The 54th annual Nuclear and Space Radiation Effects Conference (NSREC) will be held July 17th–21st, 2017, at the New Orleans Marriott hotel. Our committee has worked hard to offer an interesting venue and outstanding program for this year’s conference. We will continue the tradition of previous NSREC Conferences by offering a Technical Program, a one-day Short Course that precedes the technical sessions, a Radiation Effects Data Workshop, and an Industrial Exhibit. Engineers, scientists, and managers from around the world who are interested in radiation effects will attend. Véronique Ferlet-Cavrois, European Space Agency, is the General Conference Chairwoman.

Technical and social programs have been planned to maximize opportunities for information exchange and networking in the areas of radiation effects in microelectronics and photonic devices, circuits, and systems. Supporters of the conference include 3-D Plus, BAE, Boeing, Cobham Semiconductor Solutions, European Space Agency, Freeland Semiconductor, Interal, International Rectifier HiRel Products, Jet Propulsion Laboratory, Southwest Research Institute, and IFT Rad.

The Technical Program Chair, Heather Quinn, Los Alamos National Lab, and her committee have assembled an outstanding set of papers that are arranged in ten oral sessions and a poster session for the Technical Program. Those papers are eligible for publication after the conference in the IEEE Transactions on Nuclear Science, subject to further review. A Radiation Effects Data Workshop is also included in the Technical Program, with papers that emphasize data on electronic devices and systems, and descriptions of new simulation tools and radiation test facilities. In addition to the contributed papers, three invited talks will be presented that are of general interest to conference attendees and their companions. Guest speakers are:

2. “The Mars Reconnaissance Orbiter and the Curiosity Rover: Perspectives on Whether Mars is Habitable,” by Tanya Harrison, Arizona State University; and

The IEEE WIE speaker will be Mary Beth Stevens, Los Alamos National Laboratory; her title is “Negotiation and Communication.”

**SHORT COURSE**

Jonathan Pellish, NASA Goddard, is the chair of this year’s Short Course. The theme of this year’s course is “Hardness Assurance for Satellite Systems—from Macro to Nano.”
Conferences (Continued from PAGE 1)

The course will be held on Monday, July 17th, and is an excellent learning opportunity for those who are new to the field as well as those who want to stay abreast of current issues.

Topics and speakers for the four sessions of the Short Course are:

Total Ionizing Dose and Displacement Damage

Hardness Assurance for Satellite Systems, by Dr. Christian Poivey, European Space Agency

Total Nonionizing Dose and Displacement Damage

Short Course are:

- Total Ionizing Dose and Displacement Damage
- Hardness Assurance for Satellite Systems, by Dr. Christian Poivey, European Space Agency
- Total Nonionizing Dose and Displacement Damage

Social Principles for Mission Success in Spacecraft Programs, by Dr. Dave Roth, John Hopkins Applied Physics Lab

Social Principles for Mission Success in Spacecraft Programs, by Dr. Dave Roth, John Hopkins Applied Physics Lab

THE CURRENT LIST OF EXHIBITORS INCLUDES:

- JEDPlus
- Analog Devices
- Avanex
- BAE Systems
- Basler
- Cobham Semiconductor Solutions
- Cypress/DPAC
- Data Device Corporation
- EMPIQ
- Foss Therapy Services
- Freebeld Semiconductor Corp.
- HiRel Products
- Honeywell
- Hopewell Designs Inc.
- International Semiconductor
- Internal Corporation
- Imae
- J.L. Shepherd & Associates
- JD Instruments
- Lawrence Berkeley National Laboratory
- Los Alamos National Laboratory
- Microchip
- Micropac Industries
- Microsemi
- Moogas
- Modular Devices
- Norchip-Grumman
- ROBUST Chip Inc.
- Sisko
- Synopsys Inc.
- Texas A&M Cyclotron Institute
- Texas Instruments
- ULTRA-TEC
- Vanderbilt University/EDIE
- VERTIC Technologies
- VPI Inc.
- VPT RAD

NEW ORLEANS, LOUISIANA

Just north of the Gulf of Mexico, on the banks of the Mississippi River, the New Orleans, a 300-year-old meeting pot of cultures, sights, tastes, and sounds with something for everyone. If you're a WW2 buff, be sure to visit the National WW2 museum for an immersive experience. If you're a lover of the natural world, the Audubon Zoo and Aquarium are regularly ranked in the top ten. If history is your bag, visit the New Orleans Jazz National Historical Park, and take in a live concert, or spend a day at the Jean Lafitte National Historical Park and Preserve learning about New Orleans' very own pirate. Architecture buffs will enjoy walking through the mansions in the Garden District and exploring the Spanish-influenced architecture of the French Quarter. All are reachable by a short walk or an easy trolley or bus ride from the conference hotel.

When in New Orleans, don’t forget the food. Whether the cuisine is classic and refined Creole, its spicier rural cousin Cajun, or any of the creative fusion efforts for which New Orleans is justly famous, it is hard to get a bad meal. Take a short walk after dinner to visit the live music scene on Frenchman street, where world-class musicians play nightly, and locals take in the scene. New Orleans is the birthplace of Jazz, but you can find Latin, blues, Reggae, or some mixture of them all. Whatever you like, you can find it in New Orleans.

ADDITIONAL INFORMATION

For the latest information on the conference, including the technical program, local arrangements, hotel and travel information, and registration forms, please visit our web site at http://www.nisee.com.

