NPSS NEWS

ISSUE 1: MARCH 2015

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Pulsed Power Conference And Symposium On Fusion Engineering

Austin, Texas, May 31st–June 4th, 2015

This summer, the 20th Pulsed Power Conference (PPC) and the 26th Symposium on Fusion Engineering (SOFE) will be collocated in Austin, Texas from May 31st to June 4th. The conference committees for each of these meetings are working closely together to provide a very engaging program and overall experience and cordially invite you to participate. While PPC and SOFE are maintaining their distinct technical programs, attendees for either conference are encouraged to explore the technical programs for both PPC and SOFE. In addition, a mostly common social program for both meetings will enable cross-fertilization between these unique communities.

The venue for all aspects of both meetings is the AAA four-diamond Hilton Austin hotel located in the heart of Austin's vibrant shopping, dining and entertainment scene. All of the technical and social programs are conveniently located in the hotel's spacious function areas with direct access to the guest rooms.

The Pulsed Power General Conference Chair is Dr. Mark Crawford of Los Alamos National Laboratory. Dr. Crawford spent 12 years at The University of Texas at Austin and is excited to share the unique and vibrant style that is Austin with the larger pulsed-power community. The SOFE General Chair is Prof. JP Allain of the University of Illinois at Urbana-Champaign; it is also excited to see the fusion science and technology community visit Austin where, at the University of Texas at Austin, a rich history of magnetic fusion experimental and theoretical research has taken place and continues today with the Institute for Fusion Studies.

The goal of the two conference committees has been to develop a program that would allow both PPC and SOFE to continue their unique traditions while providing a seamless experience for attendees interested in exploring topics from both meetings. The meetings will kick-off with a welcome reception on Sunday, May 31st to be held among the very active exhibitor community. Technical programs will commence on Monday and are being organized to allow for cross-attendance including common morning and afternoon breaks and poster sessions. There will be a common banquet reception on Wednesday followed by separate conference banquets to allow for the unique traditions of each group. The technical program will wrap up on Thursday, June 4th.

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PPC SOFE 2015

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TECHNICAL PROGRAM

There are distinct technical programs for each conference. The Technical Program Chair for Pulsed Power is Prof. David Wetz of the University of Texas at Arlington and the Technical Program Chair for SOFE is Dr Mark Tillack of the University of California–San Diego. The technical chairs are currently working with a diverse set of subject matter experts to put together a comprehensive set of plenary, invited, and contributed oral presentations along with an extensive poster session program. The topics for the meetings include the following areas:

PULSED POWER CONFERENCE

- Pulsed Power Components
- Pulsed Power Systems
- Microwave Generation & Plasma Interactions
- Accelerators, Beams, & Radiation Sources
- Industrial, Commercial, & Medical Applications
- Compact & Explosive Pulsed Power
- Power Electronics

SYMPOSIUM ON FUSION ENGINEERING

- Experimental Devices
- New Device Design and Reactor Studies
- Divertors and Plasma Materials Interactions
- Targets, Chambers, Vacuum Vessels, Blankets, and Shields
- Diagnostics, Data Acquisitions, & Plasma Control Systems
- Safety and Environmental Engineering
- Materials Assembly, Fabrication, and Maintenance
- Heating and Current Drive
- Plasma Fueling, Pumping and Tritium Handing Systems
- IFE Drivers and Related Technologies
- Power Systems
- Magnet Engineering
- Electromagnetics and Electromechanics
- Project Management

Diagnostics Organizers for the 26th SOFE meeting have included new topical sessions to be in line with current emerging research areas in magnetic fusion. The new sessions include: fusion materials (including invitations to researchers in materials damage outside of fusion), talks related to concepts for a Fusion Nuclear Science Facility (FNSF), design and analysis tools for stellerator DEMO devices (a timely topic as the long-awaited W7-X at Max Planck Institute in Greifswald comes online in 2015), and innovative divertor concepts.

Abstract submission closed in early February. Authors of accepted abstracts should receive notice by the end of March to allow time to prepare for the conference and to write manuscripts for the conference proceedings.

In addition to the two conference proceedings, there is a special issue in the *IEEE Transactions on Plasma Science* for each conference. Submissions to the journal are expected to be expanded versions of the conference submissions and will be subject to the full peer review process. Deadlines for the journal submissions will be announced at the conferences.

Jean Paul Allain
Symposium on Fusion Engineering Chair

Of particular interest to authors considering submission to the IEEE TPS is that as of January 1, 2015 there will be no page charges to the authors for publication.

For our international colleagues who require a Visa for entry into the United States, a request for an invitation letter may be made on the abstract submission website when an abstract is submitted. If the abstract is accepted for presentation, a notification and letter of invitation will be sent to the authors. Apply for your Visa promptly!

SHORT COURSE

As is traditional for SOFE, a short course is being offered on the Sunday (May 31st, 2015) preceding the start of the technical program and will be held at the conference hotel. This year, the short course titled: "Fundamentals of Plasma Material Interactions and Plasma Edge Physics in Magnetic Fusion" will focus on emerging topics of PMI and its interface with the plasma edge will be taught by leading scientists in these fields. The short course is organized by Prof. Davide Curreli and Prof. Daniel Andruzcyk of the University of Illinois at Urbana-Champaign. The course has both introductory and advanced topics held over the course of one day. Graduate students and young researchers as well as scientists from academia, national labs and industry are all encouraged to register and attend the short course.

The aim of the short course is to provide a comprehensive introduction to plasma-material interactions with emphasis on fusion plasmas. This short course will address rising interest in the area of plasma-material interactions and will in part introduce the breadth and depth of the subject in areas including: plasma-surface interactions in fusion edge plasmas, plasma diagnostics for PMI and modelling of the plasma edge and materials, where the plasma/material interface plays a crucial role in materials performance and behavior. A unique aspect of this short course is to bring instructors who not only have an expertise in plasma-material interactions, but also extensive experience both in PMI experiments and atomistic/multi-scale computational PMI modeling. The course will uniquely describe the challenges of PMI experiments and computational modeling and the areas in which these two thrusts can complement each other. The course instructors include leading researchers in the areas of experimental and computational plasma-material interactions.

If you are interested in further information on this short course, please contact the organizers: Prof. Davide Curreli and Prof. Daniel Andruczyk dcurreli@illinois.edu, andruczy@illinois.edu.

SOCIAL EVENTS

Given the vibrant local neighborhood surrounding the conference venue, there are no planned evening events other than the Sunday reception and the Conference Banquets. A guide to the local activities, including the world-famous live music scene, the Texas capital, and the surrounding areas will be provided to all participants to help ensure that the trip is a memorable one.

For the companions of conference attendees, a selection of more detailed daytime tours of the unique aspects of Austin and the surrounding regions has been developed. These tours will provide an excellent introduction to the Austin region and include features like discovering the real Austin, exploring the unique history of Texas,

Dr. Mark Crawford
Pulsed-Power Conference Chair

and experiencing the Live Music Capital of the World. Companion program details can be found on the conference website.

CONFERENCE HOTEL AND AUSTIN, TEXAS

The Hilton Austin is an Austin Landmark, rising 31 floors and located directly adjacent to the convention center with commanding views of downtown Austin and LadyBird Lake. The famous 6th Street Entertainment District, Warehouse District, and 2nd Street District are all within walking distance of this downtown Austin hotel. The conference committees have negotiated a conference rate of $199/night and a block of rooms at the prevailing government rate (requires ID). The conference rate can be extended before and after the conference by up to five days, availability permitting.

Austin consistently ranks as one of America's best cities to visit according to national publications such as US News and World Report, Money Magazine, Kiplinger and Forbes. Nearly 20 million visitors come to Austin annually. Known as the Live Music Capital of the World®, Austin offers world-renowned festivals such as SXSW® and Austin City Limits Music Festival–along with more than 250 venues featuring rock, blues, jazz, hip hop, punk or Latino shows nightly. Austin's universal appeal extends well beyond music however–with outstanding dining experiences, world-class sporting events, an oasis of outdoor activities and other unique happenings found only in Austin.

MORE INFORMATION

For the latest information (abstract submission, technical program, conference and social registration forms, hotel and travel information, etc.), please visit the combined conference website at: http://www.ece.unm.edu/ppcsofe15.

2015 IEEE Nuclear and Space Radiation Effects Conference is Finalizing Technical Session Plans for Boston

The 52nd IEEE Nuclear and Space Radiation Effects Conference will be held July 13th-17th, 2015, in Boston, at the Marriott Copley Place. The General Chair is Mike Xapsos, NASA Goddard Space Flight Center. The conference will feature a Technical Program consisting of nine sessions of contributed papers (both oral and poster) that describe the latest observations and research results in radiation effects, an up-to-date Short Course offered on July 13th, a Radiation Effects Data Workshop, and an Industrial Exhibit.

TECHNICAL PROGRAM

The Technical Program Chair is Ronald Lacoe, The Aerospace Corporation. He and his technical committee will be selecting contributed papers that describe the effects of space, terrestrial, or nuclear radiation on electronic or photonic devices, circuits, sensors, materials and systems, as well as semiconductor processing technology and techniques for producing radiation-tolerant devices and integrated circuits.

The Poster Session Chair is David Hiemstra, MDA Corporation and the Data Workshop Chair is Keith Avery, Air Force Research Labs.

TECHNICAL SESSION CHAIRS

Basic Mechanisms of Radiation Effects:
Marc Gaillardin,
CEA

Dosimetry:
Michael Gordon,
IBM

Hardness Assurance:
Steve Moss,
The Aerospace Corporation

Hardening by Design:
Ethan Cannon,
The Boeing Corporation

Photonics Devices and ICs:
Cedric Virmontois,
CNES

Radiation Effects in Devices and ICs:
Ivan Sanchez Esqueda,
USC Information Sciences Institute

Single-Event Effects: Mechanisms and Modeling:
Kevin Warren,
Vanderbilt University

Single-Event Effects: Transient Characterization:
Sarah Armstrong,
NSWC Crane

Single-Event Effects: Devices and ICs:
Norbert Seifert,
Intel

Space and Terrestrial Environments:
Stuart Huston,
Atmospheric and Environmental Research, Inc.

Teresa Farris, Radiation Effects Chairman for Publicity, can be reached by E-mail at Teresa.farris@aeroflex.com

Conference Report

2014 IEEE Nuclear Science Symposium and Medical Imaging Conference with the 21st Symposium on Room-Temperature Semiconductor X-Ray and Gamma-Ray Detectors

Tony Lavietes
General Chair

The 2014 NSS/MIC was held in Seattle, Washington at the Washington State Convention Center from 9–15 November 2014. This was the first "paperless" NSS/MIC conference and this format change resulted in enormous efforts to execute the event without significant program disruption. The paperless format was one large component of the overall objective of executing–to the extent possible–an environmentally friendly conference. In fact, the committee was highly focused on not just replacing the traditional conference publications, but using technology to enhance the attendee experience through a completely redesigned website, the implementation of a multiplatform mobile app to replace all conference publications, the use of tablets for short courses, and agreements with the Convention Center to use only environmentally friendly materials–all in an effort to significantly reduce or eliminate the typically very large waste stream generated by the conference. In this, our efforts were highly successful, although we did experience a number of unexpected, mostly minor issues that were more annoyances than obstacles. The primary issues were associated with the functionality and compatibility of the mobile app, as we chose to attempt compatibility with all major OS types (maybe we were a bit too optimistic here). Early worries concerning the wireless network, particularly due to anticipated increased bandwidth requirements as a result of the mobile app, turned out to be unfounded and no issues were experienced. A number of interesting observations and suggestions have since been received from attendees and these comments, in addition to the assimilated committee experience, will be used in moving forward in preparation for the 2015 NSS/MIC (San Diego, CA).

Overall conference attendance was higher than expected (1965 registered attendees, including 30 committee members), although the additional attendees were easily accommodated within the spacious session rooms of the Convention Center. Attendance demographics were 876 from North America, 648 from Europe, 327 from Asia, and 12 from Latin America. In addition, the Industrial Exhibit included 63 exhibitors displaying their latest products and services. One significant issue affecting attendance this year was that we lost most of our registered attendees from China due to unusual difficulties in their ability to obtain U.S. Visas.

New paper review guidelines developed for the NSS/MIC and applied for the first time this year resulted in an NSS paper acceptance total that was about 10% lower than traditionally experienced. These new guidelines also eliminated duplicate submissions and required the combination of related work into single submissions. Similar actions and related results were also experienced in the MIC and RTSD programs. The result was a noticeable increase in overall conference Scientific Program quality. The NSS Program included 271 oral presentations in three parallel tracks and 372 poster presentations, the MIC Program included 117 oral presentations in two parallel tracks and 450 poster presentations, and the RTSD Program included 82 oral presentations in a single track and 75 poster presentations.

Gladys Knoll holding plaque with Ed Lampo, left and Tony Lavietes, right

During the opening session of the NSS, a special plaque was presented to Gladys Knoll to commemorate the change in the name of the highest Radiation Instrumentation community award–the Radiation Instrumentation Outstanding Achievement Award–to honor our late colleague and friend, Dr. Glenn Knoll. The award is now officially known as the Glenn F. Knoll Radiation Instrumentation Outstanding Achievement Award.

In addition to the three Scientific Programs, nine one-day Short Courses covering a broad array of topics were presented and well attended at the beginning of the conference. In addition, nine complimentary refresher courses in NSS- and MIC-related topics were held during the lunch period. Outside of the conference activities, an extensive Excursion Program provided attendees and their companions a unique and interesting variety of Seattle tours and attractions throughout the week.

Organizing a conference of this size and diversity is a tremendous challenge, and to be successful, it takes the dedicated efforts of many individuals working as a team. The additional stress and changes that I imposed by deciding on the paperless format added significantly to the complexity of executing the conference. I would like to personally thank each 2014 NSS/MIC committee member for their tireless efforts to make this conference a success.

Tony Lavietes, General Chair, can be reached by E-mail at a.lavietes@ieee.org

President's Report

John Verboncouer
NPSS President

It is a great honor to start 2015 with my inaugural NPSS Newsletter message as the new NPSS President. While my service on the Nuclear and Plasma Sciences Society Administrative Committee (AdCom) has been a brief four years, it has been a great learning experience. Thanks are due to the many people that mentored me during this period, and will continue to provide sound advice and exciting new ideas going forward. Specifically, I would like to thank Finance Committee Chair Hal Flescher, Conferences Committee Chair (and Division IV Director) Bill Moses, Communications Committee Chair Peter Clout, Secretary Albe Larsen, Treasurer Ron Keyser, Chapters and Sections Chair Steve Gold, and former Treasurer Ed Lampo. Most of all, I would like to thank my predecessor, Janet Barth, whose advice and mentoring were exemplary. I look forward to continuing the process with the 2015 AdCom.

My involvement with NPSS activities began as a student in 1987, when I had the opportunity to attend my first IEEE International Conference on Plasma Science (ICOPS) meeting. Since then I have served in various roles on technical program committees for conferences numbering well into double digits. I have been active to varying degrees in plasmas, particle accelerators, pulsed power, and fusion technology, among our diverse technical communities. I have also enjoyed lecturing in several minicourses over the years, as well as publishing in *IEEE Transactions on Plasma Science*. I have twice taken the role of guest editor for TPS. All of these activities have been very useful in learning the multifaceted approach to research and practical engineering espoused by IEEE, and I hope will provide me the basis to continue to guide NPSS. I highly recommend volunteering to help out at conferences and serving the NPSS community as a volunteer on AdCom or a technical committee, in our publications, recruiting and educational activities, and many other rewarding roles that help to make NPSS arguably the most exciting IEEE Society, one that provides leadership to the broader IEEE and to the goal of harnessing technology in service of society.

