

NUCLEAR & PLASMA SCIENCES SOCIETY NEWS

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Number 1, March 2013

CONFERENCES

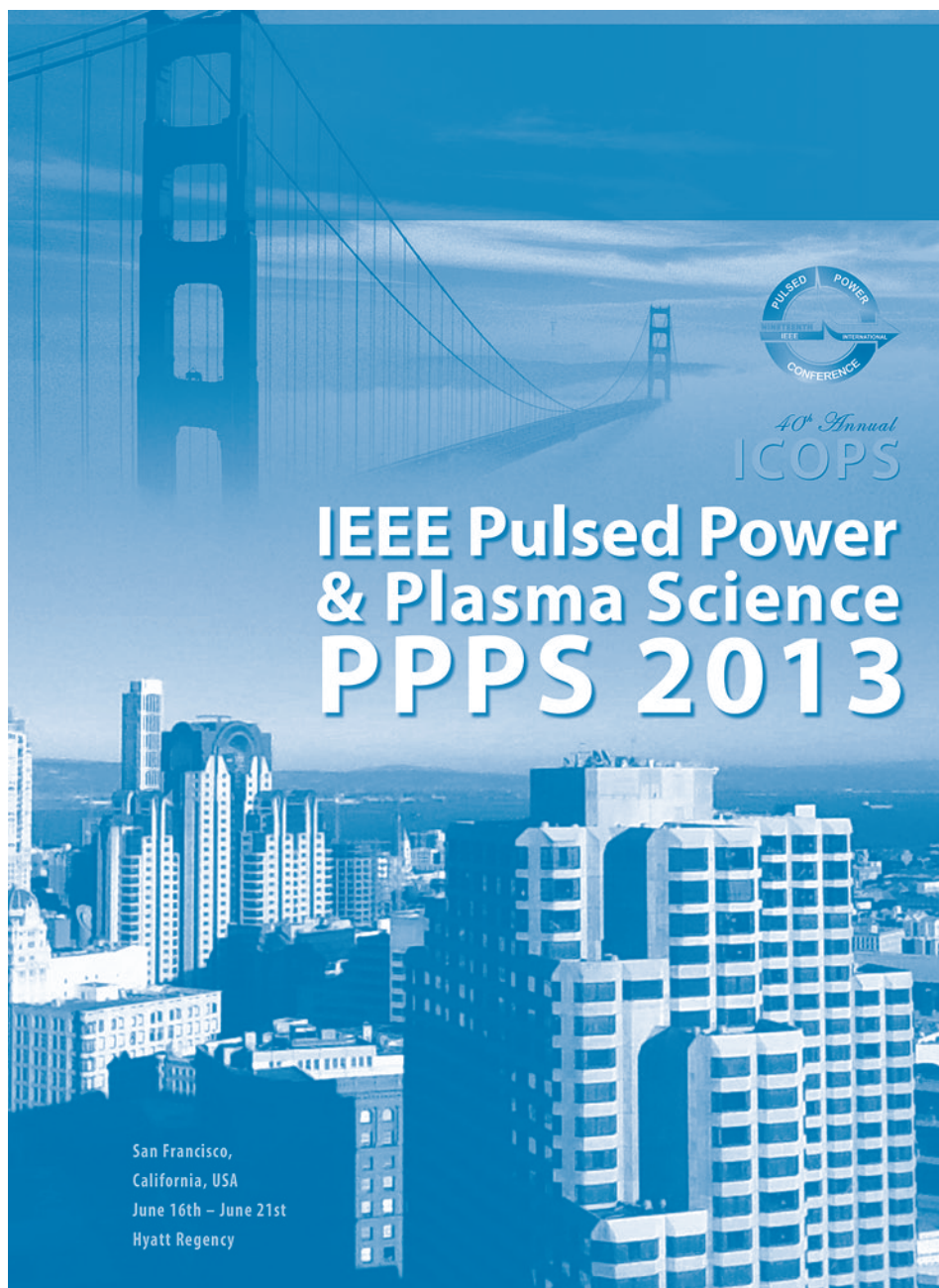
The 19th IEEE Pulsed Power Conference (PPC) and the 40th IEEE International Conference on Plasma Science (ICOPS) will be combining for a third time in 2013 as the IEEE Pulsed Power and Plasma Science (PPPS) conference to be held June 16th–21st, 2013, in San Francisco California at the Hyatt Regency Embarcadero Hotel. This conference follows the format of the two previous PPPS meetings, with topics from ICOPS in traditional plasma physics and engineering and pulsed power science and technology from the PPC. The conference also features exhibits and a 2-day minicourse. Select papers will be published in a Special Issue of the *IEEE Transactions on Plasma Science*.