President's Report

I'm writing this article on my flight back from Japan, where I had several meetings and gave a seminar. As always, I'm impressed with the different culture in Japan, about the diligent and accurate way people work there. With IEEE expanding more globally, and especially to Asia, I personally believe that Japan offers a great opportunity to host some of our conferences in the future. Maybe you have read the article “Meinung in Japan: Ski Slopes to Tropical Beaches” in the last IEEE Spectrum. It mentions that IEEE sponsored 50 meetings there in 2016, and that costs are now competitive, especially when going to smaller cities. As I have been visiting Japan for many years now, I realize that getting around has now become much easier. More and more signs, even outside of big cities, are now in English; many things including public transportation can be paid for with an integrated prepaid contactless smart card, and for the first time I got a reasonably priced prepaid Japanese SIM card for my phone, which gave me Internet everywhere. This was very handy especially for the improved Google translator App, which can now read Japanese characters through the camera and translate them in real-time into English. As you might know, there is the proposal to build the International Linear Collider (ILC) in Japan, which is a multibillion dollar project, which includes technologies in our fields of interest including accelerator physics, particle detection, radiation effects and engineering, as well as real-time computing. While this will be a large international project, many engineers and physicists from Japan will be involved. I think it’s important to bring these people into contract with IEEE, which can be best done through conferences held in their country. They will stay technically current, exchange ideas and experimental results with peers in their field and intensify international networking. They will realize the benefits of our community, become members and maybe even become active volunteers, and then in the end build a better accelerator. A similar case exists right now in China, with the planned Circular Electron-Positron Collider (CEPC). I remember the first IEEE Real-Time Conference we organized in 2009 in Beijing, China. Many students, engineers and scientists from China came to an IEEE conference for their first time. They saw
the benefits of their participation, and now have followed this conference series for many years, even outside of Asia. Many of them have become IEEE members. Getting the people building those new exciting accelerators into our community is a great opportunity we should not miss.

Several new things have happened in our society. We saw the first issue of our new journal Transactions on Radiation and Plasma Medical Sciences (TRPMS), which is co-sponsored by the Engineering in Medicine and Biology Society (EMBS). It bundles all articles with medical sciences content, which were covered previously by our TNS and TPS journals. This allows much wider exposure within the medical community, especially once it is indexed in PubMed, which will be requested as soon as possible. I would like to thank Emilio Vittori, who made all this possible.

We also have two new student branch chapters, one at the Instituto Tecnologico de Costa Rica. It is especially hard to become an IEEE member and pay the membership fees in countries where the average income is well below that of developed countries. One thing many people do not understand is that the IEEE is not a non-profit organization.* Instead, it is a membership fee structure. Applicants with an annual income below US$4,900 qualify for a 50% reduction in IEEE and society membership dues and publications. Please spread this information to your colleagues who might qualify for that.

We had our first AdCom meeting and retreat this March in St. Augustine, FL. With us were nine new AdCom members, four of them are women and five are from regions 7 and 8, which ensures we have a good diversity in regions and gender.

As a special guest, we had Relaf Sibi, 2017 IEEE Young Professionals Chair, who introduced many new ideas concerning Young Professionals to our society. A group picture has been posted to our AdCom web page at http://ieee-npss.org/adcom-info/. We had intensive discussions about future initiatives such as new instrumentation schools and common software packages for our conferences. A web site is in preparation that will act as a central place of information for our current and future conference organizers. Available conference software will be listed, together with a feature comparison and decisions on instrumentation “_paid vs free”. As host for both conference attendees and organizers. Sharing software across several of our conferences will save costs, leverage synergies and improve the user experience especially for people involved in more than one conference. Authoring Martin Grossmann as our new social media liaison will strengthen our social media outreach. Please subscribe to the IEEE NPSSfacebook page to be informed on all AdCom activities. The NPSS Wikipedia page (did you know that there is one?) has been updated to reflect recent changes such as our new journal.

An interesting new project was introduced at the last Technical Activities Board (TAB) meeting in February in New Orleans, LA. The IEEE DataPort project allows sharing of large datasets (up to 2 TB per year) to facilitate different analysis methods and to retain referenceable data for reproducible research. There exists a submission model similar to our journal, but also an open access option under the Creative Commons license. If you would like to learn more about this exciting project, please go to http://ieee-dataport.org.

It is always a great pleasure for me to see the excitement of volunteers working in our organization, not only in AdCom but also through our journals and conferences. If you are interested to contribute, for example in reviewing manuscripts or helping organize a conference, I would highly encourage you to do so independent of your experience level. Volunteers are the heart and brain that keep our society running. Looking forward to see you at an upcoming conference, maybe in Japan.

Sincerely,

Stefan Ritt, IEEE NPSS President, can be reached at the Paul Scherrer Institute, CH-5232 Villigen PSI, HWB/A145, Switzerland; Phone: +41 56 310 3728; E-mail: stefan.ritt@psi.ch.

ADCOM ACTIONS

+ CorCom moves that AdCom approve a budget of up to $4000 to support a student video competition. The competition will be advertised beginning in June 2018 in the newsletter on the web and on Facebook with contributions due 15 December 2017.

The video shall not be more than two minutes long and shall be based on the importance and relevance of NPSS to the student. For example, the video might show the relevance of specific NPSS technology to his/her work. The video copyright must be assigned to IEEE.

The Awards Committee members shall be the chairs of the Awards, Communications and Membership Committees and up to three additional members they invite.