For both junior and senior researchers and practitioners, the professional networking opportunities available through IEEE are unparalleled. We are expanding our global footprint, with rapidly increasing international membership in all corners of the globe. Our publications have long been international, and our meetings have seen strong growth in international attendance even over the two decades in which I have been involved. Recently, many of our meetings have been hosted outside the U.S. with increasing frequency, and we have enjoyed the hospitality of many nations, with even more in planning. Our goal is to become a borderless organization, which facilitates the dissemination of knowledge worldwide.

Among many ongoing initiatives, we are continuing to place a high priority on delivering high quality conferences and publications. The recent Nuclear Science Symposium and Medical Imaging Conference (NSS-MIC) held 9th-15th November 2014 in Seattle, Washington USA was our first fully paperless conference. Led by Tony Lavietes, this conference successfully lights the way to the future of conferences, with dynamic technical programs supported by mobile applications able to customize schedules, interactive maps, program updates, links to abstracts, and much more. NPSS will continue to develop and refine tools for improving the delivery of information to the broad spectrum of our membership, and seek to find ways to make the information more accessible, and personalized. In addition, improvements in backend tools will also make the conference experience both more pleasant and more efficient. We look forward to your feedback on what you do and do not like in these experiences, and hope you will help us to continue to improve.

I encourage members to take advantage of the many services IEEE and NPSS offer, starting with the newly retooled NPSS website (http://ieee-npss.org/). Here, you will find information as varied as the history of the NPSS, as well as information about all the technical committees that comprise NPSS, as well as the related conferences and publications. For those who are not yet members, by all means take a careful look at both the benefits of membership, as well as the rewards of volunteer service that makes it all possible. There are opportunities for education, job resources, news items, and of course archives of the NPSS Newsletter. We look forward to hearing from you, seeing you at conferences, and reading about your latest work in the journals.

John Verboncoeur, IEEE NPSS President, can be reached at College of Engineering, Electrical and Computer Engineering, Michigan State University, 3410 Engineering Bldg, 428 S. Shaw Lane, East Lansing, MI 48824-1226; Phone +1 517 355-5133; E-mail: johnv@msu.edu.

THE AMERICAN WAY??

I can't believe we still have the Miss America pageant. This is America! Where we're not supposed to judge people based on how they look; we're supposed to judge people based on how much money they make.

Heidi Joyce

AND DOES!

A government that is big enough and powerful enough to give you everything you want is a government that is big enough and powerful enough to take everything you have.

Gerald Ford

LOTS OF RECENT EVIDENCE

In time of peace, the war party insists on making preparation for war. As soon as prepared for war, it insists on making war.

Robert La Follette Sr.

NUCLEAR & PLASMA SCIENCES SOCIETY NEWS

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SOCIETY GENERAL BUSINESS Continued on **PAGE 4**

SECRETARY'S REPORT

Albe Larsen
IEEE NPSS Secretary and Newsletter Editor

The NPSS AdCom held its annual meeting on Saturday, November 15, 2014 at the Washington State Convention Center in Seattle, WA, at the conclusion of the highly successful NSS/MIC held together with the Symposium on Real-Time Semiconductor X-ray and Gamma-ray Detectors.

President Janet Barth noted that this was her last meeting as president. TAB does not meet until the week following this AdCom meeting so there is little to report. Bob Hebner's strategic planning committee has shown that with the changes in publications, and more emphasis on Open Access, especially, IEEE will see a drop in publication revenue. An increase is needed in income-producing webinars and other educational activities. It is important, however, to use best practices and to support students and young professionals.

Discussions continue concerning conference record and Transactions publications. The June TAB meeting rejected PSPB proposals to limit similar publications in both.

A proposal is going forward for a new NPSS journal, so watch the Newsletter for more information!

Also, if you haven't already, check out the redesigned web site.

Our treasurer, Ron Keyser, noted that our conferences performed a bit better than expected and the publications not as well, but we are still in a strong fiscal position. IEEE also granted a request made after the July AdCom meeting to use reserve funds to support the IEEE Foundation's signature SMART VILLAGE (formerly Community Solutions Initiative) program.

Tools are being developed or improved to track conference budgets, expenses and closings a suite of tools that includes ICX for initial conference budgets and NetSuite for data on daily operations and expenses as well as conference closings are in use, and CyberSense, initiated by Tony Lavietes of NPSS are part of this suite.

Conference attendance has been unpredictable, with U.S. attendance at international conferences severely impacted by the cut in Federal travel funds and sequestration, and attendance at U.S. conferences, especially for Chinese scientists, has been lowered because of increased difficulty in obtaining Visas, even when applications are made months in advance.

Ron is working with Sal Portillo and IEEE Member Services to develop an online form that will allow online membership signup at our membership tables to reduce the backroom work that has been necessary to process these applications. We hope to see this launched in early 2015!

For our publications, it looks as if TNS will come close to its page count projection and TPS will exceed the projection with the view that losing the page count bonus is far preferable to delaying paper publication.

TECHNICAL COMMITTEES

Computer Applications in Nuclear and Plasma Sciences chair Martin Purschke notes that the date and venue for the 2016 Real Time conference have been set: Paova, Italy, 6th to 10th June, with Adriano Lucchetti as Chair. Adriano is a past Real Time award recipient. The MOU is signed and the committee is in place.

Fusion Technology chair JP Allain, noted that the 2015 conference, in Austin, TX is collocated with the 2015 Pulsed Power conference. See the lead article for details. Their next conference, in 2017, may be hosted in China.

Radiation Instrumentation chair Tony Lavietes, was also chair of the 2014 NSS/MIC, provides details of the NSS/MIC in his summary report (p.3). Tony noted the new members of the Radiation Instrumentation technical committee and announced that Paul Lecoq is the newly elected AdCom member. See Paul's bio below.

Nuclear Medical and Imaging Sciences chair Dimitris Visvikis, noted the new members of his technical committee. For the 2016 NSS/MIC in Strasbourg, Fr, Dimitris will be the MIC program chair, with Suleman Surti as deputy.

Particle Accelerator Science and Technology chair Stan Schriber, was unable to attend so Bob Zwaska, the elected AdCom member from PAST, reported on the big changes to PAST which has become an elected Technical Committee and which had its first elections this last summer. Steven Gourlay takes over as the TC chair in January 2015 and Stephen Milton becomes the elected AdCom member. The structure of the TC subcommittees is being worked on.

IPAC15, to be held in Richmond, VA , will be the 50th anniversary of the PAC series of conferences, and is also the 25th anniversary of the American Physical Society Division of Plasmas and Beams. Since NPSS and APS-DPB cosponsor IPAC when held in North America the two groups will plan a number of special events and there will also be a special conference issue of the *IEEE Transactions on Nuclear Science*.

Future NA-PAC and IPAC meetings are in the planning stages, with NA-PAC 2016 planned for Chicago. Because of continued travel restrictions it is expected that future NA-PACs will only have of order 500 attendees and IPACS about 1,000 attendees.

Plasma Science and Application chair Rickey Faehl noted that Brendan Godfrey has been elected to fill a vacancy on AdCom through 2016 when he is then eligible to run for a full AdCom term.

ICOPS meetings have been scheduled through 2021, with a PPST conference (joint pulsed power plasma science) scheduled for 2019 in Orlando, FL.

Pulsed Power Science and Technology chair, Juergen Kolb, reported that the PPST committee had met in Austin, TX on Thursday before our meeting. The committee has added some new members and made some new appointments. The committee has approved becoming an elected technical committee and the elected members will be phased in over several years.

Read the opening story for news of the 2015 Pulsed Power/Fusion Engineering conference. The 2017 Pulsed Power conference will be held in Great Britain.

Radiation Effects chair, Marty Shaneyfelt, reported on the successful 2015 Nuclear and Space Radiation Effects conference held in Paris in mid-July. This was the first NSREc held outside North America. There were over 800 total participants, with a record number of summaries submitted and papers presented, and a sold out exhibition with 51 exhibitors represented.

The 2015 conference will be at the Marriott Copley Place in Boston. Plans are in place for a strong technical meeting, along with a social program that enables exploring the exciting Boston area. Mike Xapsos will be general chair. Meeting chairs and venues have been selected through 2018.

FUNCTIONAL COMMITTEES

Conferences chair, Bill Moses, who is completing his term as IEEE Conference Chair, reported that the issue of publication in conference records vs. publication in Transactions is going to the Board of Directors with a vote of approval from TAB. If passed by the BoD, for papers to be considered for Transactions, they must be significantly different from a similar paper published in a conference record. There are 'fuzzy language" issues to be rectified before policy becomes effective, most likely by late 2015.

Plagiarism checks will be mandated as of 2016 for all conference and Transactions papers. It is funded through 2016. Costs after that have to be determined and if the societies/conferences are to pay for CrossCheck then figures need to be available for budgeting purposes.

NetSuite is now mandatory for all conference treasurers. CVent is a new tool for conference registration, and RegOnline is a tool that can be used for small conferences.

There will be charges for technically cosponsored conferences and for each paper from a technically cosponsored conference entered into Xplore. Technical committees will have to decide the value of each technically cosponsored conference in deciding who pays for what.

Awards chair, Craig Woody, also the chair of the IEEE Awards Committee, noted that the new Awards page is up on our web site. Check it out. Also note our two new awards–the Jaszczak and Birdsall prizes to be granted for the first time.

The 2014 Curie Award was presented to Malcolm H. Hudson, Brian F. Hutton and Lawrence Shepp "for developing maximum-likelihood image reconstruction in emission tomography leading to is widespread and effective use in healthcare." The 2015 Curie award will be presented to Noah Hershkowitz "for innovative research and inspiring education in basic and applied plasma science."

The Phelps Travel Grant increase has been approved by TABARC.

Membership chair, Sal Portillo, notes we need better ways to get our message out–better use of social media, better use of personal stories in multiple languages. Focus needs to be on South America and Asia, and more emphasis needs to be given to enrolling students.

Chapters chair, Steve Gold, has submitted a comprehensive note for this issue. See it below under the FUNCTIONAL COMMITTEES report section.

Distinguished Lecturers chair, Dan Fleetwood, notes that the Distinguished Lecturers information on the new web site is better organized and more accessible. About 25 lectures were given by early November. Have a chapter or student chapter? Use the Distinguished Lecturers program to bring fantastic speakers to your community!

Fellow Candidate Evaluation chair, Jane Lehr, reports that the 2015 Class of Fellows will be announced in late November after the next IEEE Board of Directors meeting. See below under AWARDS for the bios of some of our new NPSS Fellows.

Nominations for Class of 2016 Fellows were due March 1, 2015. Surely you know an outstanding researcher, practitioner, technical leader, educator in your field who is worthy of becoming an IEEE Fellow. Check out the application form. Well-prepared nominations take time, so, it isn't too early to start to think about 2017.

Finance Committee chair, Harold Flescher, introduced several motions that arose from the Finance Committee meeting on November 14th. See AdCom Actions below for these motions.

Nominations Committee chair, Gerald Cooperstein, commented on the excellent help of Mary Curtis in managing our AdCom and elected technical committee elections. Nominations for new AdCom members and for elected technical committees will be submitted in early summer. Watch for the June newsletter and for the ballot, but if you are interested in serving in one of these roles, contact your TC chair (see the back cover).

Publications chair, Paul Dressendorfer, noted that we comply with IEEE requirements for such things as time to first decision on papers and time to publication.

TPS has introduced a monthly Eblast with highlighted papers and links to the web. The plagiarism check is fully implemented. They are revising the questionnaires used by reviewers. They also recommend attending a workshop on writing and reviewing manuscripts such as the one NSS/MIC periodically offers.

Communications Committee chair, Peter Clout, reminded us that 2015 is the year for new literature AND that our conferences start fairly early in the year so he needs input and fabulous photos. Also, the web site needs to be kept up to date. If you see TC information that is out-of-date, contact your TC chair to initiate an update.

Remember we also are on FaceBook. Send information for FaceBook to Stefan Ritt: Stefan.ritt@psi.ch.

Young Professionals chair, Christoph Ilgner, noted that about 850 NPSS members fall into the Young Professionals category–those within 15 years of completing their first degree. Of these about 15.5% are women, compared with about 9.5% for the whole of IEEE.

Transnational Committee chair, Patrick Le Du, noted that in 2015 the TNC will be involved with ANIMMA (Portugal), ICOPS (Turkey),PET/SPECT (Elba) and RADECS (Moscow).

LIAISON REPORTS

Ray Larsen, liaison to **SSIT, SIGHT, HHTC and IEEE Smart Village**, noted that this is now an IEEE Foundation signature program and considerable effort will be devoted to fundraisding to reach the goal of at least ten new start-ups a year. Active projects in Haiti, Cameroon, Kenya, Nigeria and South Sudan continue to grow and work will hopefully begin once funding is secured, in Malawi, DR Congo, Namibia, Zambia and India.

In Sandra Biedron's absence, Brendan Godfrey reported on the many activities of the **IEEE-USA R&D Policy** committee. Activities include manufacturing and innovation legislation, a revised advocacy position for fundamental R&D, emphasis on the important role that engineering and physical sciences contribute to growth of the GDP and the need to receive better, more balanced support to continue that contribution to economic growth. All of us, wherever we are from, need to engage with our governments to educate them about the importance of our contributions.

Peter Clout, **ICALEPCS** liaison, noted that we have had no contact from them. Their next meeting, in 2015, is in Melbourne, Australia. At this point we do not plan to technically cosponsor the conference, nor do we plan to send anyone to do a membership drive as we have at past conferences.

Randy Brill liaison to the **IEEE-USA Medical Sciences** committee, suggests discontinuing this liaison position and developing a relationship with the National Council on Radiation Protection and Measurement, which aligns more closely with NPSS interests.

Allan Johnston, liaison to Women in Engineering, reiterated the role of the liaison, with a particular mission in NPSS to foster WIE events at our conferences. In 2014 both NSREC and NSS/MIC had good events.

Michael King and Suleman Surti, our new **TMI liaisons**, noted that Michael Insana of the University of Illinois will become the new Editor-in-Chief. The new Scientific Advisory Committee has a number of members from the NMISC and RI communities, and there is also a new Associate Editor from our community.

Edl Schamiloglu, our **Educational Activities Board** liaison remarked that there are some new training programs being launched. There is also a ten-year plan and vision to get 14–18-year olds interested in STEM. There is a quarterly newsletter, but only two of three issues had appeared. However, it is well done. There will also be an increased number of on-line courses.

ADCOM ACTIONS

» It was moved and passed by voice vote (motion from PSAC) the PSAC ExCom be authorized to extend the decision process beyond the four-ballot limit stated in the PSAC Bylaws, in order to choose, from the existing slate of Candidates, a PSAC Award winner for 2015. This extended process will be conducted by a conference call before the end of Calendar Year 2014.

» It was moved by FinCom and passed (18 Y; 1 N; 2 abstain) that ICOPS 2015 and ICOPS 2016 each be allowed to pay up to $1,000/member to aid voting members of our EXCOM to attend EXCOM meetings. In future such funds may be added to ICOPS conference budgets.

» PPST moved (passed by voice vote) to revoke the perpetual MOU establishing technical cosponsorship for MEGAGAUSS conferences held outside the United States.

