalo.edu) or Aziz at [ainan@up.edu](mailto:ainan@up.edu).

### 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 con-

testant receives a standardized “design kit”, complete with a 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 winners were Parthasarathi Datta and Roopa Bharathan from California State University, Chico. Last year’s winners were Michael Flanner and Talha Ahmed, also from California State University, Chico. Congratulations to all of you on a job well done!

### Education Committee Web Site

Randy Jost continues his faithful efforts at maintaining the ESAC website. If you have not looked at the site, take a peek sometime at <http://www.ewh.ieee.org/soc/emcs/edu/index.html>. Lots of interesting information about each of the aspects of the ESAC committee can be found there, as well as resources that EMC folks will find helpful. Randy is always open to suggestions for ways to improve the website. He can be contacted at [r.jost@ieee.org](mailto:r.jost@ieee.org). Thanks, Randy!

### Leo L. Beranek Student Travel Awards

The Leo L. Beranek Student Travel Award is a new award recently approved by the IEEE for the EMC Society. As Dan Hoolihan (Hoolihan EMC Consulting) explained in the Winter 2006 EMC Newsletter (<http://www.ieee.org/organizations/pubs/newsletters/emcs/winter06/beranek.html>) the award honors Dr. Leo L. Beranek, who was a pioneer in radio, acoustics, electro-acoustics, data transmission and other IEEE related technical issues. He is a Fellow of the IEEE and a founder of Bolt, Beranek, and Newman. The new award was presented for the first time, unofficially, at the 2005 IEEE International Symposium on EMC in Chicago, to three recipients: Sven Batterman (University of Hanover, Germany), Yakup Bayram (Ohio State University) and Benjamin Moss and Vimal Ambat (University of Missouri-Rolla). The Beranek Travel Awards were OFFICIALLY awarded for the first time at the 2006 IEEE International



*Roopa Bharathan (left) and Parthasarathi Datta (center) from California State University, Chico being presented with the Best Student Design Award by IEEE EMC Society President Andy Drozd.*

Symposium on EMC. This year's awards went to Timothy Dew of the University of Tennessee-Knoxville, and Giuseppe Selli of the University of Missouri-Rolla. Selli received the travel award to present his paper entitled "Model-to-Hardware Correlation of Physics-Based Via Models with the Parallel Plate Impedance Included", which he co-authored with Christian Schuster and Young Kwark. Dew received the award to present his EMC Student Design Competition project at the Symposium, which he co-authored with Robert Hughes and Scott Waite. Great job, Giuseppe and Tim!



*Timothy Dew (left) of the University of Tennessee-Knoxville and Giuseppe Selli (right) of the University of Missouri-Rolla being presented with the Leo L. Beranek Student Travel Awards by IEEE EMC Society President Andy Drozd.*

## New Event Planned for the 2007 Symposium!

Planning is underway for a new event to be held during the 2007 Symposium. ESAC has a long history of supporting EMC education at all levels – kindergarten through retirement. Through the Grant program we have supported the development of university-level EMC courses for many years. As a complement to that activity, we hope to offer a workshop that will help those involved in EMC instruction – both those new to teaching EMC, as well as “seasoned veterans”. We envision that the workshop will become an on-going, recognized venue in which advances and initiatives in EMC, SI, and high-speed design education are presented, exchanged, discussed and improved. Although details are not completely finalized yet, possible topics include the development and/or procurement of material helpful to those teaching EMC, how to incorporate assessment techniques when evaluating the quality of EMC education, and a peek at some of the problems/obstacles that one may encounter (and overcome) when offering an EMC course (e.g., “How do you get the course into a crowded university curriculum?”, “What are ways to incorporate the lab aspect into the course?”,

etc). Plan to attend EMC 2007 and find out for yourself!

## 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:

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I would like to express my personal thanks and appreciation to Maqsood Mohd for his many years of faithful service and great investment of time and energy to ESAC. In addition, I 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