Awards

First Prize: Up to $2500 to attend the NPSS conference of his/her choice, plus certificate

Second Prize: $125 Gift Card (for student) or $250 Gift Card (for professional) for travel to attend a conference of his/her choice, plus certificate

Third Prize: $50 Gift Card, plus certificate

SOCIETY GENERAL BUSINESS

NPSS NEWS

IEEE NPSS Secretary and Newsletter Editor

Chiara Guazzoni

The Administrative Committee of the IEEE Nuclear and Plasma Sciences Society held its first meeting of 2017 on March 18th in St. Augustine, FL. The meeting was preceded by our annual retreat, designed to address a few topics in detail and have time for strategic planning for the year, as well as by Finance and Communications committee meetings.

We were pleased to welcome our new elected members and new technical and functional committees chair at both the retreat and meeting. Stefan Ritt, our new president, has written about much of what he discussed at our meeting, but while he mentioned reduced IEEE membership for those with an equivalent US income below $70,000, he did not mention that a 50% reduction is also given for society memberships and for optional society publications. Make sure that if you fall into this category that you send a certification with your membership application.

Stefan also outlined various TAB initiatives including a few more NPSS awards and prizes are being developed including food engineering (plasma seed treatment and food sterilization) and real-time monitoring of ice and icetea.

Overall our technical committees and the conferences they sponsor are doing well. Both the Particle Accelerator Science and Technology and the Pulsed Power Science and Technology committees are new electe and have established schedules for electing their steering or executive committees members. Upcoming conferences include the Symposium on Fusion Engineering which is being held in Shanghai and the TOPS first excursion outside North America. IXOPS, NSREC, NNS/MC/RTSD will all be held in the U.S. and RT-2018 will be held in Virginia.

The MOL governing U.S. sponsored PAC conferences has been renewed and has been signed off by the PAC, CIC, APS/DPF, and IEEE/NSREC. The agreement is in effect for five years. An EPRAF working group on accelerators under Lie Miermans of SLAC has established its first meeting at IPAC 16 and will meet again at IPAC 2017 (May 14-17 2017). A schematic has also been developed for “light reviews” of NA-PAC and NA-IPAC papers to be included in a Conference Record, with a link and abstract in JACoW.

The 2016 NA-PAC held in Chicago had good technical and special sessions (Teacher’s Day, Women in Science and Engineering, student poster, Low Power Award) and the attendance was low due to U.S. government travel restrictions and low attendance from Europe and Asia.

Plans for the 2018 NA-PAC in Vancouver, May 20–25, are now well along, with venue, budget and committee in place. The overall program schedule has been decided based on space constraints.

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The 2017 NPSS awards were announced by Craig Woody who stopped in during Janet Barth’s unanticipated absence. See the AWARDS section (p. 5) for names, citations and brief biographies of the recipients.

The Finance Committee met on Thursday, March 2 to discuss a request from PPST for a CB account, the NPSS reimbursement policy, Transactions special issues for unsponsored conferences, and the distribution of NSF/NSF shop, items, among other topics. Several motions were presented to AdCom and appear below.

This is the time of year when the Communications Committee reviews its literature and decides what to use for the next two years. Membership broth banners are also being redesigned. The work is in process. We have changed our website provider to a group in IEEE IT, after Peter Clout, communications chair, and president Stefan Ritt met with them at a recent TAB meeting. Work to make new member signups electronic at our meetings in process. This will get new members onto our membership roster much more quickly and in cases where there are fees to be paid, provide a mechanism. Very exciting for those of us who work at membership tables!

Our membership committee continues to work toward increasing membership in underrepresented areas as well as improving retention of current members. If you have ideas on what helps a new member become an involved, active member, contact Sid Portillo, our membership chair, at sidportillo@unm.edu.

In his President’s Report, Stefan has commented on the Young Professionals and Chapter activities. If you are interested in helping Young Professionals as a mentor or in doing communications or resume training, contact Christoph Ilgner at Christoph.Ilgner@ sportil@unm.edu.

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The big Publications news is that our new journal, Transactions on Radiation and Plasmas Medical Sciences, has been launched and the first issue is now out. Look for it and for the E-mail with content information. EMBS is our partner in this venture.

And Nominations are open for AdCom reps from CAMPs, PPST, PSAC, RE and RF. If you have a great candidate in mind contact him or her and share the information with John Verboncoeur, our Nominations chair (and/or me). Several technical committees are also holding elections for their steering groups or ExComs.

Our liaisons have also been busy with much activity in IEEE Smart Villages, in the IEEE-USA R&D competition, and our society running. Looking forward to see you at an upcoming conference, maybe in Japan.

Sincerely,

Stefan Ritt, IEEE NPSS President, can be reached at the Paul Scherrer Institute, CH-5232 Villigen PSI, HWB/A145, Switzerland; Phone: +41 56 310 3728; E-mail: stefan.ritt@psi.ch.

Society General Business

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General Business Continued on Page 4

Secretary’s Report
Secretary’s Report

Continued from PAGE 3

NEW ADOC MEMBERS

Brendan B. Godfrey
AdCom 2020, PSAC

Brendan Godfrey has been a Visiting Senior Research Scientist at the University of Maryland since March 2010, and through the university served for two years as a half-time consultant to the Deputy Assistant Secretary of Defense for Research. In 2012 he became an Affiliate of LLNL. He retired from the Air Force early in 2010, after 21 years as an executive manager of its research programs. His assignments included Director of the Air Force Office of Scientific Research in Arlington, Virginia; Deputy Director of the 315th Human Systems Wing at Brooks City-Base, Texas; Director of Plans and Programs at the Air Force Research Laboratory at Wright-Patterson AFB; Office Director of the Armstrong Laboratory at Brooks AFB, Texas; Director of Advanced Weapons and Survivability at Phillips Laboratory; and Chief Scientist of the Air Force Weapons Laboratory, both at Kirtland AFB, New Mexico. Before that, he was Vice President and Regional Manager of Mission Research Corporation, Inertial Particle Beam Group Leader at Los Alamos National Laboratory, and a plasma scientist at Kirtland AFB. His personal research centers on computational plasma physics, intense microwave sources, and particle-beam acceleration and propagation. He is a Fellow of both IEEE and APS. He has received the Meritorious Executive Presidential Rank Award three times, among other federal recognitions. He holds a Ph.D. from Princeton University and a B.S. from the University of Minnesota.