For the first time, the PPPS conference is available via social networking. The social networking via Facebook and Twitter will be used for individual interactions and announcements. We are exploring the possibility of beta testing the IEEE app for the conference program through MCM. Check the web for availability. Participation is free but you might have to register first if you are new to a site.

Conference registration for PPPS 2013 is currently available; attendees can register through the conference website at: <http://www.ece.unm.edu/ppps2013/Registration.html>.

The General Conference Chair is Dr. Bryan Oliver of Sandia National Laboratories. Dr. Oliver is a nationally

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40th Annual
ICOPS
**IEEE Pulsed Power
& Plasma Science
PPPS 2013**

San Francisco,
California, USA
June 16th – June 21st
Hyatt Regency

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CONTRIBUTED ARTICLES

Publicity releases for forthcoming meetings, items of interest from local chapters, committee reports, announcements, awards, or other materials requiring society publicity or relevant to NPSS should be submitted to the Newsletter Editor by April 5, 2013 for publication in the June 2013 Newsletter.

News articles are actively solicited from contributing editors, particularly related to important R&D activities, significant industrial applications, early reports on technical breakthroughs, accomplishments at the big laboratories and similar subjects. The various Transactions, of course, deal with formal treatment in depth of technical subjects. News articles should have an element of general interest or contribute to a general understanding of technical problems or fields of technical interest or could be assessments of important ongoing technical endeavors.

Advice on possible authors or offers of such articles are invited by the editor.

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and internationally recognized member of the Pulsed Power and Plasma Physics community. As a native of the San Francisco Bay Area, Dr. Oliver is proud to welcome you to the region. As the cultural center of Northern California, San Francisco is steeped in the history of early Spanish settlers, Chinese immigration, the California Gold Rush, earthquakes and the modern software technology boom. The San Francisco Bay Area is home to such renowned academic and scientific institutions as Stanford University, the University of California at San Francisco and the University of California at Berkeley, as well as the Lawrence Berkeley and Lawrence Livermore National Laboratories, a branch of the Sandia National Laboratories, and the SLAC National Accelerator Laboratory at Stanford University. Coupled with the natural beauty of the surrounding California coastline, the Golden Gate, and the famed wine regions of Sonoma and Napa Valley, San Francisco is a perfect place for the gathering of world experts in the technology and science of plasmas and pulsed power.

TECHNICAL PROGRAM

There are two Technical Program Chairs for the 2013 PPPS. Mark Crawford (Los Alamos National Lab) will handle the traditional PPS topics, while John Verboncoeur (Michigan State University) will handle the traditional ICOPS topics. These Technical Cochairs are committed to maintaining the high quality of papers presented at the conference. They have assembled a diverse group of subject-matter experts for their technical program committee and are looking forward to assembling a full five-day program. Topics for this year include:

- Fundamental Research and Basic Processes
- Microwave Generation and Plasma Interactions

- Charged Particle Beams and Sources
- High Energy Density Plasmas and Applications
- Pulsed Power Switches and Components
- Industrial, Commercial, and Medical Applications
- Pulsed Power Sources
- Pulsed Power Systems
- Diagnostics

Abstract submission closed on February 8th, 2013. Accepted abstracts will appear in IEEE Xplore under the ICOPS pub number, while proceedings will appear through the PP pub number. Abstracts and papers must meet the IEEE standards of originality and quality.

Manuscripts for the Conference Proceedings can be submitted after an abstract has been officially accepted for presentation at PPPS 2013. The website contains links to the manuscript template, as well as detailed instructions for manuscript preparation.

For our foreign 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.

MINICOURSE

The Minicourse for PPPS 2013 is entitled “Aspects of High Energy Density (HED) Physics” and will be held on June 15th–16th, 2013 in the Marina Room of the Hyatt Regency Embarcadero Hotel.

This minicourse is designed for graduate students and active scientists working in the field. The lectures will provide an overall view of the fundamental physics, experiments, and diagnostics

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Dr. Bryan Oliver
General Conference Chair



Dr. Mark Crawford
Technical Program Chair



Dr. John Verboncoeur
Technical Program Cochair

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used to study HED matter. The first day begins with the HED Physics of Inertial Confinement Fusion (ICF), including X-ray spectroscopy of the implosion dynamics. Large-scale test beds of ICF HED physics include the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory and the Omega laser at the Laboratory for Laser Energetics. Experiments at these facilities can bring the dynamics of the cosmos into the lab, and are discussed in a lecture on Laboratory Astrophysics.