» FinCom moved (passed by voice vote) that NPSS fund a child-care grant program on a trial basis for all NPSS conferences in 2015. $400 per family, maximum of $2000 per conference

» The Medical Sciences Liaison moved the following:

» NPSS stop the liaison with IEEE-USA Medical Technology Policy Committee

» NPSS establish a liaison with National Council on Radiation Protection and Measurements (NCRP)

» NPSS join NCRP as a Sponsoring Society at the annual cost of $5,000.

» It was moved that TPS page charges be dropped beginning in 2015 to bring the journal in line with YNS. The motion passed.

OR ENVY…

Malice is only another name for mediocrity.

Patrick Kavanagh

E.G., IRAQ

I have always believed that there are always three courses open to the enemy-and that he usually takes the fourth.

Helmuth von Moltke

NEW AdCom OFFICERS and MEMBERS

John P. Verboncoeur

John P. Verboncoeur (M'96, SM'08, F'13) received a B.S. (1986) in Engineering Science from the University of Florida, M.S. (1987) and Ph.D. (1992) in Nuclear Engineering from the University of California-Berkeley (UCB), holding the DOE Magnetic Fusion Energy Technology Fellowship. After serving as a joint postdoc at Lawrence Livermore National Laboratory and UCB in Electrical Engineering and Computer Science (EECS), he was appointed to Associate Research Engineer in UCB-EECS, and to the UCB Nuclear Engineering faculty in 2001, attaining full Professor in 2008. In 2011, he was appointed Professor of Electrical and Computer Engineering at Michigan State University. His teaching includes electromagnetics, plasma physics, neutronics, engineering analysis, and computation. His research interests are in theoretical and computational plasma physics, with a broad range of applications spanning low-temperature plasmas for lighting, thrusters and materials processing to hot plasmas for fusion, from ultra-cold plasmas to particle accelerators, from beams to pulsed power, from intense kinetic nonequilibrium plasmas to high-power microwaves. He is the author/coauthor of the MSU (formerly Berkeley) suite of particle-in-cell Monte Carlo (PIC-MC) codes, including XPDP1 and XOOPIC, used by over 1000 researchers worldwide with over 350 journal publications in the last decade.

John Verboncouer
President

He has authored/coauthored over 350 journal articles and conference papers, with about 2500 citations, and has taught 13 international workshops and mini-courses on plasma simulation. He served as the Chair of the Computational Engineering Science Program at UCB from 2001-2010. He is currently an Associate Editor for Physics of Plasmas, and has served as a guest editor and/or frequent reviewer for *IEEE Transactions on Plasma Science*, *IEEE Transactions on Electron Devices*, as well as a number of other plasma and computational journals. He has served as a Session Organizer or Technical Area Coordinator for eight IEEE International Conferences on Plasma Science and one IEEE International Power modulator and High Voltage Conference. He served as the Technical Program Co-Chair for the 2013 IEEE Pulsed Power & Plasma Science Conference. He is an active participant in many technical areas within the NPSS, and has served four years on the NPSS Administrative Committee, including two as Vice President/ President-elect..

Stefan Ritt

Stefan Ritt (M'07, SM'11) received his Ph.D. in physics (1993) from the University of Karlsruhe, Germany. After being employed at the University of Virginia in Charlottesville he went to the Paul Scherrer Institute in Switzerland, where he is now

Stefan Ritt
Vice President/President –elect

head of the muon physics group and science coordinator working on the institute's particle physics program. In addition he is technical coordinator of the MEG experiment, being responsible for the readout electronics, the DAQ hardware and software and the slow control system. He is primary author of the MIDAS DAQ system and the ELOG electronic logbook software, which are now used in many experiments worldwide. He designed and holds two patents for the DRS series of chips, which allow ultra-fast waveform digitizing in the GHz range. These chips and associated electronics boards are now used in more than 50 locations worldwide, advancing detector electronics significantly. They hold the the current world record in time resolution. He has been involved in the organization of the IEEE NPSS Real Time conference since 2003. He served as short course instructor, program co-chair and chair of the CANPS technical committee (2010-2014). He served as Associate Editor of the Transactions on Nuclear Science (2005-2009) and is a member of several NPSS award committees including the Curie Award. At the NPSS Nuclear Science Symposium he has been involved as topic convener and refresher course lecturer. He has been an NPSS Distinguished Lecturer since 2013. His most recent contribution to the Real Time and NPSS communities has been as co-organizer of the first NPSS real-time school, held in Japan in 2014. He was chosen twice as the elected member of AdCom from the CANPS community and has implemented NPSS's Facebook page.

His first goal as vice president is to ensure the continuation of the excellent management of our society. As the first vice president from Region 8, he will use his contacts in Europe and Asia to involve new volunteers especially from those regions, reflecting the growing global distribution of our members. Coming from a computer area, he seeks to establish new electronic ways of communication inside our society, such as the intensified use of social media, video conferencing for remote lectures especially for young people who cannot afford expensive intercontinental travel to conferences, and to establish new software tools across the society's conferences for a better attendee experience.

CLASS OF 2018 ELECTED ADCOM MEMBERS

Paul Lecoq

Paul Lecoq received his diploma as Engineer in Physics Instrumentation at the Ecole Polytechnique de Grenoble in 1972, under the leadership of Nobel Laureate Louis Néel. After two years of work at the Nuclear Physics laboratory of the University of Montreal, Canada, he got his Ph.D. in Nuclear Physics in 1974. Since then he has worked at CERN in five major international experiments on

Paul Lecoq
Radiation Instrumentation

particle physics, two of them led by Nobel Laureates Samuel Ting and Carlo Rubbia. His work on detector instrumentation, and particularly on heavy inorganic scintillator materials has received a strong support from Georges Charpak. He has been the technical coordinator of the electromagnetic calorimeter of the CMS experiment at CERN, which played an important role in the discovery of the Higgs boson.

Paul Lecoq is the founder of the CERN-based international Crystal Clear collaboration regrouping 28 institutes and companies worldwide contributing to the development of scintillator science. He also created the SCINT conference series in 1991, which gathers every second year the international community working on fundamental aspects, production technologies and applications of scintillators.

Member of a number of advisory committees and of international Societies he is since 2002 the promoter of the CERIMED.NET initiative (European Center for Research in Medical Imaging) for networking physics and medicine in the field of medical imaging.

In 2008 he was elected to the European Academy of Sciences. He was awarded an ERC advanced grant in 2013 by the European Research Council.

Steve McClure

Steve McClure received his B.S. in Physics from the California Polytechnic State University, San Luis Obispo, and did his graduate work in nuclear physics the Department of Applied Science, UC Davis/Lawrence Livermore National Laboratory. He joined the Jet Propulsion Laboratory in 2000. He is presently the Radiation Control Manager

Steven McClure
Radiation Effects

for the Europa Clipper pre-project. Prior to this he was the Technical Group Supervisor of the Radiation Effects Group at JPL. He has been the lead radiation effects engineer and electronic parts manager for several JPL projects including the Jupiter Icy Moons Orbiter, Phoenix Lander, and Grace Follow-on. Further, he has been the task manager for Radiation Mitigation for the Europa Jupiter System Mission, and is presently the task manager for the JPL NASA Electronic Parts and Packaging (NEPP) Radiation Effects task. The focus of his goals for NPSS are to support and foster diversity in NPSS membership, participation and conference attendance, internationally, across government agencies, universities, and industry; and to maintain the technical quality of NPSS conferences and their relevance to the present day and future challenges and opportunities in our industry.

CATCH 22

Manners are what is left when serious issues of human relations are removed from consideration, yet without manners serious human relations are impossible.

Mark Caldwell

OR TODAY'S DATA IS TOMORROW'S BACKGROUND

The altar cloth of one aeon is the doormat of the next.

Mark Twain

NEW ADCOM CONTINUED Continued on **PAGE 6**

NEW AdCom OFFICERS and MEMBERS Continued from **PAGE 5**

Steven Meikle

Steven Meikle (M'96-SM-'00) is the Professor of Medical Imaging Physics at the University of Sydney and Head of the Imaging Physics Laboratory at the Brain and Mind Research Institute (BMRI). He received his Ph.D. from the Graduate School of Biomedical Engineering, University of New South Wales in 1995. He was a medical physicist at Royal Prince Alfred Hospital in Sydney from 1987-2004, a visiting research associate at the Division of Nuclear Medicine and Biophysics, UCLA School of Medicine from 1991-2 and a post doctoral research scientist at the MRC Cyclotron Unit in London from 1995-6, before joining the University of Sydney in 2004. He is best known for his contributions to the development of quantitative emission computed tomography and small animal imaging. He has published seven book chapters and 180 research papers which have attracted more than 3,600 citations (h-index 33). He has served on the Nuclear

Steven Meikle
Nuclear Medical and Imaging Sciences

Medical and Imaging Sciences Council (secretary and chair of awards subcommittee 2004-9) and the Radiation Instrumentation Steering Committee, organized IEEE short courses and workshops and was Deputy General Chair of the 2013 Nuclear Science Symposium, Medical Imaging Conference and 20th International Workshop on Room Temperature Semiconductor Detectors. He is a senior member of the IEEE, a fellow of the Australian Institute of Physics and an Editorial Board member of Physics in Medicine and Biology.

Stephen V. Milton

Stephen V. Milton's recent interest includes making accelerator and beam systems more efficient and more compact. Milton received a bachelor's degree in physics from the University of California-Davis and a Ph.D. in physics from Cornell University. Prior to joining Colorado State, Milton was the director of the 155M Euro FERMI@Elettra Free-Electron Laser project in Italy, during which time he concurrently served as a senior scientist at Argonne National

Stephen V. Milton
Particle Accelerator Science and Technology

Laboratory. Before taking on the FERMI director role, Milton led the design, engineering, and construction of the $55 million magnetic device undulator line for the Linac Coherent Light Source, the world's first X-ray FEL, at SLAC National Accelerator Laboratory. Milton also led the Argonne FEL, also known as the Low Energy Undulator Test Line, the world's first Self-Amplified Spontaneous Emission FEL to achieve saturation at visible through ultraviolet wavelengths. He is a Fellow of the American Physics Society, a Senior member of the IEEE, and the 2003 IEEE NPSS Particle Accelerator and Technology Prize recipient.

NEW COMMITTEE CHAIRS

Steve Gourlay

Steve Gourlay is a Senior Staff Scientist at the Lawrence Berkeley National Laboratory (LBNL) in the Accelerator and Fusion Research Division (AFRD). He joined Fermilab in 1985 after receiving a Ph.D. in high energy physics from the University of California, Davis. In 1988 he joined Fermilab as project physicist for the Low Beta Project where he was in charge of constructing the interaction region quadrupoles for the Tevatron and worked on the development of dipoles for the SSC. In 1995 he led the Superconducting Magnet Group at Fermilab, working on the development of IR quadrupoles for the Large Hadron Collider. After a year as a Scientific Associate at CERN he moved to LBNL

Steve Gourlay
Particle Accelerator Science and Technology

in 1997. From 2001 until 2005 he was head of the Superconducting Magnet Group, developing high field Nb_3Sn dipoles for future accelerators and headed the magnet activities of the LHC Accelerator Research Program. From 2006–2014 he was director of AFRD and has recently returned to head the Superconducting Magnet Group. He is a member of the IEEE Council on Superconductivity and was a Distinguished Lecturer in 2006. He is on the Board of Directors of the Applied Superconductivity Conference and was Conference chair in 2012. He also chaired the 2013 North American Particle Accelerator Conference and is a Fellow of the APS.

Patrick Le Dû

Patrick Le Dû is the Senior Scientific Advisor, Institut National de Physique Nucleaire et de Physique des Particules, France, responsible for promoting multidisciplinary actions at IN2P3-CNRS, Lyon, France (Institut National de Physique Nucleaire et de Physique des Particules), and was a senior experimental physicist at the French Atomic Energy Commission (CEA) from 1969 to 2007. He received his Ph.D. in 1973. He was involved as

Patrick Le Dû
Radiation Instrumentation

a CEA-Saclay group leader in many High Energy Physics particle accelerator experiments at CERN (PS, SPS-NA3, LEP-OPAL, LHC-ATLAS,,SSC(SDC) and FNAL-Tevatron (DO). He is an expert in instrumentation for large experimental systems, including wire chambers (MWPC), photodetectors and timing detectors (TOF), and read-out electronics (Trigger and Data Acquisition). Since 2002, he has been a Scientific Advisor to CEA and IN2P3 for technology transfer between fundamental physics instrumentation and biomedical imaging. He has chaired many multidisciplinary conferences and workshops, including the IEEE NPSS Real Time 1997 Beaune Conference, and was General Chair of the first non-North American IEEE NSS-MIC in 2000 in Lyon. He is an elected member of the Administrative Committee (AdCom) of the IEEE Nuclear and Plasma Physics Sciences Society (NPSS) as elected chair of the Transnational Committee Chair (2012-2014) and now is the elected Chair of the Radiation Instrumentation Steering Committee (RISC). He is also the deputy chair of the 2016 NSS-MIC conference in Strasbourg France.

Christian Bohm

I have been Professor in Instrumentation Physics at Stockholm University since 1987. My main areas of interest have been developing PET and instrumentation for particle physics. During the

Christian Bohm
Transnational Committee Chair

late 1970s and the early 1980s I was involved in developing the first Swedish PET cameras, commercialized by the Swedish company Scanditronix, who later transferred their production line to General Electric. Since then I have been involved in many instrumentation projects but the emphasis has been on developing ATLAS electronics at CERN.

I have participated in the NSS/MIC conferences since 1972, was the MIC deputy program chairman in Lyon 2000 and chairman of the local organization of IEEE Real Time in Stockholm 2005. I have continued being involved in the organization of Real Time conferences and was the elected CANPS representative at NPSS ADCOM between 2010 and 2013.

As interim Chair of our Transnational Committee for 2015 I will study the charge of the committee together with the former chairman, Patrick Le Dû, to see whether it needs to be modified. One reason for this could be that one of the committee's main goals has been achieved, i.e. increasing the non-American representation in AdCom. However, although the representation in Europe and Asia has greatly improved there are other areas which need better representation.

Don Schiffler's bio and photo will appear in the June 2015 newsletter.

SO WHY PSYCHOLOGISTS?
Man's greatest asset is the unsettled mind.
Isaac Asimov

TECHNICAL COMMITTEES

COMPUTER APPLICATIONS IN NUCLEAR AND PLASMA SCIENCES

Martin Purschke
CANPS Chair

Last year's Real Time Conference in Nara, Japan, featured student awards that were given to four students out of a competitive field of about 30 outstanding contributions. The award committee consisted of experienced referees, Christian Bohm from the University of Stockholm (chair), Patrick Le Dû (IN2P3-CNRS), Michael Levine (BNL), Jin-Yuan Wu (FNAL), Pierre-André Amaudruz (TRIUMF) and Niko Neufeld (CERN). Due to the hard work of the committee, we are able to present writeups of the award-winning research, one per issue. We started this custom with the last Newsletter, which featured the research of Marc-André Trétrault from the University of Sherbrooke, Canada. Today we showcase the research of Binxiang Qi from the State Key Laboratory of Particle Detection and Electronics, Department of Modern Physics, USTC, Hefei in China. He won the student award for his paper "A Compact PCI-Based Measurement and Control System for Satellite-Ground Quantum Communication."