Dr. Godfrey has been a member of the IEEE since 1976, and has served on the Plasma Science and Applications (PSAC) Executive Committee (ExCom) almost continuously since 1994, including twice as Vice-Chairperson and once as Chairperson. As Chairperson, he was an ex officio member of the Nuclear and Plasma Sciences Society (NPSS) Administrative Committee (AdCom) in 2011-2012. He has been an appointed member of AdCom in 2014 and an elected member in 2015 and again in 2017. He maintains the comprehensive NPSS Directory of Plasma Conferences. Since 2011, he has been a member of the IEEE-USA Research and Development Policy Committee (R&D PC), appointed Vice-Chair in 2014 and Chair in 2016. As an R&D PC member, he has drafted several policy statements and letters, which have been adopted by IEEE-USA. He has given talks about IEEE-USA and NPSS conferences and management meetings. He has helped to organize several plasma conferences and has served on a number of state, university, and National Research Council advisory committees.

Brendan Godfrey can be reached by phone at +1 281-778-1517 (home) and +1 832-408-0882 (cell) (or by E-mail at brendan.godfrey@e-mail.org).

FOOD FOR THOUGHT

Earth provides enough to satisfy every man’s need, but not every man’s greed.

Malachi Gandhi

Technical Committees

COMPUTER APPLICATIONS IN NUCLEAR AND PLASMA SCIENCES

Martin Purcshke
Chair, CANPS Technical Committee

In this issue we have the third installment of the articles by student award winners from the Podrea Real-Time conference last year. Today you can read about the award-winning work by Sergio Esquembri from the Technical University of Madrid (UPM). For the past three years, Sergio has been a graduate student working in the Instrumentation and Applied Acoustics Research Group (IA2A) on image acquisition and processing systems for ITER, the magnetic confinement fusion device under construction in southern France. The group also collaborates with the Spanish Energy Research Center CEBA on several projects. Sergio and the IA2A group have built a FPGA-based data-acquisition system to capture essential parameters of the ITER tokamak. Sergio received the student award for his paper “Real-time implementation in JET of the SPND disruption predictor using MARTIS.”

Martin Purcshke, CANPS Chairman, can be reached by e-mail at purcshke@bnl.gov or by phone at +1 631-344-5244.

OUT OF SIGHT

Fanaticism consists of redoubling your efforts when you have forgotten your aim.

George Santayana

NUCLEAR MEDICAL AND IMAGING SCIENCES

Paul Marsden
NMISC Chair

As you read this newsletter the composition of the program for this year’s 2017 IEEE NSS/MIC meeting at the Hyatt Regency in Atlanta, USA is well underway. The meeting will take place from the 21st—26th October. John Aaron(biomedical Chair) along with Lars Fastelt and Matt Kugler (NMIC Program Chair and Deputy Program Chair respectively) will be working on the abstract review with the aim of producing an exciting program for this latest edition of the meeting. Further details can be found on the conference website http://www.nss-mic.org/2017/.

It is also at this time of the year when we are searching to replace five NMISC committee members by motivated volunteers to serve a three-year term starting from 1st January 2018. Self-nominations are encouraged if you are interested in serving on the NMISC please contact the NMISC Secretary Emilie Roncali emilie.roncali@ucdavis.edu.

Nominations are now being solicited for this year’s NMISC awards. The Edward J. Hoffman Medical Imaging Scientist Award is given annually to an individual in recognition of outstanding contributions to the field of medical medical imaging. The Bruce Haagae Young Investigator Medical Imaging Scientist Award is also awarded annually to a young investigator in recognition of significant and/or innovative technical contributions made early in their career. To be eligible for the Haagae award the individual must have been awarded their highest degree no more than six years prior to the date of nomination. I would like to take this opportunity to encourage all of you to nominate worthy colleagues for both these awards by the 15th of July deadline. All relevant information including the nomination form may be found on the NMISC website: http://eeesoeering.technical committees/nuclearmedicalandimagingsciences/ Please send your nominations to the NMISC Awards Chair, Dimitris Vissios Vissios.dimitris@cern.ch, using the nomination form on the website.

Paul Marsden, Chair of the NMISC, can be reached by e-mail at paul.marsden@kcl.ac.uk.

PULSED POWER SCIENCE AND TECHNOLOGY

Andreas Neuber
PPS&T Chair

The 21st Pulsed Power Conference is being held at the Hilton Metropole Hotel, in Brighton, UK, June 18th—22nd. Since its inception in 1976 in Lubbock, TX, the PPC will be held for the first time in its 50 year history outside the U.S.

The organizers are happy to announce that 450 abstracts have been received and accepted, and an exciting technical program has been developed. It may be found online here http://science-events.unl.edu/ ppst2017/program.html. Also, as has become the custom, one of the highlights of this biennial meeting is the recognition of distinguished members of our community through professional awards.