Further presentations continue with the laser generation of HED plasmas (HEDP), but with very different parameters for the laser pulse. The formation of energetic beams by short-pulse, high-intensity lasers will be discussed through experiments and simulations. When matter is heated rapidly by a laser, and before it can expand, it is too hot to apply condensed-matter physics and too dense to be a weakly coupled plasma. This Warm Dense Matter (WDM) regime is discussed at the quantum level in the last lecture of the first day.

The second day focuses on plasmas produced with pulsed-power generators that use electrical current to compress ordinary matter into the HED state. Experiments on large-scale generators, such as the Z machine at Sandia National Laboratories, as well as university-scale systems, such as at Cornell University, are presented. Spectroscopic diagnostics are essential to reveal the nature of such plasmas and recent advances in this area are described in the third lecture of the day. The final presentation includes a history and presents recent experiments and theory of HEDP formed when the generator current compresses matter embedded with the flux of an ambient magnetic field.

Please!

Don't be yourself. Be someone a little nicer.

Mignon McLaughlin

They cleaned up!

Many wealthy people are little more than janitors of their possessions.

Frank Lloyd Wright

SOCIAL EVENTS

The PPPS Banquet is tentatively scheduled for Thursday, June 20th. Please check the conference website for additional information.

A Companion Program has been organized to ensure that your companions have a wonderful visit to San Francisco. San Francisco, also known as “The City by the Bay,” is one of the world’s top tourist destinations. For the PPPS 2013 Companion Tour, the following tours are under consideration:

- Alcatraz Island Tour
- Bus tour to Muir Woods and Sonoma wine country
- Food tours, for sampling some of the wide range of cuisine available in the city
- Japanese Tea Garden/Golden Gate Park
- Please check the website for the final listing of Companion Activities.

CONFERENCE HOTEL AND SAN FRANCISCO, CALIFORNIA

Luxury and location converge in perfect balance at the Hyatt Regency San Francisco. Boasting the Guinness Book of World Records’ largest atrium lobby of over 42,000 square feet, the AAA Four Diamond downtown San Francisco hotel is situated right on the Embarcadero waterfront; our guests will enjoy immediate access to both the Financial District and some of the city’s most famous attractions. You’ll find the historic Ferry Building on one side of our expansive San Francisco, California downtown hotel, the ferry to Alcatraz and the Bay nearby, and stunning views all around. With so many options, you may choose to wander through Chinatown to Fisherman’s Wharf, shop in Union Square or board the cable cars for a riding tour of the city all just minutes from our luxurious hotel.

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The conference has negotiated a discounted rate of US\$239 per night (not including taxes) for reservations made prior to the group rate deadline of May 24, 2013. A number of rooms at the prevailing government rate are also available. Please note that you **MUST** present a Government ID at check-in to receive the government rate; otherwise you will be charged the regular conference rate.

ADDITIONAL INFORMATION

For the latest PPPS information (abstract submission, technical program, conference and social registration forms, hotel and travel information, etc.), please visit the conference website at: <http://www.ece.unm.edu/ppps2013>.

To stay informed about what's happening at PPPS-2013, join the mailing list, or ask a question by e-mailing us at ppps2013@ieee.org.

2013 Symposium on Fusion Engineering (SOFE)

It's not too late to plan to attend the 25th SOFE, which will be held June 10th–14th, 2013 in San Francisco, CA (see www.SOFE2013.org for complete details). SOFE is organized and sponsored by the Fusion Technology Committee of the IEEE Nuclear and Plasma Sciences Society (NPSS). The venue for SOFE 2013 will be the Stanford Court Renaissance San Francisco Hotel on Nob Hill in the heart of the city.

A strong international program has been created featuring leaders from major fusion experiments and research programs across the globe. A list of plenary and invited speakers who will be presenting at SOFE can be found under the program link at the conference web site. The conference is hosting a tour of the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory on Wednesday, June 12th. The tour is open to all attendees and their guests, but preregistration is required.

LLNL is the local host and organizer with Dr. Wayne Meier serving as the

Conference Chair. The Technical Program Committee is being chaired by Dr. Hutch Neilson of PPPL.

SOFE 2013 MINICOURSE

Plasma-Material Interactions in Fusion and Industrial Plasmas

The aim of the minicourse is to provide a comprehensive introduction to plasma-material interactions (PMI) with emphasis on fusion and industrial plasmas. This minicourse 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 processing of micro- and nanoelectronics with industrial plasmas, biomaterials plasma and pulsed-power treatments, plasma propulsion applications and other relevant areas where the plasma/material interface plays a crucial role in materials performance and behavior. A unique aspect of this minicourse is to bring instructors that not only have expertise in plasma-material



Wayne Meier
General Chair, SOFE 2013

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Including heaven?