Binxiang Qi was born in Qinghai, China in 1987. He received a B.S. degree in applied physics from University of Science and Technology of China (USTC) in 2010. He is currently a fifth-year Ph.D. student at the State Key Laboratory of Particle Detection and Electronics, USTC and Synergetic Innovation Center of Quantum Information and Quantum Physics, USTC. His current research interests include high-precision time measurement, high-speed data acquisition system design, and new gas detector readout electronics. He is involved several research projects, taking an important role in the design, development and testing of the electronics. He was in charge of the improvement and test of the preamplifier of the water Cherenkov detector for the Large High-Altitude Air Shower Observatory (LHAASO) in 2010. He designed a USB-based multichannel quasi-gaussian pulse generator for the test of front-end electronics for large particle physics experiments in 2011. He devoted himself to the electronics research of quantum communication from 2010 to 2013, such as a quenching circuit of avalanche photodiode for single-photon detection and a compact time measurement and control system for quantum communication. He is now very much enjoying his research about the readout methods that can reduce the readout density and the design of large high-density readout electronics system for large particle physics experiments.

Find his report towards the end of this newsletter, and stay tuned for the reports from the other award reward recipients in the upcoming issues.

Martin Purschke, Chair of CANPS, can be reached at Brookhaven National Laboratory, Upton, NY 11973; Phone: +1 631 344-5244; E-mail: purschke@bnl.gov.

NUCLEAR MEDICAL AND IMAGING SCIENCES

The 2014 IEEE NPSS Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC) was held at Washington State Convention Center in

Seattle between the 8th and the 15th of November. This was the first ever paperless IEEE NPSS conference which went very smoothly. I would like to congratulate Tony Lavietes as the Conference General Chair and his entire committee for putting this process in place and ensuring its success.

At this year's meeting we honored the work of two of our colleagues. Joel Karp from University of Pennsylvania, in Philadelphia received the Edward J. Hoffman Medical Imaging Scientist award "for contributions to fully-3D PET system design and quantitative imaging." Mathieu Hatt from the National Institute of Health and Medical Sciences in Brest, France received the Bruce Hasegawa Medical Imaging Conference Young Investigator award "for contributions to the field of medical image analysis and processing for oncology and radiotherapy applications." I extend my congratulations to both of them for their success. (See AWARDS under Functional Committees.)

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 (relevant information may be found on the NMISC website-http://ieee-npss.org/technical-committees/nuclear-medical-and-imaging-sciences/). Please send your nominations to the NMISC Awards subcommittee chair Glenn Wells (gwells@ottawaheart.ca). Also every year there are four other NPSS awards for which you can all nominate eligible candidates from our community (details on the awards and associated nomination procedures can be found in http://ieee-npss.org/awards/).

The preparations are ongoing for this year's 2015 IEEE NSS/MIC meeting in San Diego, CA, at the Town and Country Resort from the 31st Oct to 7th Nov. Vesna Sossi will be the General Chair for the meeting, with Adam Alessio and Lawrence MacDonald the MIC Program Chair and Deputy Program Chair, respectively. More details can be found on http://www.nss-mic.org/2015/NSSMain.asp.

The 2016 IEEE NSS/MIC meeting will be returning to Europe and will be held in Strasbourg, France between October 29th and November 6th. Maxim Titov will be the General Chair, with myself and Suleman Surti as the MIC Program Chair and Deputy Program Chair respectively. The first complete 2016 committee meeting was held during the recent 2014 NSS/MIC conference in Seattle.

The 2017 IEEE NSS/MIC meeting will be held in Atlanta at the Hyatt Regency hotel. The process for the 2018 IEEE NSS/MIC meeting site selection is currently ongoing with three candidates: Australia, Japan and England.

Finally I would like to encourage all of you to volunteer as candidates for being future Council members and help in serving the NMISTC membership by gaining experience in matters associated with our community as well as the running of the MIC meeting. Five individuals

Dimitris Visvikis
NMISC Chair

are elected each year for a three-year term and more detailed information can be found on the NMISC webpage (http://ieee-npss.org/technical-committees/nuclear-medical-and-imaging-sciences/). Please send your nominations (self nomination is acceptable)to Andrew Goertzen (Andrew.Goertzen@med.umanitoba.ca), the chair of the NMISC Nominations Subcommittee, before the 15th of May.

Dimitris Visvikis can be reached at the National Institute of Health and Medical Research (INSERM), UMR1101, LaTIM, CHRU Brest, Bat 1, 2 avenue Foch, Brest, FRANCE; Phone: +33 298-01-81-14; Fax: +33 298-01-81-24; E-mail: dimitris.visvikis@inserm.fr

PLASMA SCIENCE AND APPLICATIONS TECHNICAL COMMITTEE

Every 10 years, the Plasma Science and Applications Committee (PSAC) is required to evaluate the effectiveness of its Constitution and Bylaws. The goal of this evaluation is "to study the rules of governance required by the activities of the Committee at that time, and to consider writing a new Constitution and Bylaws appropriate to the existing and anticipated needs of the Committee." During 2013-2014, a seven-member committee consisting of present and past elected members of the PSAC Executive Committee conducted this evaluation. As a result of the review, the committee proposed a number of changes to both the Constitution and the Bylaws, and submitted these for approval to the Executive Committee of the Plasma Science and Applications Committee. The revised Constitution and Bylaws were approved by the PSAC Executive Committee on May 25, 2014, and by the NPSS Administrative Committee on July 19, 2014. The amendments to the Bylaws went into effect upon approval by the NPSS AdCom, and the amendments to the Constitution will go into effect unless 20 members of the Plasma Science and Applications Committee object in writing to the NPSS President within 90 days of the mailing date of this Newsletter. While the entire revised Constitution and Bylaws are printed below, the most significant changes are listed here:

- The name of the PSAC executive committee (the ExCom) is formally the Plasma Science and Applications Executive Committee. (Art. IV, Sec. 1).
- The eligibility criteria for candidates for ExCom are clarified, in order to exclude current members of ExCom, including the Vice-Chairperson, the Chairperson, the Most Recent Past Chairperson, and the Editor of the *IEEE Transactions on Plasma Science*. (Art. IV, Sec. 2.)
- The most Recent Past Chairperson is made a voting member of ExCom. (Art. IV, Sec. 4 and Bylaw 1 and 2).
- The conditions for election and succession of Vice-Chairperson to Chairperson are revised, as well as for the succession of Chairperson to Most Recent Past Chairperson. Additionally, the process for filling a vacancy for Chairperson or Vice-Chairperson is clarified. (Art. IV, Sec. 4 and Bylaw 10)
- The quorum number is increased from eight to ten, since a quorum generally should require at least half of the ExCom membership. Also, the revision makes explicit provision for electronic attendance at a meeting. (Art. VI, Sec. 4)
- The provision for periodic revision of the Constitution and Bylaws is changed from a seven-member committee every ten years to a five-member committee every five years. (Art. VIII, Sec. 1)
- The Nominations Subcommittee is given the responsibility to arrange a call for nominations and to ensure a balanced slate of candidates for ExCom. (Bylaws 2.1 and 2.4)
- The Nominations Subcommittee is now a Functional subcommittee. (Bylaw 4(c))
- The revision eliminates the Human Rights subcommittee.
- The revision adds the Igor Alexeff Outstanding Student in Plasma Science Award to the Bylaws. (Bylaw 4(e) and Bylaw 13.
- The revised Bylaws add the responsibility of functional subcommittee chairs to obtain additional members as needed, and of ExCom members-at-large to serve on functional subcommittees. (Bylaw 4.3)
- Members-at-large elected to partial terms shall begin serving immediately upon notice of election. (Bylaw 6)
- A PSAC member's right to present a paper at ICOPS is subject to the review and decision of the conference program committee. (Bylaw 8)
- References to obsolete documents have been removed from the rules for running an ICOPS. (Bylaw 11)
- The revised Bylaws clarify the selection criteria for the PSAC Award. (Bylaw 13.1)
- The Secretary maintains a permanent online record of the minutes of the Executive Committee meetings. (Bylaw 14)
- The ICOPS Conference Chair oversees the process for the ICOPS Best Student Paper Award by selecting an individual to manage the activity. The Awards subcommittee chair works with the Conference chair to identify the individual, to provide information on the selection process, and to provide assistance as needed for selecting the judging panel and providing award certificates. (Bylaw 4e)

This report was prepared by Don Shiffler, the new PSAC chair, who can be reached at the Air Force Research Laboratory,3550 Aberdeen SE Kirtland AFM, NM 87117, Phone: +1 505 853-3906; E-mail:don.shiffler@ieee.org

Constitution and Bylaws of the Plasma Science and Applications Committee of the IEEE Nuclear and Plasma Sciences Society

CONSTITUTION

Article I-Name and Object

Section 1. This organization shall be known as the Plasma Science and Applications Committee (PSAC) of the IEEE Nuclear and Plasma Sciences Society (NPSS), referred to hereafter as the Committee. This elective standing technical committee was formed in 1973.

Section 2. The Committee shall strive for the advancement of the theory and applications of plasma science and of its allied arts and sciences and the maintenance of high scientific and technical standards among its members.

Section 3. The Committee shall aid in promoting close cooperation and exchange of technical information among its members and to this end shall hold meetings for the presentation and discussion of original contributions, shall assist in the publication of the Transactions on Plasma Science, and shall otherwise provide for the needs of its members.

Section 4. The Committee shall attempt to provide information on plasma science to those who request it.

Article II-Field of Interest

Section 1. The field of interest of the Committee is plasma science and related technologies and applications. The Committee shall foster publication or other dissemination of original contributions to the theory, experiments, educational methods, and applications of plasma science and to the development of standards. Areas of technical activity will include, but not be limited to, the following:

Section 2.

1. Magnetohydrodynamics
2. Thermionics and plasma diodes
3. Basic plasma phenomena
4. Gaseous electronics
5. Microwave-plasma interaction
6. Electron, ion, and plasma sources
7. Space plasmas
8. Intense electron and ion beams
9. Laser-plasma interactions
10. Plasma diagnostics
11. Plasma chemistry and processing
12. Solid-state plasmas
13. Plasma heating
14. Plasmas for controlled fusion research
15. High energy density plasmas
16. Industrial, commercial, and medical applications of plasma science
17. Plasma waves and instabilities
18. High-power microwave and submillimeter wave generation
19. Pulsed power applications of plasmas

Article III-Membership

Section 1. Members of the Committee are members or affiliates of the NPSS who have indicated a professional interest in plasma science and applications. Only members of the Committee are entitled to vote on Committee matters.

Article IV-Administration

Section 1. The Committee shall be managed by the Plasma Science and Applications Executive Committee (ExCom), consisting of elected members-at-large, plus certain other members as specified herein and in the Bylaws. The number of elected members-at-large shall be 18 members.

Section 2. The terms of office of the elected members-at-large shall be three years. Election of members-at-large shall be held annually to fill vacancies for the coming year. Current members of ExCom, with the exception of those serving partial terms as members-at-large, may not be candidates in elections held during their term of service.

Section 3.

a. The affairs of the Committee shall be managed by the Chairperson as directed by the ExCom and in accordance with the powers and duties as defined

CONSTITUTION AND BYLAWS Continued on **PAGE 8**

Constitution and Bylaws Continued from **PAGE 7**

hereunder and in the Bylaws. In the event of the Chairperson's absence or incapacity, these duties shall be performed by the Vice-Chairperson.

b. The Chairperson shall appoint a Secretary for the Committee. The Secretary need not be chosen from among the elected members-at-large, but should be a member of the Committee.

SECTION 4.

a. All directly elected members of ExCom are eligible for election as Vice-Chairperson or Chairperson, subject to the provisions of this Section. In addition, the Vice-Chairperson is eligible for election as Chairperson. The elections for both Vice-Chairperson and Chairperson shall take place in even numbered years, according to the procedures specified in the Bylaws. The Vice-Chairperson shall be elected by the voting members of ExCom from among the eligible members-at-large of the ExCom to serve a two-year term beginning the following January. In the second year of this term, he or she will be the sole candidate in that year's election for Chairperson. If elected, he or she will become the Chairperson-elect, and become Chairperson the following January. If he or she is not elected, the newly chosen Vice-Chairperson-elect will instead become the Chairperson-elect, and ExCom will choose a new Vice-Chairperson from among the eligible members-at-large for the term beginning the following January.

b. If the position of Vice-Chairperson is vacated at any other time during the two-year term, a replacement Vice-Chairperson will be elected by the voting members of the ExCom from among the eligible members-at-large to complete the remainder of the term. This Vice-Chairperson would then be a candidate to succeed to Chairperson, subject to the approval of ExCom, as prescribed above.

c. At the conclusion of the term of the Chairperson, he or she shall serve for two years as the Most Recent Past Chairperson. The terms on the ExCom of the Vice-Chairperson, the Chairperson, and the Most Recent Past Chairperson shall automatically extend until they vacate their offices, and during this period they shall be considered full members of ExCom with a vote. No individual may be elected as Chairperson or Vice-Chairperson immediately after completing a term as Chairperson.

d. In the event that neither the Chairperson nor the Vice-Chairperson is able to take office as prescribed in the Bylaws or if both are incapacitated, or if both offices become vacant for a period greater than 60 days, the ExCom shall promptly elect an Acting Chairperson from among the eligible elected members-at-large to assume the duties of Chairperson until either the Chairperson or Vice-Chairperson takes office or resumes his or her duties. The Most Recent Past Chairperson shall serve as acting Chairperson until ExCom acts.

Section 5. The Chairperson shall be an ex-officio member of all subcommittees of the Committee.

Section 6. The Chairperson, as soon as expedient after election, shall appoint the chairpersons of the subcommittees provided for in the Bylaws. All appointees serve at the pleasure of the Chairperson.

Article V-Nomination and Election of Executive Committee Members-at-Large

Section 1. Nominating procedures shall be as prescribed in the Bylaws and shall include provision for nomination by Society members.

Section 2. Election of the members-at-large of the Executive Committee shall be as prescribed in the Bylaws.

Section 3. If a member of the ExCom does not complete a term, the vacancy shall be filled at the next regular election for the unexpired portion of the term.

Article VI-Meetings

Section 1. The Committee may hold meetings, conferences, symposia or conventions either alone or in cooperation with other organizations, subject to applicable IEEE and NPSS rules and regulations. The primary conference to be held by the Committee shall be the IEEE International Conference on Plasma Science (ICOPS).

Section 2. Meetings, conferences, or conventions sponsored by the Committee shall be open to all members or affiliates of the NPSS. The Committee may not sponsor or cosponsor a meeting that is in any way subject to security clearance.

Section 3. The ExCom shall meet as required to conduct business and in accordance with the Bylaws.

Section 4. Ten voting members of the ExCom shall constitute a quorum. A member may attend either in person or electronically by any means that allows the member to participate actively in discussions and votes. No member shall have more than one vote for any reason. A member-at-large may appoint a proxy to represent him or her at an Executive Committee meeting. However, such a proxy may not cast a vote.

Section 5. A majority of the legal votes cast by those members of the ExCom attending a meeting shall be necessary for the conduct of its business except as otherwise provided in this Constitution.

Section 6. The business of the ExCom may be handled by correspondence, telephone, or electronic communications (fax, email, etc.) where, in the opinion of the Chairperson, matters requiring prompt action can be adequately handled in that manner. A majority vote of the full ExCom is required to take action in such cases. Telephone actions are to be promptly confirmed in writing by the Chairperson.