Dr. Ron Gilgenbach is the recipient of the Peter Haas Award. Dr. Gilgenbach is distinguished Professor and Chair of Nuclear Engineering and Radiological Sciences at the University of Michigan. During his 45 years in Plasma and Pulsed Power Science, most of them at the University of Michigan, he has supervised 49 graduated Ph.D. Students. Many of these students have gone on to have significant careers in pulsed power in Academia, Industry and National Laboratories. Prof. Gilgenbach has made major contributions in the areas of electron- and ion-beam generation, ion and neutral beam-driven devices, high-power microwaves, diagnostic development for pulsed-power-driven plasma environments and high-power microwaves and z-pinch physics. He has a long history of service to the IEEE and APS, and is a fellow of both.

Dr. Sergei Rulin is the recipient of this year’s Erwin Marx Award. Dr. Rulin is currently the Head of the Pulsed Power Laboratory of the Institute of Electrophysics, Russian Academy of Science, Ural Division. He is recognized for his pioneering work in the discovery of nanosecond current cutoff in silicon semiconductors at high current densities known as the SOS effect. He has enabled high repetition rate, high-power microwave generation, fast high-voltage switching and nanosecond megawatt pulse rise times (< 10ns) for large pulse power. Dr. Rulin has authored and coauthored over 150 publications and 3 inventions.

Mr. David Yanuka is the recipient of this year’s Arthur H. Guenther Pulsed Power Student Award. A student of Prof. Kraus, Mr. Yanuka is currently completing his Ph.D. research at the Technion, Israel Institute of Technology. He is recognized for his research on implosion of shock waves generated by underwater electrical explosion of wire arrays. Mr. Yanuka has published eleven coauthored journal papers with four of them as first author.

NPSS NEWS

SocietY General Business, continued

IEEE.org/npss

Susanne Kuehn
Conferences Chair

Susanne Kuehn graduated in particle physics from the University of Freiburg, Germany.

She worked on data analysis of the ATLAS experiment and silicon detector development and research for particle physics experiments. Now, she is a staff physicist at CERN, Geneva, Switzerland. It is currently the world’s largest particle accelerator lab and within the ATLAS experiment, she works on the upgrade of the silicon detectors and on R&D for future silicon detectors for particle tracking. In 2016 she was Deputy NSREC Program Chair at the NSS-MIC Symposium and for several years she has been chairing the session on the upgrade of the silicon detectors and on R&D for future silicon detectors for particle tracking. In 2016 she was Deputy NSS Program Chair at the NSS-MIC Symposium and for several years she has been chairing the session on the upgrade of the silicon detectors and on R&D for future silicon detectors for particle tracking. In 2016 she was Deputy NSS Program Chair at the NSS-MIC Symposium and for several years she has been chairing the session on the upgrade of the silicon detectors and on R&D for future silicon detectors for particle tracking.
PPS&T ELECTIONS
The Pulsed Power Science and Technology (PPST) technical committee continues the transition to an elected committee. At the time this newsletter reaches the readership, we will be in the transition period between closing the nominations on June 1st, and opening the ballots for voting on July 31st. We consider it important for the future of pulsed power that we have a solid voting turnout. Please support our excellent candidates with your vote. They are ready to volunteer their time so that we may be able to shape the future of the Pulsed Power Conference as well as other co-sponsored conferences in the upcoming years. Ballots shall be distributed to the members of the Voting Community on July 31st, 2017 to fill the four member-at-large vacancies.

The Voting Community consists of persons who are IEEE NPS members at the time of ballot distribution and who have a vested interest in Pulsed Power Science & Technology as witnessed, for instance, by past participation in the IEEE International Pulsed Power Conferences. Individuals will be elected by majority vote. The four-year terms of office of elected members at-large shall begin January 1st, 2018. In general, the PPST Committee represents the interests of the entire pulsed power community in the understanding, development and application of pulsed power to a variety of fields including but not limited to plasma physics, nuclear science, high-power RF, and life sciences. The constitution and bylaws for PPST may be found at the following link: http://ieeexplore.ieee.org/xpl/portal.jsp?aid=4024364.

RADIATION INSTRUMENTATION
The Radiation Instrumentation Steering Committee serves the interests of the community members attending the Nuclear Science Symposium and Medical Imaging Conference. Every year, five of the fifteen elected positions on the RISC are up for election for a three-year term. The experience of serving on the committee is both technically interesting and professionally fulfilling, providing an in-depth perspective on the inner workings of the conference, and giving our members a chance to work for the nuclear science instrumentation community. We are seeking candidates for this year’s five elected positions, so if you or a colleague are interested in being involved at a higher level, please contact Patrick Le Dû patrickledu@me.com at your earliest convenience. More information on RISC, its composition and its mission is available at http://ieee-npss.org/technical-committees/radiation-instrumentation/

Functional Committees

AWARDS
2017 NPS Awards

Janet Barth
IEEE NPS5 Awards Committee Chair

Each year the Awards Committee is tasked with selecting the recipients of our Society’s awards. They are for individuals who have shown outstanding dedication to the Society and who have made significant contributions to one or more of our fields. The young award recipients show strong early contributions in their technical areas or great promise in making contributions along their career paths. This is the first year that the Cleen F. Knoll Awards have been presented. We thank Gladys H. Knoll and Valentín T. Jordanov for their generous gifts to the IEEE Foundation, which make these awards for post doctoral and graduate education possible. Our congratulations to all.