*Good girls go to heaven, bad girls
go everywhere.*

Helen Gurley Brown

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interactions but also extensive experience both in PMI experiments and atomistic/multiscale computational PMI modeling.

The course will describe the unique challenges of PMI experiments and computational modeling and the areas in which these two thrusts can complement each other. The title of the course uses the concept of “industrial plasmas” to include all nonfusion areas where plasmas play a critical role in the modification and processing of materials. This area has also included the use of both plasma and ion-beam interaction with advanced material surfaces modified at the nanoscale. Therefore this course will also discuss recent progress in the role of nanotechnology in the area of PMI both for fusion and industrial plasmas applications.

Audience: Students, junior faculty or new faculty entering these fields, industry researcher scientists/ engineers and postdoctoral researchers.

COURSE CONTENT

The course is divided in two categories: experimental PMI and computational PMI. The morning session will cover topics in experimental PMI: 1) Fundamentals of Plasma-Material Interactions, 2) PMI in Fusion and lastly 3) PMI in Industrial Plasmas. The afternoon session will cover topics in computational PMI: 1) Introduction to PMI Computational Science, 2) Multiscale Modeling in fusion PMI and 3) Computational PMI of industrial plasmas. The course will conclude with Progress in PMI Nanotechnology.

Wayne Maier, SOFE General Chairman, can be reached by E-mail at meier5@llnl.gov.

2013 IEEE NSREC is Finalizing Nine Technical Sessions for San Francisco



Teresa Farris
*Radiation Effects Vice President
for Publicity*



The 2013 IEEE Nuclear and Space Radiation Effects Conference will be held July 8th–12th, 2013, at the Hyatt Regency Embarcadero, San Francisco, California. 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, a Short Course offered

on July 8th, a Radiation Effects Data Workshop, and an Industrial Exhibit.

TECHNICAL PROGRAM

Chaired by Cheryl Marshall, NASA/GSFC, the papers to be presented at this meeting will describe the effects of space, terrestrial, or nuclear radiation on electronic and photonic devices, circuits, sensors, materials and systems, as well as semiconductor processing technology and techniques for producing radiation-tolerant devices and integrated circuits. The conference will be attended by engineers, scientists, and managers who are concerned with radiation effects. International participation in the conference is strongly encouraged.

CONFERENCES

The Poster and Data Workshop chairs will be Pascale Gouker, MIT Lincoln Laboratory, and Philippe Paillet, CEA, respectively. The Technical Session chairs are:

- *Basic Mechanisms of Radiation Effects*: Enxia Zhang, Vanderbilt University
- *Dosimetry*: Ethan Cascio, Massachusetts General Hospital
- *Hardness Assurance*: Jean-Marie Lauenstein, NASA-GSFC
- *Hardening by Design*: Manuel Cabanas-Holmen, Boeing
- *Photonics Devices and ICs*: Vincent Goiffon, University of Toulouse
- *Radiation Effects in Devices and ICs*: Gary Lum, Lockheed-Martin
- *Single-Event Effects: Mechanisms and Modeling*: Mark Law, University of Florida
- *Single-Event Effects: Transient Characterization*: Veronique Ferlet-Cavrois, ESA/ESTEC
- *Single-Event Effects: Devices and ICs*: Steve Guertin, JPL
- *Space and Terrestrial Environments*: Joe Mazur, Aerospace Corporation

2013 SHORT COURSE

“Evolution of Radiation Studies on the Path of Moore’s Law: Past, Present and (Foreseeable) Future” is chaired by Alessandro Paccagnella, University of Padova. This Short Course will provide an introduction to the basic

radiation effects on devices and systems. At the same time, it will offer a valuable retrospective of 50 years of radiation studies for the attendees of the anniversary NSREC, and a perspective for future challenges coming from radiation effects in contemporary technologies and devices. We will learn how testing methodologies and physical models, now solidly assessed, have been investigated and found, in a fascinating path covering the pioneering years of radiation studies on early simple components to the more recent important discoveries in advanced technologies and complex systems.

TOPICS AND PRESENTERS

- *TID Through The Looking Glass*: Kenneth F. Galloway, Vanderbilt University
- *Displacement Damage Effects In Devices*: Joe Srour, Aerospace Corporation
- *Landmarks In Terrestrial Single-Event Effects*: Robert Baumann, Texas Instruments
- *Challenges Of Testing Complex Systems*: Heather Quinn, Los Alamos National Laboratory
- *Where Radiation Effects In Emerging Technologies Really Matter*: Kenneth Rodbell, IBM T.J. Watson Research
- *Radiation Effects In Emerging Technologies*: Steven Koester, University of Minnesota, Department of Electrical and Computer Engineering

It’s a lengthy cure

Love—a temporary insanity cured by marriage.