Section 7. If the PSAC Chairperson is unable to represent the Committee at a meeting of the NPSS Administrative Committee (AdCom), the Chairperson may designate the Vice-Chairperson or the Most Recent Past Chairperson as his or her alternate. This alternate shall have the privilege of the floor and may vote on all matters coming before AdCom.

Article VII-Amendments

Section 1. Amendments to this Constitution may be initiated by petition ratified by a two-thirds vote of the ExCom, such petition being submitted to the AdCom of the NPSS for approval. After such approval, the proposed amendment shall be published in the NPSS News, with notice that it goes into effect unless 20 members of the Plasma Science and Applications Committee object in writing to the President of the NPSS within 90 days of the date of mailing of the notice.

If such objections are received, a copy of the proposed amendment shall be mailed with a ballot to all members of the Committee at least 30 days before the date set for the return of the ballots; the ballots shall carry a statement of the deadline for their return to IEEE Headquarters. When a mail vote of the entire Committee membership is made necessary, approval of the amendment by at least two-thirds of the ballots returned shall be necessary for its enactment.

Section 2. As an alternative to the procedure outlined in Section 1 above, ten members of the Committee may submit a petition to the AdCom of the NPSS. If approved by the NPSS AdCom and after notification of the ExCom, the proposed amendment shall be submitted to the membership of the entire Plasma Science and Applications Committee for ratification by mail ballot as described in Section 1.

Section 3. Committee Bylaws, and amendments thereto, may be adopted by a two-thirds vote of the ExCom at a regularly scheduled meeting, provided that notice of the proposed Bylaw or amendment has been sent to each member of the ExCom at least a week prior to such meeting, or a Committee Bylaw or amendment may be adopted by a two-thirds mail vote of the members of the ExCom, provided that a 30-day period is allowed for such responses. In either event, the proposed Bylaw or amendment shall be published in the NPSS News. No Bylaw or amendment shall take effect until it has been approved by the AdCom of the NPSS.

Article VIII-Revision

Section 1. The Chairperson of the Committee shall appoint a five-person subcommittee every fifth year, starting with January 1, 2019, to evaluate the effectiveness of this Constitution and Bylaws, to study the rules of governance required by the activities of the Committee at that time, and to amend the Constitution and Bylaws as appropriate for the existing and anticipated needs of the Committee.

Bylaws

1. Executive Committee: Article IV, Section 1 of the Constitution provides that the ExCom shall consist of a number of elected members-at-large plus certain other members. These other members of the ExCom shall be, unless they are already elected members-at-large, the Chairperson of the Committee, the Vice Chairperson of the Committee, the Most Recent Past Chairperson, and the Editor of the Transactions on Plasma Science. Certain other individuals who are carrying out specific functions or activities are also expected to attend the ExCom meetings, even if they are not voting members of the ExCom. These include the Secretary, the elected AdCom members representing the interests of PSAC, the Most Recent Past Chairperson of the Committee, the chairpersons of the Functional Subcommittees, and the chairpersons of the ICOPS to be held in the following two years. In addition, chairpersons of ICOPS to be held more than two years in the future are expected to attend at least one ExCom meeting per year, in order to present a progress report on the preparations for their conferences.

1.1 The voting members of the ExCom shall be the elected members-at-large, the Chairperson of the Committee, the Vice-Chairperson of the Committee, the Most Recent Past Chairperson of the Committee, and the Editor of the Transactions on Plasma Science. The Chairperson of the Committee shall be the Chair of the ExCom.

1.2 The ExCom shall meet at least two times per year, upon dates determined by the Chairperson at least three weeks in advance of the meeting. One of these two meetings shall be held in conjunction with the IEEE International Conference on Plasma Science (ICOPS). Additional meetings may be called at the discretion of the Chairperson or upon request of at least nine voting members of the ExCom with at least three weeks' notice.

1.3 The last regularly scheduled meeting in the calendar year shall be considered the Annual Meeting of the ExCom.

1.4 In the absence of extenuating circumstances as approved by the ExCom, an elected member-at-large who misses three successive meetings shall automatically be dropped from the ExCom.

2. Nomination and Election of ExCom Members-at-Large: As specified in Article IV, the ExCom shall include 18 members-at-large, each serving a three-year term. Six posts, plus any vacancies occurring in the previous year, are to be filled each year by election of the general membership of the Committee.

2.1 The Nominations Subcommittee of ExCom has principal responsibility to assemble a balanced slate of qualified ExCom candidates reflecting the diversity of PSAC. Nominations may be made by any member of the Committee by written submission to the Nominations Subcommittee, up until a date fixed each year by the Chairperson of the Committee. Self-nominations are permitted. The Chairperson of the Committee shall ensure that the number of candidates is at least one and one-half (1.5) times the number of positions to be filled.

2.2 Anyone making a nomination must determine in advance that the nominee is willing to serve if elected. The name, address, e-mail address, and phone number of the nominee must be included, as well as a short biographical statement. In addition, the nomination must provide either the IEEE membership number of the nominee, or a statement that an application for membership in the IEEE and NPSS has been submitted.

2.3 The Nominations Subcommittee shall arrange, before April 1 of each year, for a call for nominations to be conveyed to the whole membership through the NPSS News.

2.4 All nominees must be either members in any grade of IEEE and NPSS or must have submitted an application for membership in IEEE and NPSS at the time the nomination is forwarded to IEEE Headquarters. An affiliate member of NPSS is not eligible to be a nominee for member-at-large.

2.5 The Secretary shall annually arrange for the distribution to the members of the Committee, on or about July 31, of a ballot to elect the candidates to fill member-at-large vacancies on the ExCom. The ballot shall be accompanied by a short biographical statement from each nominee.

2.6 Forty-five days after distribution of the ballots, the IEEE Headquarters shall count and tabulate the votes received and report the results to the Secretary of PSAC, who, in turn, shall notify the Chairperson.

2.7 The Chairperson of the ExCom shall submit to the Secretary of the NPSS AdCom the names of the candidates elected to fill the designated vacancies.

2.8 Those nominees receiving the highest number of votes will be elected. Any vacancy on the ExCom resulting from an uncompleted three-year term shall remain unfilled until the next regularly scheduled election. At that time, the remainder of the uncompleted term shall be filled by the nominee receiving the next highest vote total after determination of the six regular three-year terms. In the event of a tie vote by the general membership of PSAC, the individual selected will be determined by a majority vote of the voting members of the ExCom. The tie-breaking vote of the ExCom members shall be conducted by fax or electronic mail by the Secretary of the Committee. The Secretary shall endeavor to obtain the results as far as possible in advance of the Annual Meeting of the ExCom.

3. Each of the Functional Subcommittees shall submit a written report of its activities to the ExCom prior to or at the Annual Meeting.

4. Functional Subcommittees: The Chairperson of the Committee shall appoint the chairpersons and members of the following Functional Subcommittees:

a. Membership Subcommittee: To recommend to the ExCom and to implement approved actions to increase PSAC membership.

b. Site Selection Subcommittee: To identify, encourage, and solicit potential ICOPS sites and conference chairpersons.

c. Nominations Subcommittee: To identify, encourage, and solicit qualified nominees for ExCom members-at-large.

d. Minicourse Subcommittee: To identify, encourage, and solicit potential ICOPS minicourses.

e. Awards Subcommittee:

i.) To identify, encourage, and solicit PSAC member candidates for various IEEE awards, including the Plasma Science and Applications Award and the Igor Alexeff Outstanding Student in Plasma Science Award (see Bylaw 14).

ii.) To work with the ICOPS Conference Chair to identify a chair for the conference awards committee, as well as to provide assistance as needed for selecting the judging panel, establishing the selection process, and providing the awards certificates.

The Chairperson may authorize additional Functional Subcommittees if deemed necessary for the efficient functioning of the ExCom.

4.1 The terms of office of chairpersons of the Functional Subcommittees shall be one year.

4.2 The chairpersons of the Functional Subcommittees must be members of the Committee.

4.3 Chairpersons of Functional Subcommittees shall obtain additional members for their subcommittees. All members-at-large are expected to serve on Functional Subcommittees.

5. Ballots: Ballots intended for all members of the Committee shall be prepared by the Secretary at the direction of the Chairperson. No ballot shall be counted unless it is unambiguously marked by a qualified Committee member to indicate his or her choice and sent in a sealed envelope bearing the voter's name on or before the specified deadline date or is transmitted by other secure voting means as IEEE may provide. The distribution and counting of ballots issued to all members of the Committee shall be entrusted to IEEE Headquarters. The Secretary of the Committee shall report the results to the ExCom at their next regular meeting.

6. Beginning of Terms of Office: All terms of office of elected members-at-large of the ExCom shall begin January 1 of the year immediately following their election, with the exception of those elected to partial terms, who shall begin serving immediately upon notice of their election.

7. The Chairperson of the Committee and the Nominations Subcommittee shall actively encourage the broadest possible representation from throughout the plasma science community on the ExCom and in its activities.

8. Any member of the Committee may submit a contributed paper to a conference sponsored by the Committee. All contributed papers shall by reviewed for quality, novelty, and relevance by the conference technical program committee.

9. The Editor of the Transactions on Plasma Science and the Editorial Board shall strive to ensure that publication of papers in the Transactions depends only upon the technical merit of the paper, and not upon the financial condition of the author.

10. The Chairperson and Vice-Chairperson of the Committee shall be elected by written ballot at the Annual Meeting in even-numbered years, in accordance with Art. IV, Sect. 4 of the Constitution. The ballot shall indicate two choices for Chairperson: 1) the current Vice-Chairperson, and 2) an indication that an open election is desired. Additionally, the ballot shall contain a slate of candidates for Vice-Chairperson.

10.1 Nominations and seconds for Vice-Chairperson shall be solicited by the Chairperson at least two months prior to the Annual Meeting in even-numbered years, and the Chairperson shall accept nominations and seconds up to one month prior to the Annual Meeting. The Secretary shall send written ballots to all voting members of the ExCom at least three weeks prior to the Annual Meeting. The marked ballots shall be sent or delivered in person to the Secretary prior to the beginning of the Annual Meeting. The Chairperson shall designate tellers to verify and count the ballots during the Annual Meeting.

10.2 Should the Vice-Chairperson fail to receive a majority of the ballots cast, then the individual elected to be the Vice-Chairperson shall become the Chairperson-elect, and ExCom shall itself determine a new slate of candidates for Vice-Chairperson and vote at the Annual meeting.

10.3 In any event, should no candidate receive a majority of the votes cast for Vice-Chairperson, runoff elections shall be conducted by secret ballot at the Annual Meeting between the candidates receiving the two highest numbers of votes until one candidate receives a majority of the votes cast.

10.4 The terms of office of the Chairperson and Vice-Chairperson shall begin January 1 of the year following their election.

11. The IEEE International Conference on Plasma Science: The chairperson of an ICOPS must be a member of the Plasma Science and Applications Committee. The ICOPS Chairperson, who must be a member of the Committee, and the ICOPS site are selected by the ExCom from proposals brought forward by the Site Selection Subcommittee. The ICOPS Chairperson shall follow IEEE, NPSS, and ExCom guidelines for the conference. The Conference Chairperson is responsible for the budget of the conference and determines the registration fees to be charged, subject to approval by the ExCom and the NPSS. He or she shall appoint the members of the Organizing Committee and the Program Committee. At least one former chairperson of an ICOPS shall be included on the Program Committee. The ICOPS Chairperson shall also present a list of Technical Area Coordinators (TACs) to the ExCom for approval no later than the Annual Meeting 18 months prior to the conference and a list of Session Organizers (SOs) to the ExCom for approval no later than the ExCom meeting 12 months prior to the conference. These two lists shall not include individuals who have served consecutively in the same capacity for the 3 prior ICOPS. Additionally, the ICOPS Chairperson shall appoint a conference awards committee, which shall be responsible for selecting the winners of the two ICOPS Outstanding Student Paper Awards as well as the two honorable mention certificate awards. Any minicourse offered must be submitted for approval to the ExCom and should follow the ICOPS Minicourse Guidelines. The ICOPS Chairperson shall have full authority over the management and technical content of the conference, subject to the oversight of ExCom.

12. Open Business Meeting of the Committee: An annual open Business Meeting of the Committee shall be held in conjunction with ICOPS.

13.1 The Plasma Science and Applications Award: To recognize outstanding individual contributions to the field of Plasma Science, the Committee presents a Plasma Science and Applications Award at the ICOPS. Primary consideration will be given to the impact of the research or new applications. Other factors can include research contributions over a career, influence on plasma science through teaching, professional service to PSAC and to the plasma science community, and any other information the Special Award Subcommittee wishes to consider. The Award consists of a monetary award and a plaque, with the award money included in the ICOPS budget. Changes in the Award amount must be approved by AdCom and the appropriate IEEE committee. The recipient shall be invited to deliver an address at the ICOPS in the year of the Award and to submit the text of the talk for an invited paper in the Transactions on Plasma Science. Publicity announcing the recipient shall appear in appropriate NPSS publications.

13.2 The Igor Alexeff Outstanding Student in Plasma Science Award: To recognize outstanding contributions by a student to the field of plasma science and technology, the Committee presents an Igor Alexeff Outstanding Student in Plasma Science Award at the ICOPS. Nominees shall be judged according to their contributions to plasma science. The judgment will be based on quality of research contributions, quality of educational accomplishments, and quality and significance of publications and patents. The Award consists of a monetary award and a plaque. Publicity announcing the recipient shall appear in appropriate NPSS publications.

13.3 Nomination forms for the following year's awards shall be made available on the NPSS web site. A nomination for the Plasma Science and Applications Award must be endorsed by three current IEEE members. Any person except a current voting member of the ExCom or a previous recipient of the same award is eligible for these awards. Nominations are submitted to the Chairperson of the Awards Subcommittee, who shall distribute nomination materials to the voting members of the ExCom at least one month prior to the Annual Meeting. Selection of the recipients is performed by the PSAC Special Award Subcommittee, which is comprised of the ExCom voting members and chaired by the Committee Chairperson. No more than four votes of the Special Award Subcommittee by secret ballot shall be taken for each award at a separate Subcommittee Meeting following the Annual Meeting. The vote of at least 3/4 of the Subcommittee present, but no fewer than six votes, is required to select the recipient of the Plasma Science and Applications Award. A majority vote is required to select the recipient of the Igor Alexeff Outstanding Student in Plasma Science Award. If no agreement of the Subcommittee can be reached, or if no candidates are nominated for an award, that award shall be skipped for that year.

14. The Secretary shall maintain a permanent record of the minutes of past meetings on a password-protected section of the NPSS web site and shall make the password available to ExCom members. The Secretary also shall ensure that current copies of the Constitution and Bylaws are available on the NPSS web site.

Pulsed Power Science and Technology

Jurgen Kolb
PPST Chair

In only a few weeks we will be meeting for the-without a doubt-most important biennial event for our committee. The 20th IEEE Pulsed Power Conference (PPC) will invite everybody engaged and interested in pulsed power science and technology for stimulating exchange and discussions once again. This time the meeting is held in Austin, Texas, from May 31st–June 4th and collocated with the 26th IEEE Symposium on Fusion Engineering (SOFE), which is organized by our sister committee in the NPSS. More information on either conference can be found elsewhere in this newsletter and on the conference website: www.ece.unm.edu/ppcsofe15. Therefore, I would like to remind you that early registration at a discounted registration fee is possible until April 29th.