MERRIT AWARD
Ravi P. Joshi

Ravi P. Joshi received the B. Tech, and M. Tech. Degrees in Electrical Engineering from the Indian Institute of Technology in 1983 and 1985, respectively, and earned the Ph.D. degree in Electrical Engineering from Arizona State University in 1989, where he joined Old Dominion University where he was a named University Professor in 2007 and an Eminent Scholar in 2010. Since 2015, he has been a full Professor at Texas Tech University. He has mentored over 60 graduate students. Dr. Joshi has been involved in research related to Pulsed Power for over 27 years, broadly encompassing modeling and simulations of charge transport, bio-electrics and biomedical applications of Pulsed Power, and various nonequilibrium phenomena involving high electric fields. The latter included breakdown under pulsed power conditions, streamer physics, simulation studies of relativistic magneto- and electro-thermal effects on explosive emission. He has used Monte Carlo methods for simulations of charge transport in solids, liquids, gases, and plasmas; physics including calculations of transport coefficients to test the accuracy of cross-sections; and electron transport in bio-molecular liquids. More recently he has begun to use atomistic Molecular Dynamics techniques to probe field-driven interaction phenomena at surfaces, including cell membrane penetration and miasma-ejection phenomena over ultrashort time scales at nanowires. Dr. Joshi has authored over 350 articles, including 165 refereed journal publications, and has given over 25 invited talks. He has been a visiting scientist at Oak Ridge National Laboratory, Philips Laboratory, Motorola, and NASA Goddard. He served as a Guest Editor for the special issues of the IEEE Transactions on Plasma Science in 2003, 2007, 2009, 2011, and 2014 and has been a reviewer for 30 international peer-reviewed journals. In 2009, he was selected to IEEE Fellow. In 2014, he became a Fellow of the Institute of Physics, the Institution of Engineering and Technology, and the Institution of Electronics and Telecommunication Engineers. To date, his publications have over 6,000 citations, with an h-index of 42 and i10-index of 114. Dr. Joshi has served as reviewer for the Air Force Office of Scientific Research, National Science Foundation, NSF (US), Israel Science Foundation, Agencie Nationale Recherche (France’s National Research Agency), and the Czech Science Foundation. He was part of the organizing committee of the 2010 IEEE International Conference on Plasma Science, Chair of the Publications and Publicity Committee for IEEE Conference on Electrical Insulation and Dielectric Phenomena in 2007 and 2008, and has served as an IEEE Distinguished Lecturer since 2014. He holds one patent.

Dr. Ravi P. Joshi received the B. Tech, and M. Tech. Degrees in Electrical Engineering from Arizona State University in

THAT EXPLAINS IT!
A Democrat sees the glass of water as half full. A Republican looks at the same glass and wonders who the hell drank half his glass of water.

US POOR LEMMINGS
These people prefer to lead … are simply the fastest runners and the loudest squeakers of the herd which is rushing blindly down to its destruction.

Thomas Henry Huxley

Citation: For significant and sustained contributions to bioelectronics and physics-based understanding of high field phenomena in pulsed power applications.

RICHARD F. SHEA DISTINGUISHED MEMBER AWARD
Ronald M. Keyser

Ron Keyser received his B.S., M.S., and Ph.D. degrees in Nuclear Physics and Mathematics from the University of Florida in 1965, 1967, and 1970, respectively. Later, he took additional course work in internal dosimetry and technical management. In 1971, he joined ORTEC in Oak Ridge, TN as the High Energy Physics Product Manager. He continued at ORTEC for over 40 years in a variety of positions, including software developer for embedded systems and spectroscopy data collection, Applications Lab Director, Software Development Manager, and ECR PET control and data collection software developer. He managed the development of software for more than 25 commercial products and wrote the operating manuals and was the major contributor to the marketing materials for those products. In the early 1990s, he concentrated on testing low-background HPGe detectors and worked on IEEE and ANSI standards for characterizing these as a member of the N42 committee. He has taught the ORTEC-sponsored Gamma-Ray Spectroscopy and SNA analysis classes for many years and developed these into interactive, computer-based training classes. In 2005, Dr. Keyser worked on testing systems to detect nuclear smuggling, using both vehicle monitoring and handheld devices, and contributed to the design of software for the ORTEC systems. He is one of the awardees on the US patent for “zero-deadtime correction” in gamma-ray spectra collection. He was elevated to IEEE Fellow in 2011. When he retired in 2012, he and his wife, Merry, formed a consulting company to continue the training and authorship of articles. Dr. Keyser has been an IEEE NPS5 volunteer for more than 30 years. He was the NPS5 Committee Chair and a member of IEEE Standards and served on the Radiation Instrumentation and Nuclear Medical and Imaging Sciences steering committees. For most years from 2000 to 2017, he served as the Chair the Industrial Exhibit of the Nuclear Science Symposium (SNSS) and Medical Imaging Conference (MIC), increasing the number of companies from about 35 to over 80. He also served as the NASS/MIC General Chair in 2010 and the Conference Treasurer in 2008 and 2011. From 2011 through 2014, he was the NPS5 Treasurer and is currently serving as the Assistant Treasurer. Throughout his years of service to the NPS5, he successfully promoted increased support for students to attend the NSS/MIC. Dr. Keyser is a member of IEEE (Life Fellow) and a member of the American Physical Society, Sigma Xi, ANS (N42), and past member of the American Nuclear Society and the Institute of Nuclear Materials Management. He and Merry have two children and three grandchildren and enjoy travelling, both for the IEEE and to visit family.

Citation: For outstanding contributions and leadership to the Nuclear and Plasma Sciences Society and IEEE as NPS5 Treasurer, and for further contributions to the Radiation Instrumentation Technical Committee and NSS/MIC conference over many years.