Ambrose Bierce

And (almost) everybody loses

*In the Soviet Union, capitalism triumphed over communism.
In [the United States] capitalism triumphed over democracy.*

Franz Lebowitz



Dr. Andrew Ng
2012 PSAC Award Recipient



Kostya Ostrikov
Plenary Speaker

2012 International Conference on Plasma Science (ICOPS)

The 39th IEEE International Conference on Plasma Science (ICOPS 2012) was held in historic and picturesque Edinburgh, Scotland, the United Kingdom, at the Edinburgh International Conference Centre (EICC). This meeting is the third ICOPS held outside of North America. Professor Michael Kong of Loughborough University, United Kingdom served as the Conference Chair, and Dr. Christine Coverdale of Sandia National Laboratories, New Mexico, USA served as Technical Program Chair. The conference ran from July 8th through July 12th, 2012. It was followed by a minicourse entitled "Plasma Medicine and Plasma Healthcare," that began on July 12th and ended July 13th. The minicourse, organized by Professor Mounir Laroussi of Old Dominion University and Dr. Georg Isbary of the Munich-Schwabing Hospital, provided a forum for discussion and collaboration in this new and

emerging field. The lecture topics spanned basic biology and biochemistry fundamentals, which provided a foundation necessary for plasmas researchers, to actual plasma applications in diverse areas such as surgery and dentistry, elaborating on opportunities and challenges. The instructors included medical doctors who have used plasmas in medicine, plasma scientists who have ventured into biomedicine, and the technology translators who have been involved in successful implementation of plasma technologies in healthcare facilities.

With a total of 821 accepted abstracts from 43 countries, the ICOPS 2012 conference featured a rich technical program that spanned the gamut of plasma science topical areas ranging from the fundamental to the applied. Of the accepted abstracts, 27% were from the USA, 39% from Europe, 31% from Asia and 1% from Africa.



2012 Curie Award recipient Gennady Mesyats presented award by Peter Staecker, IEEE President, and Edl Schamiloglu, PSAC Awards Chair.

CONFERENCE REPORTS

There were 299 oral talks and 515 posters. Support from numerous sponsors helped the conference committee with expenses, including 16 travel grant awards of £175 each for selected students attending from across the globe.

Conference committees worked hard to facilitate the participation of students, scientists, and engineers from around the world and to make the conference enjoyable, informative, interesting, and memorable. The meeting's technical sessions included abstracts apportioned as follows: "High Energy Density Plasmas and Applications" (172), "Industrial, Commercial and Medical Plasma Applications" (245), "Basic Processes in Fully and Partially Ionized Plasmas" (178), "Microwave Generation and Plasma Interaction" (106), "Charged Particle Beams and Sources" (41), "Plasma Diagnostics" (36), and "Pulsed Power and Other Plasma Applications" (42). Details regarding the technical program and committee activities can be found on the conference web page at icops2012.lboro.ac.uk/sites/default/files/icops_program.

Prof. Kong opened the conference with a synopsis of the Conference agenda that included technical sessions, participating countries, plenary speakers, awards, students' representation, and proceedings and publications.

On the second day of the conference, Dr. Brendan Godfrey presented the Plasma Science and Applications Award (PSAC Award) to Prof. Andrew Ng for his pivotal leadership in the advancement of Warm Dense Matter as a multidisciplinary scientific frontier, and his pioneering research on laser-driven shock compression and isochoric laser heating of solids. Following the award presentation, Prof. Ng gave a plenary presentation on "Warm Dense Matter: The Missing Link Between Condensed Matter and Plasma."

On Wednesday, Academician Gennady Andreevich Mesyats of the Lebedev Physics Institute was presented the IEEE Marie Skłodowska-Curie Award by Dr. Peter Staecker, IEEE President-Elect with the assistance of Prof. Edl Schamiloglu. Dr. Mesyats received the award for founding the field of nanosecond pulsed power, the physics of pulsed discharges, and for seminal contributions to the physics of vacuum breakdown at high power levels. Following the award presentation, Academician Mesyats gave a plenary talk about "Ecton Processes in a Vacuum Arc," which included a comprehensive overview of cathode spot phenomena.