In the process of transitioning to an elected committee we have appointed for the last time two new voting members to the committee. Andreas Neuber from Texas Tech University and Joshua Leckbee, who is working at Sandia National Laboratories, have each been appointed for a 3-year term starting on January 1, 2015. Andreas has been a voting member before, while we welcome Joshua for the first time.

With great expectations for the future development of our committee we have now also established an Industrial Advisory Committee and an International Advisory Committee. The first one is chaired by Steve Calico. We hope that in this way we can offer a point of contact for pulsed power professionals from industry and ask them to share insights and ideas with us on future directions and conference participation and in general get more involved in our committee work and our conferences. The second newly founded committee is chaired by Bucur Novac with the goal to collect input and focus experience towards the organization of international conferences and cooperation with other conferences with an interest in pulsed power technologies and applications. The most imminent task of this committee is helping in the organization of the first Pulsed Power Conference to be held outside the USA in 2017. This meeting will take place in England in the historic and scenic venue of Brighton, England close to London. Starting in 2016 some administrative changes will also require us to deal a little differently with technically cosponsored conferences. If you are involved in any conferences considering technical cosponsorship endorsed through our committee, please contact us to discuss any details.

Contact information for our committee and in fact for every committee member can be found on our web pages, which are located under 'Technical Committees' on the society webpage: ieee-npss.org. The same page also includes a link to the Distinguished Lecturer program. Bucur Novac has now joined the ranks and is offering two more lectures on pulsed power topics: "Magnetic Flux-Compression" and "Fast Transient Sensors." If you are interested in these matters (or any others that are offered), the website provides a convenient way to contact speakers. Expenses to invite a distinguished lecturer can often be supported.

Concluding this short report, I would like to draw your attention to the efforts of a team around Steve Gitomer to improve the Transactions on Plasma Science (TPS), which are probably the most important publication venue for the pulsed power community besides our PPC proceedings. If you are not aware of the changes because you are not subscribing to the still rather new TPS newsletter, have a look at it (found under 'Publications' on the society webpage) and maybe consider updating your 'Personal Profile and Communication Preferences' in your IEEE Account to receive the monthly newsletter by email.

Juergen Kolb, chair of the Pulsed Power Science and Technology Committee can be reached by E-mail at jkolb@odu.edu or by phone at +49 3834 554 3950

Anthony Lavietes
2014 RITC Chair

RADIATION EFFECTS

See Conferences for information on the upcoming NSREC conference in Boston (p. 2) and see FUNCTIONAL COMMITTEES Awards, for the 2014 Radiation Effects Awards, (p. 11)

RADIATION INSTRUMENTATION

This has been a typical quiet time for our community. We have just completed the 2014 Nuclear Science Symposium and Medical Imaging Conference (2014 NSS/MIC, http://www.nss-mic.org/2014) that took place in Seattle, Washington from 8th–15th November at the Washington State Convention Center. The conference had an unexpectedly high number of attendees, but ran quite smoothly nonetheless. This was executed as the first NPSS "paperless" conference and as such, included many new challenges. A multiplatform mobile app was developed to replace all of the traditional conference publications and tablets were used to facilitate the short courses. There were a few minor issues (e.g., app incompatibilities, software glitches), although nothing significant. It was refreshing to have a continuously current, up-to-date conference program and the typically large waste stream from the conference was almost nonexistent. Many lessons were learned from this experience and we will improve upon this new format and refine the execution in succeeding conferences.

The Radiation Instrumentation community had several awards in 2014, most of which were presented during the Nuclear Science Symposium. The highest Radiation Instrumentation community award–the Radiation Instrumentation Outstanding Achievement Award–was renamed in honor of our late colleague and friend, Dr. Glenn Knoll. A special plaque to commemorate this event was presented to his wife, Gladys Knoll, during the NSS Plenary session. [Photo of plaque being presented to Gladys Knoll]

See the AWARDS section under Functional Committees for further information on the 2014 awards.

We are now looking forward to the next conference, the 2015 NSS/MIC (http://www.nss-mic.org/2015) that will be held in San Diego, California. The conference will be held at the Town and Country Resort and Convention Center in Mission Valley. The format of this conference will be an extension of that which was executed in Seattle–with numerous improvements based on attendee feedback and committee experience. Many significant enhancements are in the works, so visit the conference website to catch up on the latest information.

UPCOMING CONFERENCES

2015 NSS/MIC
1 Nov–7 Nov., San Diego, California
Vesna Sossi, *General Chair*
John Valentine, *NSS Program Chair*
Chiara Guazzoni, *Deputy NSS Program Chair*

2016 NSS/MIC
29 Oct–5 Nov., Strasbourg, France
Maxim Titov, *General Chair*
Eckhard Elsen, *NSS Program Chair*
Susanne Kuehn, *Deputy NSS Program Chair*

2017 NSS/MIC
20–29 Oct., Atlanta, GA

RITC CONSTITUTION AND BYLAWS

A modification to the RITC Constitution Article V, Section 3 is proposed to address an early RISC Member-at-Large position vacancy. The modified text is as follows (changes in *italics*):

If a member of the RISC does not complete their term and the term has more than one year remaining, *the RISC Chair shall appoint a replacement, with approval by simple majority from the RISC membership, to serve for the unexpired portion of the term. For a term with a remaining duration of less than one year*, the vacancy shall be filled at the next election.

Any objections to the revised Constitution and Bylaws must be submitted in writing to Dora Merelli, RISC Secretary (dora.merelli@ieee.org) within ninety days of the mailing date of this notice. 383 4554 3950.

FUNCTIONAL COMMITTEES

AWARDS

Class of 2015 IEEE Fellows

The IEEE offers Institute Awards, and most Societies and Society Technical Committees also offer awards. Elevation to IEEE Fellow is a prestigious honor awarded each year to no more than 0.1% of the full IEEE membership by the Institute's Board of Directors. Nominations are made from among Senior Members. Nominees must be supported by at least six Fellows. After being reviewed and ranked by the appropriate IEEE Society, the nominations are forwarded to the Institute's Fellow Committee who then recommend a list of candidates to the IEEE Board of Directors for their consideration. The Nuclear and Plasma Sciences Society is justifiably proud of its Fellows. We present here the Class of 2015 Fellows, and wish them each our heartfelt congratulations. [Editor's note]

David K. Abe

David K. Abe received a BS in engineering from Harvey Mudd College (1981), an M.S. in electrical engineering from the University of California, Davis (1988), and a Ph.D. in electrophysics from the University of Maryland (1992). Dr. Abe has been a major contributor to several high power microwave (HPM) research projects including experiments with plasma-filled backward-wave oscillators, overmoded backward-wave oscillators, and the first U.S. experiments with multiwave Cherenkov generators. In 1996, he joined the U.S. Naval Research Laboratory where he is currently the head of the Electromagnetics Technology Branch. At NRL, he has successfully assembled and led multidisciplinary teams from government laboratories, industry, and academia that have produced numerous advances in high power microwave and millimeter-wave devices such as traveling-wave tubes and multiple-beam klystrons. Dr. Abe has been an active member of the IEEE community for over 20 years, serving in various capacities at international conferences, as a reviewer and guest editor of IEEE journals, and as an elected member of the NPSS Administrative Committee (AdCom) and the NPSS PSAC Executive Committee (ExCom).

David K. Abe
IEEE Fellow

> Citation: For leadership in and contributions to the development of high power microwave and millimeter-wave vacuum electronic devices.

David Abe can be reached by E-mail at david.abe@nrl.navy.mil |Phone:202.404.4513

Marcela Bilek

Marcela Bilek has made significant contributions to the development of plasma processing technologies for materials and biointerfaces. She employed plasma diagnostics, simulations and materials characterisation techniques to gain fundamental understanding to drive the development and optimization of processes used in a range of industries. Professor Bilek has contributed to plasma processing technologies with applications in microelectronics, optics, machine tooling and biomedical devices. The knowledge her research has generated has been applied to significantly improve the quality of materials and to enable new applications. She has made important contributions to the development of filtered cathodic vacuum arc plasmas for the deposition of thin film materials, shaping the understanding of plasma transport in magnetic filters. She is recognized internationally as a pioneer in the development of plasma immersion ion implantation and deposition (PIII&D), a technique that is widely adopted to enhance thin film adhesion and to minimize the intrinsic stress in thin film coatings. She invented plasma surface activation processes using energetic ions that enable linker-free covalent surface immobilization of biologically active molecules by means of embedded radicals. Materials functionalized in this way have the potential to address problems with the current generation of biomaterials and to provide new biologically active materials.

Marcela Bilek
IEEE Fellow

> Citation: For contributions to the science and application of plasma processes for materials modification and synthesis.

Professor Bilek can be reached by E-mail at marcela.bilek@cantab.net or marcela.bilek@sydney.edu.au).

Martin G. Buehler

The technology cited includes test structures developed at the National Bureau of Standards (now NIST) for measuring the linewidth and resistivity of conductors found on integrated circuits. At the Jet Propulsion Laboratory, gas and radiation detectors were developed. My contribution to the gas sensor included the design of the substrate upon which gas sensing polymers were deposited. This sensor was part of an Electronic-Nose that flew on the Space Shuttle (STS-95) with John Glenn in 1998. Radiation detectors included p-FET (Field Effect Transistor) dosimeters and an upsetable SRAM (Static Random Access Memory). The p-FET dosimeters experience a threshold-voltage shift as ionizing particles induce charge in the gate oxide. These dosimeters and upsetable SRAMs flew on Clementine when it orbited the Moon in 1994. The 1k-upsetable SRAM was designed with large drain areas so that protons from the Sun can flip the cells. Particle flux was determined from the number of cells flipped from ones to zeros in a 30-minute period. While orbiting the Moon, the sensor detected two solar flares which is a highlight of my career.

Martin G. Buehler
IEEE Fellow

> Citation: for contributions to metrology through development of semiconductor process control test structures, gas sensors and radiation detectors.

Martin Buehler can be reached by E-mail:mgbuehler@earthlink.net, Phone: +1509-332-4568.

John Conley

John Conley received the B.S. in Electrical Engineering in 1991 and a Ph.D. in Engineering Science and Mechanics in 1995 from The Pennsylvania State University. He has worked at Dynamics Research Corporation, the Jet Propulsion Laboratory (JPL), and Sharp Laboratories of America (SLA). Since 2007 he has been at Oregon State University where he is Professor in both the School of EECS as well as the Intercollege Materials Science Program, ONAMI Signature Faculty Fellow, and co-Director of the Materials Synthesis and Characterization (MASC) facility.

John F. Conley, Jr.
IEEE Fellow

Dr. Conley has authored or co-authored over 120 technical papers, over 130 additional conference presentations (including tutorial short courses on high-k dielectrics and 15 invited talks), and 20 U.S. patents. He has an h-index of 32.

One of his key contributions to improve the radiation hardening of CMOS devices was to develop understanding of the reactions between hydrogen and radiation damage centers in MOS devices (with Patrick Lenahan). Another was the first experimental confirmation of the Lelis Model for switching (border) traps (with Lenahan, Aivars Lelis, and Tim Oldham). This work provided fundamental

insight into the way in which oxygen vacancy defects, the most important oxide traps, change structure and electronic properties in response to charge capture. Although this work dealt specifically with radiation damage problems near Si/SiO_2 interface, the experimentally demonstrated Lelis model now forms the basis for understanding of the negative bias temperature instability (NBTI)-one of the most important MOS reliability problems.

Dr. Conley has also made significant contributions to the atomic layer deposition (ALD) of dielectrics and nanotechnology (the selective growth of nanowires). Dr. Conley's current research interests include ALD, metal/insulator/metal devices, internal photoemission, and thin film transistors.

Dr. Conley has been an active member of IEEE, serving as guest editor for three special issues of *IEEE Transactions on Device and Material Reliability*; serving on the technical and/or management committees of IEEE NSREC, IEEE Nano, IEEE IRPS, and the IEEE SOI Conferences as well as Technical Program Chair of IEEE MRQW; and General Program Chair of IEEE IIRW.

Citation:For contributions to semiconductor process technology to improve radiation hardening of MOS devices.

Dr. Conley can be reached at the School of Electrical Engineering and Computer Science, Oregon State University, Corvallis, OR, 97331; E-mail: jconley@eecs.oregonstate.edu; Phone: +1 541-737-9874.

Paul Lecoq

Paul Lecoq's biography can be found on (p. 5), under SOCIETY GENERAL BUSINESS.

Paul Lecoq
IEEE Fellow

Citation: for contributions to scintillator detectors for high-energy physics and medical imaging

Paul Lecoq can be reached by E-mail at pail.lecoq@cern.ch

Xiaodong Chen

There is no photo or biography for Xiaodong Chen.

Citation: for contributions to antennas for wireless communications and satellites

Sokrates Pantelides

Dr. Pantelides' photo and biography will appear in the June 2015 Newsletter

Citation: for contributions to point-defect dynamics in semiconductor devices

CONFERENCE AWARDS

Nuclear Medical and Imaging Sciences Awards

Joel Karp

Joel Karp from University of Pennsylvania, in Philadelphia received the 2015 Edward J. Hoffman Medical Imaging Scientist award "for contributions to fully-3D PET system design and quantitative imaging"

Joel Karp
Edward J. Hoffman Medical Imaging Scientist

Joel Karp received his Ph.D. in 1980 from MIT in Nuclear Physics, and continued his research on heavy-ion nuclear reactions as a post-doctoral researcher at Stony Brook. Eager to work on more practical applications, he joined the faculty at the University of Pennsylvania in 1983 in Radiology which was well-known for its pioneering work in developing emission computed tomography, and performing the earliest human studies of FDG PET. Dr. Karp received tenure in 1993 with appointment to Professor in 1999. He is chief of Radiology's Physics and Instrumentation Group, and oversees PET Physics to support clinical and research studies, as well as PET/SPECT/CT imaging for the Small Animal Imaging Facility. Dr. Karp's responsibilities include teaching nuclear medicine physics for the Radiology residents and serving on the Advisory Committee for the Masters Medical Physics Program. Dr. Karp has trained two dozen graduate students and postdoctoral fellows at Penn.

Dr. Karp's work has focused on investigations of signal processing, detector design, data correction, and image reconstruction; all to improve the performance of PET. His early work emphasized large-area Anger-logic detectors, which required improvement of techniques to optimize both temporal and spatial processing in order to maximize the count-rate capability of these detectors for PET imaging. This work led to the development of fully-3D PET scanners with practical data correction and reconstruction algorithms to generate quantitative images. Over the years, he incorporated new scintillators and pixelated detector designs to improve spatial resolution and sensitivity of the scanners, some of which were commercialized for human and small animal imaging. Most recently Dr. Karp has developed systems for time-of-flight (TOF) imaging, and his work with industry led to adoption of TOF in modern PET/CT scanners. Dr. Karp's group has been at the forefront to quantify the clinical impact of TOF using commercial instruments, and to advance the technology by building proto-type instruments with superior performance.

Dr. Karp has held various committee positions and has helped to organize scientific programs in the Society of Nuclear Medicine and the IEEE NPSS. He currently serves as the Senior Editor of the Transactions of Nuclear Science: Nuclear Medical Imaging Sciences journal. Dr. Karp was selected to be an IEEE Fellow in 2013.

Mathieu Hatt

Mathieu Hatt from the National Institute of Health and Medical Sciences in Brest, France received the 2014 Bruce Hasegawa Medical Imaging Conference Young Investigator award "for contributions to the field of medical image analysis and processing for oncology and radiotherapy applications."