EARLY ACHIEVEMENT AWARD
Chao Chang

Chao Chang received B. Eng. and Ph. D. degrees from Tsinghua University, Beijing in 2006 and in 2010, respectively. He was a Research Associate at the SLAC National Accelerator Laboratory and Stanford University from 2011 to 2013. Presently, he is full professor at the Xian Jiao Tong University, Xian, China. He proposed and developed methods of multipactor suppression on windows and in dielectric-loaded accelerators and proposed a high-gain optical undulator for a free-electron laser (FEL). As the first and corresponding author, he has published more than 40 peer-reviewed journal papers and has authored 15 patents for his inventions. He received the IEEE Outstanding Student in Plasma Science Award in 2011 and was elevated to IEEE Senior Member in 2016.

Citation: For contributions to optical and electromagnetic undulators, in free electron lasers, and for studies of microwave window breakdowns, multipactor suppression on windows, and in dielectric-loaded accelerators, and high-power microwave devices.

FUNCTIONAL COMMITTEES
Continued on PAGE 6
**Dr. Alex Friedman** received his B.S. and Ph.D. degrees in Engineering Physics and Applied Physics, respectively, from Cornell University. After post-doctoral research with Professor Ned Birdsall at UC Berkeley from 1978 through 1980, he joined the staff of Lawrence Livermore National Laboratory (LLNL) where he has held research and leadership positions. He has also been an active Affiliate at Lawrence Berkeley National Laboratory (LBNL) for over twenty years. His career has included work on laser-inerted fusion, heavy-ion driven inertial fusion, magnetically confined fusion, plasma physics, accelerator physics, computer simulation, numerical analysis, and other topics. He is known for the invention and development of simulation methods for plasmas and particle beams and was the originator of the open-source particle-in-cell simulation code Warp, which incorporates a number of advanced methods. Following in Ned Birdsall's tradition, he has promoted the use of interactive and user-interactive simulations. From 1998 through 2015, he was the Theory and Simulations Group Leader for the Heavy Ion Fusion Science Virtual National Laboratory, a collaboration of LLNL, LBNL, and the Princeton Plasma Physics Laboratory (PPPL). He is currently serving as LLNL's Fusion Energy Sciences Program's Associate Program Leader for Simulations and Theory (primarily magnetic fusion). Dr. Friedman is a Fellow of the American Physical Society and a recipient of the LLNL Physics Department's Distinguished Achievement Award. He served as Associate Editor of the Journal of Computational Physics from 2003 through 2009. He has mentored a series of students and postdoctoral fellows, including co-mentoring with Ned Birdsall after moving to LLNL, and has authored or coauthored over 350 publications and reports.

**Citation:** For contributions to the science and practice of computational physics, including the development of novel methods and effective computer codes, and their application to fusion plasmas and particle beams.

**GLENN F. KNOLL GRADUATE EDUCATIONAL GRANT**

Audrey Corbeil Therrien

Audrey Corbeil Therrien completed her B.App. Sc. and her MApp.Sc. in Electrical Engineering at the University of British Columbia, Canada, in 2010 and 2013, respectively. As a student, she received the Leonardo da Vinci Medal, the highest distinction given by the Engineering Faculty. She is currently pursuing a Ph.D. degree in Electrical Engineering under the supervision of Prof. Jean-François Plante. Her research interests include the simulation and optimization of radiation detectors based on single-photon avalanche diodes (SPADs). In particular, she studied positive emission tomography detectors to determine the feasibility of achieving a time resolution of 10 ps. Most notably, she created a simulator to help in the design of SPAD-based detectors and readout electronics which is now available for everyone to use. Therrien was awarded the Paul Phelps Continuing Education grant to attend the 2011 IEEE Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC) and has won three prizes for student paper competitions, including best paper in the 2016 MIC student paper competition. In addition to her academic pursuits, she is strongly involved in promoting Science, Technology, Engineering and Mathematics (STEM) careers with local youth and is a member of the Conference Information and Promotion (CIP) committee for the NSS/MIC.

**Audrey Corbeil Therrien Glenn F. Knoll Graduate Education Grant Recipient**

Sabahattin C. Yurt

Sabahattin C. Yurt received the B.S. degree in electrical and electronic engineering from Istanbul University, Istanbul, Turkey and the M.S. degree in electrical engineering from Istanbul Technical University, Istanbul, Turkey. He is currently completing his Ph.D. degree under the supervision of Professor Edl Schamiloglu at the University of New Mexico, Albuquerque, NM. His current research interests include high power microwave devices, microwave generation, metamaterials, periodic structures, BWOs, traveling wave tubes, and various microwave applications. He has accepted a position with Intel Corporation in Chandler, AZ beginning in the summer of 2017.

**Sabahattin C. Yurt 2017 Graduate Scholarship Award**

**RADITION INSTRUMENTATION AWARDS: CALL FOR NOMINATIONS**

In the March issue of the Newsletter you had the chance to read a report on the 2016 activities of the RISC Honors and Awards Subcommittee and on the RISC award ceremony held on October 31st, 2016 during the opening session of the 2016 IEEE Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC) in Atlanta. The call is available for everyone to use. Therrien was awarded the Paul Phelps Continuing Education grant to attend the 2011 IEEE Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC) and has won three prizes for student paper competitions, including best paper in the 2016 MIC student paper competition. In addition to her academic pursuits, she is strongly involved in promoting Science, Technology, Engineering and Mathematics (STEM) careers with local youth and is a member of the Conference Information and Promotion (CIP) committee for the NSS/MIC.