The ICOPS 2012 meeting included seven plenary talks, including those by the PSAC and Curie award winners noted above. On Monday morning, Prof. Kostya (Ken) Ostrikov gave a very entertaining talk on "Plasma Nanoscience in a Sustainability Age." The talk highlighted plasma nanoscience applications such as super capacitors, biosensors, and efficient solar cells based on plasma-plasmon interactions. The talk also included novel methods of producing graphene.

This was followed by another interesting talk on Monday afternoon by Prof. J. Gary Eden on "Plasma Science in the Limit of the Small: Recent Advances in Microcavity Plasmas and their Applications." Such plasmas hold great potential in application areas such as lighting.

The Tuesday afternoon plenary talk was given by Prof. Alan Phelps. His very interesting presentation was titled "Advances in Gyro-Amplifier Research."

For Wednesday afternoon's plenary session, Prof. P. Thomas Vernier spoke on "Transient Plasma: Energy, Engines



J. Gary Eden
Plenary Speaker



Alan Phelps
Plenary Speaker



P. Thomas Vernier
Plenary Speaker

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CONFERENCE REPORTS

And I met a man who wasn't there

Some stories are true that never happened.

Elie Wiesel

Sigh! It hasn't helped me

It is not that I am so smart, it's just that I stay with problems longer

Albert Einstein

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and Aerospace Applications,” a subject of significant interest to his audience.

Thursday morning's plenary session featured Dr. Andrew Randewich (not pictured) who spoke on “High Density Waves at AWE,” which captured much attention. The talk focused on the Orion Laser at the Atomic Weapons Establishment, AWE, in the UK and its complementary relationship to the NIF experiment in the USA.

Steve Gold presented the PSAC Outstanding Student in Plasma Science Award to Boaz Rubinstein. He received the award for experimental and theoretical plasma spectroscopy advances leading to new insights into magnetic field penetration in nearly collisionless plasmas. More than 95 student papers were presented at the oral and poster sessions. Dror Alumot of the Weizmann Institute of Science, whose paper was entitled “A novel method for the determination of the ion temperature in plasmas, implemented for stagnating HED plasma,” and Tiny Verreycke of Eindhoven University of Technology, whose paper was entitled “OH dynamics in a ns pulsed filamentary discharge in atmospheric He-H₂O,” received the Student Outstanding Paper Award. This award included a \$500 cash prize along with a certificate of recognition. The runners-up, Marc Ramsey and Andreas Schlaich, received Honorable Mention Certificates. Jerry Chittenden presented the awards. Two Paul Phelps Continuing Education Grants were also awarded to support two outstanding students to attend the minicourse.

A Special Issue of *IEEE Transactions on Plasma Science* (TPS) will be published to document key technical content presented

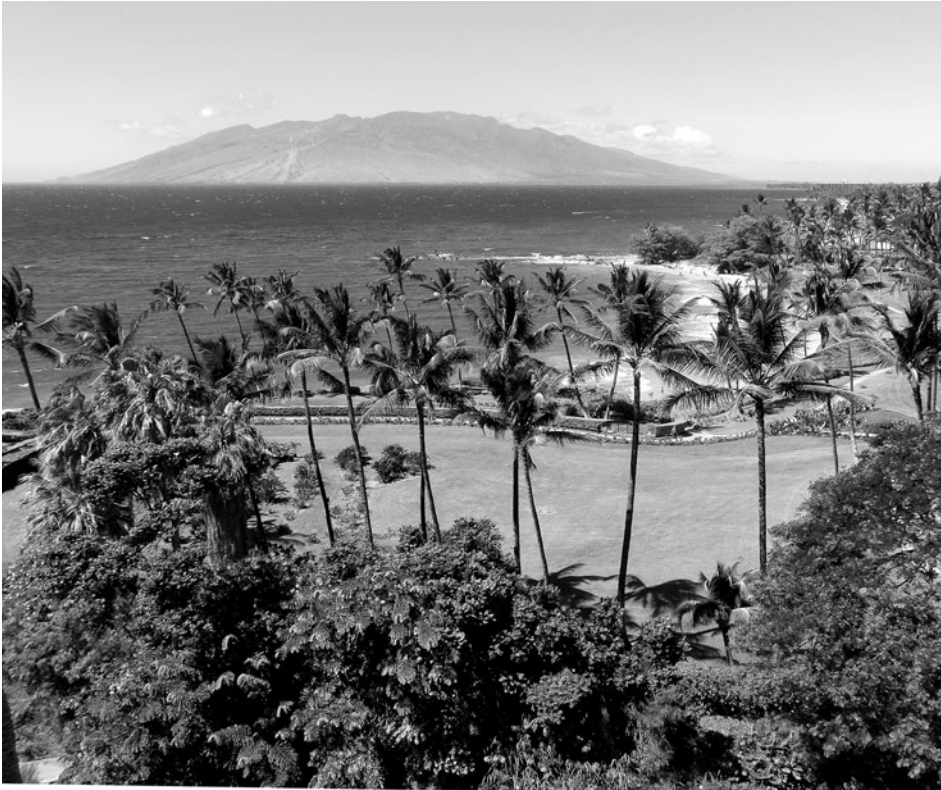
at ICOPS 2012. The Special Issue will include Plenary and Invited Talks from ICOPS 2012. Guest Editors Drs. Carl Ekdahl, Felipe Iza and Michael Kong, together with Dr. Steven Gitomer, Editor-in-Chief, will oversee this special issue.