Mathieu Hatt was born October 5th, 1981, in Strasbourg, France. From 1999 to 2004, he studied theoretical computer science at the University of Strasbourg. He spent two voluntary periods in the summers of 2002 and 2003 at the Astronomical Observatory of Strasbourg, during which he developed graphical interfaces and tools dedicated to astronomical databases. He acquired a specialization in image analysis and processing in 2004, and spent six months at the Laboratory of Image, Computer Sciences and Remote Sensing (CNRS) in the team "Models, Images, Vision." His Master's thesis was dedicated to the development of novel statistical image segmentation methods based on fuzzy Markov chains, applied to multiband images of astronomical nebulae. He then switched from astronomical to medical imaging for his Ph.D. by joining the "multimodal quantitative imaging for diagnosis and therapy" team led by Dimitris Visvikis, in the Laboratory of Medical Information Processing (LaTIM) in Brest, France. His Ph.D. thesis (2005-2008) addressed the issue of automatic image segmentation for the determination of functional volumes of tumors in Positron Emission Tomography (PET) images. He developed and validated the Fuzzy Locally Adaptive Bayesian (FLAB) method combining statistical and fuzzy models adapted to PET imaging, to allow tumor functional volumes and subvolumes for heterogeneous uptake distributions to be determined automatically. This work was recognized in 2009 by the award for best Ph.D. research thesis in biomedical imaging, delivered by the IEEE French section and the SFGBM (French Society for BioMedical Engineering).

From 2009 to 2012, after completing his Ph.D., he further investigated the issues of PET image segmentation and the clinical value of functional volumes in oncology and radiotherapy, as an investigator of the ANR-funded project "Functional Images Segmentation for Radiotherapy" (2009-2011) in the LaTIM. He was also an invited fellow at the MRC Clinical Sciences Center (London, in 2010) and a research fellow at the Maastricht Radiation Oncology (MAASTRO) research center (the Netherlands, end of 2011 to mid-2012).

Mathieu Hatt
Bruce Hasegawa Young Investigator Award

M. Hatt also expanded his research interests to multimodal PET/CT image fusion for therapy follow-up, image-guided radiotherapy, intratumor heterogeneity quantification, denoising and partial volume effects correction. He co-supervised several Ph.D. students, which was recognized by the French diploma "Habilitation to supervise research" in March 2012. He was recruited as a junior research fellow in 2012 by the French National Institute of Health and Medical Research (INSERM) to lead the research project "multimodal medical image analysis and processing for diagnosis and therapy.".He currently supervises four Ph.D. students andtwo post-doctoral fellows in the team of Dimitris Visvikis in the LaTIM. Since 2006 he has published more than 40 research papers in peer-reviewed journals on the topic of image analysis and processing in oncology.

2014 IEEE NUCLEAR AND SPACE RADIATION EFFECTS CONFERENCE AWARDS

It is a longstanding tradition of the IEEE Nuclear and Space Radiation Effects Conference to honor the Outstanding Conference Paper and the Outstanding Data Workshop Presentation. In recent years recognition has also been given to the best paper presented and first-authored by an IEEE Student Member. The awards process not only rewards authors for particularly high quality and important work, but also encourages all authors to produce presentations and manuscripts of high technical quality, clarity of presentation, and significance to the community.

Although there were a number of strong candidates for the Outstanding Conference Paper, two papers stood out due to their high scores across committee members. When two papers stand out from the other papers, there can be a Meritorious Paper Award given in addition to the Outstanding Conference Paper Award. This was the case this year.

IT IS OUR PLEASURE TO ANNOUNCE THE FOLLOWING 2014 NSREC AWARD WINNERS:

OUTSTANDING CONFERENCE PAPER

"Hardness assurance for proton direct ionization-induced SEEs using a high-energy proton beam," *N. A. Dodds, J. R. Schwank, M. R. Shaneyfelt, P. E. Dodd, B. L. Doyle, M. Trinczek, E. W. Blackmore, K. P. Rodbell, M. S. Gordon, R. A. Reed, J. A. Pellish, K. A. LaBel, P. W. Marshall, S. E. Swanson, G. Vizkelethy, S. Van Deusen, F. W. Sexton, and M. J. Martinez.*

MERITORIOUS CONFERENCE PAPER

"Upsets in Phase Change Memories due to High-LET Heavy Ions Impinging at an Angle," *S. Gerardin, M. Bagatin, A. Paccagnella, A. Visconti, M. Bonanomi, S. Beltrami, V. Ferlet-Cavrois.*

OUTSTANDING STUDENT PAPER

"On the Transient Response of Best-of-Breed Complementary (npn+pnp) SiGe HBT BiCMOS Technology," *N. E. Lourenco, Z. E. Fleetwood, S. Jung, A. S. Cardoso, P. S. Chakraborty, T. D. England, N. J.-H. Roche, A. Khachatrian, D. McMorrow, S. P. Buchner, J. S. Melinger, J. H. Warner, P. Paki, M. Kaynak, B. Tillack, D. Knoll, J. D. Cressler.*

OUTSTANDING DATA WORKSHOP

"The Reliability of Software Algorithms and Software-Based Mitigation Techniques in Digital Signal Processors," *K. A. LaBel, M. V. O'Bryan, D. Chen, M. J. Campola, M. C. Casey, J. A. Pellish, J. M. Lauenstein, E. P. Wilcox, A. D. Topper, R. L. Ladbury, M. D. Berg, R. A. Gigliuto, A. J. Boutte, D. J. Cochran, S. P. Buchner, and D. P. Violette.*

RADIATION INSTRUMENTATION AWARDS

Dr. Robert Klanner

Dr. Robert Klanner, *2014 Glenn F. Knoll Outstanding Achievement Award*, for the development of high-precision silicon detectors and calorimeters, their successful use in particle physics experiments, and the education of junior scientists in physics and applications of detectors.

Dr. Jelena Ninkovic

Dr. Jelena Ninkovic, *2014 Radiation Instrumentation Early Career Award*, for contributions to developments of Avalanche Photodiodes in Geiger mode, especially SiPMs with bulk-integrated quench resistors for single photon and particle detection, and of DEPFET active pixel vertex detectors.

In addition, since he was unable to attend the 2013 NSS/MIC, we took the opportunity to present Dr. Veljko Radeka of the Brookhaven National Laboratory the prestigious 2013 IEEE Marie Sklodowska-Curie Award. The award was given to Dr. Radeka for his outstanding long-term achievements and

FUNCTIONAL COMMITTEES Continued on **PAGE 12**

Functional Committees Continued from **PAGE 11**

contributions to the field of instrumentation and detector development covering a broad range of science.

Dr. Radeka earned a Ph.D. in engineering sciences from the University of Zagreb, Croatia, in 1961 while working on nuclear instrumentation at the Institute Ruder Boskovic in Zagreb. He joined BNL in 1962 as a research associate in Instrumentation and rose through the ranks to become head of the division in 1972. Dr. Radeka has authored or co-authored more than 170 peer-reviewed papers, and several of his papers have been reprinted in books as classic contributions.

Dr. Radeka has been a member of IEEE for more than 40 years. He was elected an IEEE Fellow in 1976 and a Life Fellow in 1999. He has received numerous other awards from IEEE, including the Radiation Instrumentation Outstanding Achievement Award in 2010, the IEEE Harold Wheeler Award in 2009, the IEEE Centennial Medal in 1984, and the NPSS Merit Award in 1983. This award was presented jointly by Dr. Craig Woody (NPSS Awards Chair) and Dr. Peter Staecker (2014 IEEE Past President).

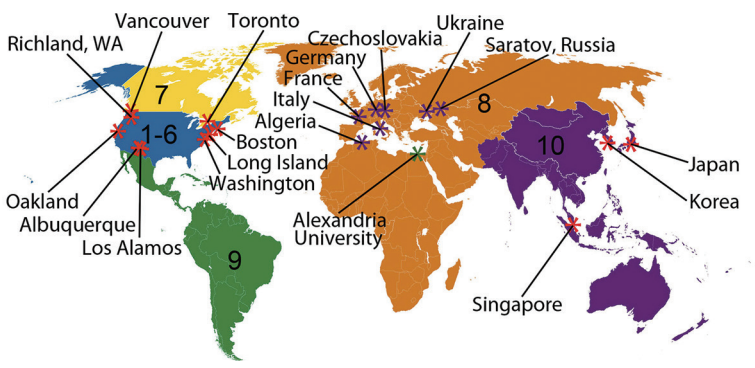
> Citation: For the development of new radiation detectors and electronics enabling discoveries in many areas of science over a period of more than 50 years.

Veljiko Radeka (center) with Craig Woody, IWWW Awards Chair, and Peter Staecker, IEEE Past President

CHAPTERS

Steve Gold
Chapters Chair

Chapters are local units of the IEEE that are established in Sections, but are also affiliated with one or more IEEE Societies. Student branch chapters are formed within IEEE student branches at colleges, universities, or technical institutes, and are also affiliated with IEEE Societies. Chapters of both types serve their members by sponsoring local activities, including workshops, seminars, guest lectures, and social gatherings, as well as by providing leadership and networking opportunities. The NPSS has an active chapters program, with 20 chapters and joint chapters around the world, including one student branch chapter, as shown in the accompanying map, [map picture] and we are interested in promoting the formation of new chapters or student branch chapters wherever NPSS members are active. Efforts are currently under way to form new NPSS chapters at a number of locations around the world, and most recently, we received a petition to form a new NPSS student branch chapter at the Vellore Institute of Technology in Tamil Nadu, India. We look forward to welcoming VIT as our second student branch chapter, once the necessary regional approvals have been given. The NPSS can provide speakers for chapter meetings through our Distinguished Lecturers program, and can also provide direct financial assistance to support chapter activities. If you are interested in establishing a new NPSS chapter or student chapter, or need additional information on the NPSS chapters program, please visit our chapters webpage http://ewh.ieee.org/soc/nps/chapters.htm or contact Steven Gold, the NPSS Chapter Coordinator, at steeve@ieee.org.



PUBLICATIONS

Transactions on Plasma Science

As part of our continuing efforts to upgrade and improve the *IEEE Transactions on Plasma Science* (TPS), a number of changes have been made or are taking place. I wanted to update our readers on these developments.

Steve Gitomer
TPS Editor-in-Chief

In an important departure from past practices, TPS will be eliminating page charges for all manuscripts submitted on or after January 1st, 2015. This action was taken via a formal positive vote of the IEEE Nuclear and Plasma Sciences Society's (NPSS) governing body, the Administrative Committee (AdCom), at its November 15th, 2014 meeting in Seattle, WA, USA. Manuscripts submitted prior to January 1st, 2015 will still be subject to voluntary and mandatory page charges.

Another change we have made is the creation of a monthly E-Mail Newsletter (referred to as the TPS E-mail Blast). Issues began with the September 2014 TPS Issue. These electronic E-mail Blasts feature several highlighted papers from that month's regular issue. Highlighted papers are those of especially significant interest, and are nominated by the TPS Senior Editor responsible for the subject area of that paper. Highlighted papers are made available in their entirety to our readers free of charge from IEEE Xplore for a period of one month. Following the highlighted papers in the E-mail Blast, the full tables of contents are displayed for the regular issue (and Special Issues, if there are any in that month). Each listed paper's title may be clicked on and the link will take the reader to the IEEE Xplore location of that particular paper where the abstract may be viewed. Copies of recent E-mail Blasts are accessible via TPS's website,

http://ieee-npss.org/publications/transactions-on-plasma-science/.

Finally, the IEEE NPSS AdCom has also approved a special fund to encourage review articles in both of the Society's Transactions (*IEEE Transactions on Nuclear Science* and TPS). The fund would pay the open access charges for any review papers published in either Transactions. Of course, we always encourage authors to first consult with the relevant TPS topical Senior Editor before making such a submission. However, it is my hope that this additional support will serve to encourage members of the plasma science community to seriously consider a review paper submission.

Steven J. Gitomer, Editor-in-Chief , IEEE Transactions on Plasma Science, can be reached by E-mail at tps-editor@ieee.org)

IEEE TRANSACTIONS ON PLASMA SCIENCE SPECIAL ISSUES

» Mar 2015 Special Issue on *Atmospheric Pressure Plasma Jets and Their Applications*—Guest Editors: XinPei Lu (HuaZhong University of Science and Technology, WuHan China) & Alexander Fridman (Drexel University, Philadelphia PA USA)—Status: submission deadline passed; to be published March 2015

» Mar 2015 Special Issue on *Electromagnetic Launchers*–Lead Guest Editor: Harry Fair (University of Texas, Austin TX USA), Guest Editors: Melody Hummel, Tom Hurn, Xinjie Yu, Markus Schneider, Jun Li, and John Mallick.—Status: submission deadline passed; to be published March 2015

» Apr 2015 Special Issue on *Z-Pinch Physics*—Guest Editors: John Guiliani (Naval Research Laboratory, Washington DC USA), Brent Jones (Sandia National Laboratories, Albuquerque NM USA), Sergey Lebedev (Imperial College, London UK), and Farhat Beg (University of California at San Diego, San Diego CA USA)–Status: submission deadline passed; to be published April 2015

» Apr 2015 Special Issue on *Plenary and Invited Papers From ICOPS/Beams 2014*—Guest Editors: Donald Shiffler (Air Force Research Laboratory, Albuquerque NM USA), and Chunqi Jiang (Old Dominion University, Norfolk VA USA)—Status: submission deadline passed; to be published April 2015

» May 2015 Special Issue of *Tutorial Papers From Minicourse on Low Temperature Plasmas*—Guest Editor: John Foster (University of Michigan, Ann Arbor MI USA)—Status: submission deadline 28 February 2015

» June 2015 Special Issue—*Spacecraft Charging Technology 2015*—Guest Editors: Henry B Garrett (Jet Propulsion Laboratory, USA), Albert Whittlesey (Jet Propulsion Laboratory, USA), Dale C Ferguson (AFRL, USA), Dr. Joseph Minow (NASA MSFC, USA), Michael Bodeau (Northrop Grumman Aerospace Syst, USA), Victoria A Davis (Leidos, USA), Linda Parker (Jacobs Technology, USA), Adrian Wheelock (AFRL/RVBXR USA), Jean-François Roussel (ONERA/DESP, France), Denis Payan (CNES, France), Alain M Hilgers (ESA, The Netherlands), David J Rodgers (ESA/ESTEC, The Netherlands), and Mengu Cho (Kyushu Institute of Technology, Japan)—Status: submission deadline passed; to be published June 2015

» Aug 2015 Special Issue on *Electrical Discharges in Vacuum*—Guest Editors: Alexander Batrakov (Laboratory of Vacuum Electronics, Institute of High Current Electronics, Tomsk RUSSIA) & Vasily Kozhevnikov (Tomsk State University, Tomsk, RUSSIA)—Status: submission deadline passed; to be published August 2015

» Oct 2015 Special Issue on *Selected Papers From EAPPC 2014*—Guest Editors: Luis Redondo (Lisbon Engineering Superior Institute (ISEL), Lisbon, Portugal), Hamid Hosseini (Kumamoto University, Kumamoto, Japan), Bucur Novac (Loughborough University, Leicestershire, UK) & Xinjie Yu (Tsinghua University, Beijing, China)–EAPPC (Euro-Asian Pulsed Power Conference)—Status: submission deadline passed; to be published October 2015

» Dec 2015 Special Issue on *Plasma Assisted Technologies*—Guest Editors: Igor Matveev (Applied Plasma Technologies, Falls Church VA USA) & Tim Ombrello (Air Force Research Laboratory, Wright Patterson AFB OH USA)-Status: Submission deadline 1 May 2015

» Apr 2016 Special Issue on *Dusty Plasmas*—Guest Editors: Jeremiah Williams (Wittenberg College, Wittenburg, Ohio USA), Uwe Konopka (Auburn University, Auburn Alabama USA) and Edward Thomas, Jr. (Auburn University, Auburn Alabama USA)-Status: Submission deadline 30 June 2015

» Apr 2016 Special Issue on *Plenary and Invited Papers From ICOPS-2015*—Guest Editors: Brent Jones (Sandia National Laboratories, Albuquerque NM USA) and Tao Shao (Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China)-Status: Submission deadline 1 September 2015

» Oct 2016 Special Issue on *Pulsed Power Science and Technology*—Guest Editors: David Wetz (University of Texas-Arlington, Arlington, TX USA), Stephen Bayne (Texas Tech University, Lubbock, TX USA), Jose Rossi (National Institute for Space Research-INPE, Sao Jose dos Campos, SP Brazil) & Haiyun Luo (Tsinghua University, Beijing, China)-Status: Submission deadline 30 November 2015

SO WHY PSYCHOLOGISTS?