**GLENN F. KNOLL POSTDOCTORAL EDUCATIONAL GRANT**

Patricia Schuster

Patricia Schuster 2017 Glenn F. Knoll Postdoctoral Education Grant Recipient

Dr. Patricia Schuster is a Postdoctoral Fellow in the University of Michigan Nuclear Engineering and Radiological Sciences department. She completed her Ph.D. at the University of California, Berkeley, where she studied radiation-detection materials and instrumentation for a broad range of nuclear security applications. Her dissertation research was performed at Sandia National Laboratories in Livermore, CA through the Nuclear Science and Security Consortium. She has also studied nuclear security policy, including work on cross-domain determinants as implemented historically by U.S. policy makers. Dr. Schuster’s primary technical interests include the materials science and basic physics of neutron detectors, including organic scintillator materials. She also works on applications in arms control, nonproliferation, and emergency response. She uses her Knoll Grant funds for the development of a radiation imaging system for arms control treaty verification.

**Amanda Loveless 2017 Graduate Scholarship Award**

Amanda Loveless is a graduate student in the School of Nuclear Engineering at Purdue University, where she is advised by Dr. Allen Garner, Assistant Professor of Nuclear Engineering. This award is in recognition of her work in theoretical modeling of electrical breakdown in gases in microscale gaps. She performed a matched asymptotic analysis of a model unifying field emission with Townsend avalanche that matched simulation and experimental results across a wide range of gap distances and pressures while quantitatively and analytically demonstrating the transition from field emission to the classical Pierce law. Her work demonstrates the fundamental physics in small-scale devices that will aid researchers interested in either generating microplasmas or avoiding breakdown in micro- and nanoelectronics. Loveless’ research is supported by a Junior Faculty Development Grant from the Nuclear Regulatory Commission. She also received the 2016-2017 Otto F. and Jenny K. Kraus Scholarship and the 2016-2017 IEEE Dielectrics and Electrical Insulation Society Fellowship for her proposal on modeling RF breakdown.

**Nuclear engineering** is based on fundamental principles of physics and mathematics that describe nuclear interactions and the transport of neutrons and gamma rays, so the chapter was determined to present a crash course in vector calculus, named Spotlight on Vector Calculus. Spotlight on Vector Calculus aims to highlight basic concepts in vector calculus useful to nuclear engineering students and physics/engineering students in general. It starts with an introduction and motivation of introducing the idea of coordinates to solve geometrical problems using the power of algebra, and ends up with different applications in physical problems governed by famous/different field equations. Spotlight on Vector Calculus aims at finding the patterns on which physical sciences are based. Familiarity with basic mathematical notions is one of its goals. The targeted audience was the students of the first, second, and third years. Engineer Hosam M. Farag, who is a senior student in the Nuclear and Radiological Engineering department and a volunteer in the chapter, was the instructor. The course took place in the Nuclear and Radiological Engineering department over five consecutive days.
This course allows students to:

- Understand the concept of a field (scalar/vector) coupled with the continuum approximation and its application in physical problems.
- Be familiar with the basic tensor notation.
- Investigate the interrelation of Linear Algebra and Vector Analysis.
- Understand different commonly used orthogonal coordinate systems and Vector Linear Transformation.
- Investigate different commonly used orthogonal coordinate systems and the applications in physical problems.
- Be familiar with the basic tensor notation.

We also managed to organize a seminar on Plasma Applications in Industry: Glenn Plasma Drying, by Dr. Ali Abdou. Professor A. Abdou received a B.S. degree in nuclear engineering from the Alexandria University, Egypt in 1992, M.S. in Nuclear Engineering in 2002, M.S. in Computational Sciences in 2003 and Ph.D. in Nuclear Engineering in 2005 all from the University of Wisconsin Madison, USA. The seminar was presented as a webinar and it lasted for two hours. The plasma-etching technology requirements in the nanotechnology era was outlined from an industrial perspective.

› Investigate different commonly used orthogonal coordinate systems and Vector Linear Transformation.

Vector Calculus class.

Hossam M. Farag, a senior at Alexandria University, lecturer in Vector Calculus course.

Deep learning fusion reactors:
Fig. 1 Representation of the coefficients used by SPAD algorithm for non-disruptive (a) and disruptive (b) discharges. The figures show wavelet transformation level 4 applied to Locked Mode signal sampled at 1 kHz in 32 sample windows updated every 2 ms. Due to the covariance among the members of the cluster, the outliers can be detected using the Mahalanobis distance. APODISE and the threshold predictor using the LM signal in Table 1.

Table 1:

<table>
<thead>
<tr>
<th>Predictor</th>
<th>False Alarms</th>
<th>Missed Alarms</th>
<th>Valid Alarms</th>
<th>Valid Alarms</th>
</tr>
</thead>
<tbody>
<tr>
<td>APODISE</td>
<td>-5%</td>
<td>13.38%</td>
<td>2.67%</td>
<td>79.15%</td>
</tr>
<tr>
<td>LM</td>
<td>10%</td>
<td>30.91%</td>
<td>3.08%</td>
<td>64.83%</td>
</tr>
</tbody>
</table>

\[ OP = \frac{D_M[k] - \mu(D_M[0,k-1])}{\sigma(D_M[0,k-1])} \]

SPAD is implemented using MARTe[4], the framework used in JET for the development of real-time applications. After its offline validation when SPAD was fed with recorded data from JET past discharges, SPAD is currently running as part of JET’s real-time systems, processing the discharge data in real-time. There is still room for improvements. One of the possible improvements is to identify the root cause of false alarms and try to reduce their number. The possibility of applying this process to other signals of the LM, together or separately, is being evaluated. We also study the possibility to dynamically determine the optimal value for the outlier factor during the discharge.

REFERENCES