The conference also offered a rich social program, which started with Sunday evening's welcome reception at Strathblane Hall in the Edinburgh International Conference Center. Monday evening featured an exclusive visit for attendees to the Royal Yacht Britannia, which included cuisine prepared on board by the Executive Chef in the Royal Galley. For more than 40 years, the Royal Yacht Britannia served the British Royal Family. In the past the yacht sailed more than one million miles on nearly a thousand state visits. It now is permanently berthed in the historic port of Leith in Edinburgh. The Conference Banquet was held in Cromdale Hall at the Edinburgh International Conference Center on Wednesday. The banquet featured traditional Scottish entertainment, including a piper to escort the entry of the haggis. Beyond the formal social program, the city of Edinburgh offered so much. Edinburgh castle, which sits atop an impressive hill and centrally located, beckoned attendees to explore the rich Scottish history told in the walls and chambers of the impressive structure.

The meeting was a success both intellectually and socially—memorable in all aspects.

John E. Foster, University of Michigan Department of Nuclear Engineering and Radiological Sciences can be reached by E-mail at: jefoster@umich.edu or by phone at +1 734 764-1976.

International Conference on Megagauss Magnetic Fields and Related Topics



View from the Wailea Beach Marriott Resort and Spa on the beautiful island of Maui, Hawaii, USA.

The 2012 14th International Conference on Megagauss Magnetic Field Generation and Related Topics (MEGAGAUSS XIV) was held October 14th–19th at the Wailea Beach Marriott Resort and Spa on the beautiful island of Maui, Hawaii, USA. A list of previous conferences and their locations is available at <http://megagauss.org/>.

The Megagauss XIV General Chair was Jim Degnan (Air Force Research Laboratory), the Technical Program Chair was Ken Struve (Sandia National Laboratories), the Conference Secretary was Chuck Mielke (Los Alamos National Laboratory), and the Treasurer was

Jim Goforth (Los Alamos National Laboratory). Local organization was provided by Sandy Ryan and Leilani Hearn of the Maui Economic Development Board. Vita Feuerstein of IEEE Conference Services was very helpful in the venue arrangements. The conference was sponsored by the Megagauss Institute, Inc., a nonprofit scientific and educational institution and the IEEE Nuclear and Plasma Sciences Society's Pulsed Power Science and Technology Committee; it was supported by Lawrence Livermore

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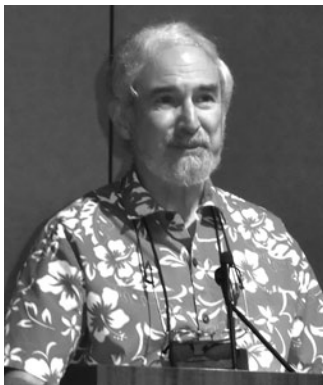
Jim Degnan
General Chair, Megagauss XIV

Not (quite) true

The problem with adding years to your life is that they come when you are too old to enjoy them.

New Scientist editorial

CONFERENCE REPORTS



Peter Turchi, recipient of the Megagauss Award, presents an invited talk.



Jerry Kiutti
President, Megagauss Institute

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National Laboratory, Sandia National Laboratories, and SAIC, Inc.

CONFERENCE TOPICS

- Ultrahigh Magnetic Field Generation
- Nondestructive Production of Pulsed, High Magnetic Fields
- Explosively Driven Magnetic Flux Compression Generators and High Current Sources
- High-Current, High-Power Switching and Power Conditioning
- High-Energy Liners
- Science in Ultrahigh Magnetic Fields
- Mathematical Modeling
- Diagnostics and Experimental Techniques
- Experiments for High-Energy Density in Physics
- Related Topics

We had 63 conference participants from 8 countries from North America, Europe, and Asia. There were 65 papers presented; 43 were oral, including

17 invited. The conference program, including a list of invited papers and speakers, as well as other details, can be found at <http://www.megagauss.org/mgi2012.htm>.