Man's greatest asset is the unsettled mind.

Isaac Asimov

YOUNG PROFESSIONALS

IEEE Young Professionals getting together in Seattle

As the IEEE Nuclear and Plasma Science Society promotes the activities of the IEEE Young Professionals (the former GOLD) program, a special evening reception was held at the Nuclear Science Symposium & Medical Imaging Conference last November in Seattle, Washington. Traditionally, the invitation was not limited to our Young Professionals (YP) members, but also extended to conference attendees that had joined IEEE or the Nuclear and Plasma Sciences Society right at the meeting. Some 20 Young Professionals and new members attended this evening function.

After a brief welcome address, the participants were invited to take refreshment and introduce themselves in one or two sentences. In the usual format, they could then listen to speakers who outlined briefly their careers in academia and industry. But this time, it was not so easy to determine who was a Young professional, and who had already made some significant steps in his or her career. And isn't that the way it should be? The IEEE YP web page says "IEEE Young Professionals is an international community of enthusiastic, dynamic, and innovative members and volunteers. IEEE is committed to helping young professionals evaluate their career goals, polish their professional image, and create the building blocks of a lifelong and diverse professional network."

Nevertheless, if you are a Senior Staff Physicist at a U.S. National Lab, you already look back on some important career steps and thus rather belong to the second group of attendees: "Try to be good in what you're doing, and you will make your way," is what William Moses from Lawrence Berkeley National Laboratory told the Young Professionals members. What sounds rather trivial at a first glance, can be interpreted as a useful hint not to refrain from making changes to one's own educational and career planning if something doesn't quite work out. Ronald Keyser, a Senior Scientist retired from ORTEC-AMETEK, explained how he made a change from academia into industry in his late twenties. "Since then, I have never been doing the same for six weeks in a row," he said, "and that is what made my professional life interesting." Needless to say that Ron has still been doing science all his life and has authored many scientific papers, providing his customers in scientific institutes with the forefront measuring equipment they need. So, there is apparently no need to be afraid of leaving the academic environment most of us have grown up in.

What do these professionally successful men and women have in common? They all devote a bit of their time to our community as an IEEE volunteer: Fine Fiedler from Helmholtz-Zentrum Dresden-Rossendorf in Germany is an Associate Editor of the *IEEE Transactions on Nuclear Science*. And a division leader at her institute, where she works on the application of radiation in tumor diagnosis and therapy. Also Charles Watson from Siemens Medical Solutions works in positron emission tomography, and is an IEEE volunteer. This way, they all participate in interesting activities and expand their knowledge. They gain valuable skills in management and leadership and connect with others who are active in their field. Fostering one's own career as a side effect can hardly be avoided. If you also want to become an IEEE volunteer, just visit us at ieee-npss.org/make-a-difference-get-involved. Or connect with your local IEEE section or chapter. Or write an E-Mail right now to John Verboncoeur, our society president (johnv@msu.edu), if you dare. But why shouldn't you? It is the knowledge and skills of people like you that our society needs!

Young Professionals Gathering with Senior Members and Fellow at NSS/MIC in Seattle

Christoph Ilgner, NPSS Young Professionals chair, can be reached by E-mail at Christoph.ilgner@cern.ch.

AND WE DON'T CATCH ON

As most politicians have by now figured out, the moral of the boy who cried "wolf" is to never to tell the same lie twice.

Mark Sidloi

EAB Education Liaison Report

IEEE Educational Activities is striving to develop a strategy that will guide the Educational Activities Board's (EAB's) initiatives and activities over the next 10 years. The EAB's goal is to ensure that IEEE's educational activities…

- are grounded in addressing the needs of today and visionary in anticipating the needs of tomorrow;
- are agile in exploring new opportunities, technologies, and technical areas;
- are successful in scaling its activities for impact;
- and that EAB is IEEE's nexus for educational products and services.

EAB's envisioned future can be summarized as:

- IEEE will be the resource of choice for practitioners: the primary source of unbiased, current educational products, best practices, and standards in our fields of interest.
- IEEE will be the community of choice for university educators: the preferred destination for developing and providing curricula, resources, and pedagogical research and practices in our fields of interest.
- IEEE will be the network of choice for pre-university educators: the primary source for curricula, resources, and pedagogical research and practices for pre-university education in our fields of interest.
- Students of all ages will value our products and services as a source of fun and engaging ways to learn about technology.
- Teachers at all levels will look to IEEE to learn about trends in engineering education.
- The public will look to IEEE to understand technology in their world.

Edl Schamiloglu
EAB Liaison

In 2014 EAB launched its quarterly newsletter, EA Insight. Three issues have appeared thus far, and you can download the newsletters from:

http://www.ieee.org/education_careers/education/eab/42177099

IEEE Spark is an online publication intended to inspire students ages 14-18 to learn more about engineering, technology, and computing, and raise excitement about careers in these disciplines. IEEE Spark features articles on technological innovation, university preparation tips, professional career profiles, at-home activities, comics, and more! IEEE Spark is supported by the IEEE New Initiatives Committee. Check out http://spark.ieee.org.

Try Engineering is another online publication intended to help students and parents make intelligent choices in pursuing a degree in Engineering. Check out http://tryengineering.org.

Finally the EAB has recently signed a three-year agreement with edX, the non-profit organization founded by Harvard University and the Massachusetts Institute of Technology, to offer massive open online courses (MOOCs) and other continuing professional education courses to a worldwide audience on www.IEEEx.org to serve IEEE members with career growth, advancement, and lifelong learning.

Edl Schamiloglu, NPSS liaison to the IEEE EAB can be reached by E-mal at edls@unm.edu.

THEY CAN EVEN BE CLOSED

The voyage of discovery lies, not in seeking new horizons, but in seeing with new eyes.

Marcel Proust

WILLING ACCOMPLICES

Propaganda does not deceive people. It helps people deceive themselves.

Eric Hoffer

ARTICLE

A Compact PCI-based Measurement and Control System for Satellite-Ground Quantum Communication

Binxiang Qi
University of Science and Technology of China , Hefei, China

Since the 1990s, quantum communication has become the hotspot of future information technology research because of its unconditional communication security, which is guaranteed by the laws of quantum physics. Once this nascent technology enters the mainstream, it will have a huge impact on communications that require enhanced security, such as financial transactions, which are gravitating towards using fully nonreusable information. An example of reusable information is the majority of current credit card transactions, where the same combination of card number, expiration date, and security code can be used to authorize any number of payments. A number of high-profile breaches of vendor computer systems and the disclosure of millions of credit card numbers has been a major problem in recent months, precisely due to the reusable nature of those credit card credentials.

Any application wishing to authenticate or authorize a transaction based on the exchange of nonreusable information needs to negotiate a session key between the participants, such as a customer making a purchase from a particular vendor. Such a session key is valid only for this one transaction, and completely useless if disclosed afterwards. A number of such key exchange mechanisms exist. Best known is probably the classic Diffie-Hellmann key exchange algorithm [1]. However, all subsequent transaction data are as secure as the initial session key exchange method, which is the Achilles' heel of those transactions (even though they are orders of magnitude more secure than transactions with reusable information.)

In conventional cryptography, the security comes from the fact that a particular computational problem is extremely hard and takes a very long time to solve. An example of such a problem is the factorization of large numbers. It is fast to multiply two large (a few hundred digits long) prime numbers, but given only the product, it will take decades to find the prime factors. However, what was once considered a safe level of complexity for a problem has to be adjusted with each major advance in computing power, which can bring solving of such a problem down to manageable time scales. It is also conceivable that a mathematical breakthrough will make the underlying problem easily solvable, which will then break all existing ciphers and ciphertexts that relied on that method. By contrast, the security of quantum communication is not threatened by the advancement of computing power, new mathematical algorithms, or by the development of quantum computers in the near future. As the most developed application of quantum communication, quantum key distribution (QKD) addresses the aforementioned key exchange problem by providing an unbreakable method for facilitating the exchange

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Article

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[2]. The so-called BB84 standard [3] is a well-known QKD protocol whose security can be mathematically proven. It uses single photons to transmit the secure key between distant parties, the sender (typically named Alice) and the receiver (typically named Bob). Alice and Bob communicate with each other through a public classical channel and a quantum channel (Fig. 1). The quantum channel is only used to transmit single quanta (qubits) and must consist of a transparent optical path such as optical fiber and free space path. The classical channel can be a conventional internet protocol channel such as an Ethernet connection, a telephone line, or an optical communications link, which transmits ciphertexts and authentication information. Alice uses the quantum channel to send random information encoded in the polarization of the photons, which produces a shared secure key. Heisenberg's uncertainty principle dictates that a third party trying to decode the key cannot look at these photons without changing or destroying the information they carry. In this case, any eavesdropping will change the state of the photon that can be detected via the quantum bit error rates of the quantum channel.

Satellite-ground quantum communications have been demonstrated as the most feasible option to achieve ultra-long-distance quantum communication [4]. Several countries, including Canada, China, the European Union, and Japan, are working to put experimental quantum communication satellites into orbit. Being one of the strategic space projects proposed by the Chinese Academy of Sciences, the Quantum Science Satellite is scheduled for launch in 2016. It aims to implement satellite-ground quantum communication experiments and carry out a series of tests of fundamental quantum principles on a global scale.

As part of the ground station of the Quantum Science Satellite, a compact PCI-based electronics system has been designed. The main tasks of this system are time measurements, data transmission and experiment control. A 16-channel, 24ps time resolution time-to-digital converter is implemented by FPGA's carry chains, which records the arrival time of single photons. A high data-transfer speed of 35 MBps is achieved on the PCI bus. Taking full advantage of the flexibility of the FPGAs, some necessary modules in the quantum communication experiment, such as experiment control, multi-channel counter and system monitor logic, are also integrated in a single board. The combined features of high time resolution, high data rate and high system integration can well meet the requirements for quantum communication, and make the quantum communication electronics system more standardized and more compact.

The Quantum Science Satellite will be located in a low earth orbit at an altitude of 600 km for two years. According to the plan, the project will implement a series of science missions between satellite and ground stations, such as satellite-ground QKD, global scale quantum communication network, quantum teleportation from ground to satellite, and quantum entanglement distribution from satellite to two ground stations. It will not only promote wider use of the new technology, but also will offer physicists a new arena to test the foundations of quantum theory.

[1] W. Diffie and M.E. Hellman, "New Directions in Cryptography," *IEEE Transactions on Information Theory*, v. IT-22, n. 6, Nov 1976, pp. 644-654.

[2] Sanwar Ali and Waleed Farag, "How is Quantum Cryptography used for Secure Financial Transactions?" Second International Conference on e-Technologies and Networks for Development (ICeND2013), Malaysia, 2013

[3] C. H. Bennett and G. Brassard. "Quantum cryptography: Public key distribution and coin tossing," *Proceedings of IEEE International Conference on Computers, Systems and Signal Processing*, volume v.175, page 8. New York,1984.

[4] Jian-Wei Pan et al, "Direct and full-scale experimental verifications towards ground-satellite quantum key distribution," *Nature Photonics*, 7(5): 387-393, 2013.

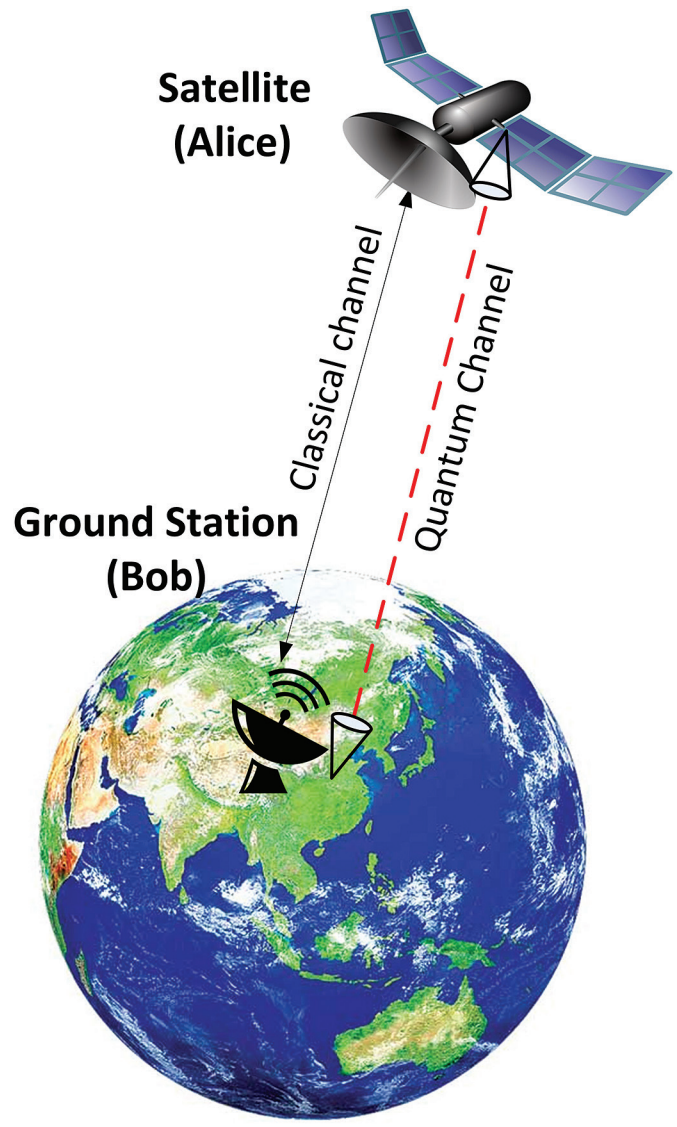

FIgure 1: Overview of the satellite-ground quantum communication system. "Alice" is the sender, "Bob" is the receiver.

THAT SINKING FEELING...

I worship the quicksand he walks in.

Art Buchwald

CHEER FOR THE OFFENCE

If all printers were determined not to print anything till they were sure it would offend nobody, there would be very little printed.

Benjamin Franklin

NUMBERS GAME

If it doesn't matter who wins or loses, then why do they keep the score?

Vince Lombardi

SADLY FOR US

You don't have power if you surrender all your principles-you have office.

Ron Todd