The conference banquet was a traditional Hawaiian luau. Three international prizes were awarded. The Pavlovskii Prize, awarded by the International Steering Committee of the Megagauss Conference and sponsored by the All-Russian Scientific Research Institute of Experimental Physics (VNIIEF), went to Vasily Demidov (Russia) and Jim Goforth (USA) for long-time contributions to megagauss physics and technology. The Megagauss Award, sponsored by the Megagauss Institute, was presented to Peter Turchi (LANL, retired) for lifetime contributions to megagauss physics and technology, and his pioneering role in establishing and guiding the Megagauss conferences.

The next Megagauss Conference will be held in Russia in 2016, and it will be hosted by VNIIEF.

Submitted by Jerry Kiutti, chair of the Megagauss Institute, who can be reached by E-mail at Gerald.kiutti@varitech-services.com.

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President's Report

It is a great pleasure and an honor to be writing my first message as I begin my two-year term as the President of the NPSS. My involvement with the NPSS began in 1982 when I attended my first NPSS-sponsored conference when I was developing radiation and effects analysis applications for NASA flight programs. This was the Nuclear and Space Radiation Effects Conference (NSREC) which was held in Las Vegas, and it was the first time that I met with researchers whose published work was critical to my efforts to develop radiation-hardened systems for NASA. I quickly realized that progress in science and engineering comes about via researchers and practitioners sharing knowledge and setting up collaborations at conferences and symposia and that the NSREC is an essential venue for this to happen in radiation-effects research. In my experience, the success of agency and commercial programs is a direct result of formal and informal dialog between scientists and engineers at IEEE-sponsored conferences that have strong support from all stakeholders. Over the years, I have met and formed collaborations with members of the international radiation effects community and have been impressed that the IEEE is an organization that promotes research and engineering developments throughout the world. In 2008, I was elected by the Radiation Effects community to serve as a member of the NPSS Administrative Committee (AdCom), which has given me the opportunity to see more clearly what tremendous organizations the IEEE and our Society are and what great benefits they bring to its members. This is the place where you will find friends and colleagues, conferences where you can present research, journals where you can publish papers and find the latest results,

and where you can explore opportunities for collaborations.

In addition to the conferences, publications, and award programs in the NPSS, the IEEE offers a wide range of learning, career enhancement, and employment opportunities within the engineering sciences, research, and other technology areas. The goal of these programs is to ensure the growth of skill and knowledge among professionals and to foster individual commitment to continuing education among IEEE members, the engineering and scientific community, and the general public. I invite you to explore the IEEE Education website at http://www.ieee.org/education_careers/index.html where you will find career and job resources, university education and accreditation resources, technical education opportunities, and pre-university education resources. Also, it was not until I participated on the NPSS AdCom that I learned about the IEEE Humanitarian Technology Challenge (HTC). The HTC was an innovative, collaborative endeavor started through the IEEE, the UN and the Vodaphone Foundation that would develop and implement technological solutions to selected humanitarian challenges in developing countries. It was created by technologists, humanitarians, nonprofit organizations, students, government employees—and citizens of the world—who came together to identify and work to solve some of the world's most pressing challenges. With a unique, open-source collaborative concept, HTC enabled volunteers to make a difference—without making a major commitment of time or resources. Although the HTC was discontinued in 2010, the NPSS continues work born out of the HTC through the IEEE

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Janet Barth
IEEE NPSS President

Don't you wish

Destiny has two ways of crushing us — by refusing our wishes and by fulfilling them.

Henri Frederic Amiel

Opinion sells more than hard facts, alas!

In journalism, it is simpler to sound off than it is to find out. It is more elegant to pontificate than to sweat.

Harold Evans

(continued from page 13)

Community Solutions Initiative (CSI) development of mobile solar generators for use in Haiti and, in the future, other developing countries. Over the past year, work has begun on infrastructure in Haiti so the units can be produced by Haitian managers and workers thereby providing economic growth to the country. The success of this effort is due to the support of the NPSS as one of the organizations that provided major seed funding. However, the solar generator project would not have gotten off the ground without the efforts of our IEEE Social Implications of Technology Liaison, Ray Larsen, a past NPSS president, who has devoted thousands of hours of time and his own resources to the project. If you have not already read his Liaison Report in the December 2012 issue of the NPSS News, I encourage you to do so now. More information on the mission of the Community Solutions Initiative can be found at <http://communitysolutionsinitiative.org/>, including exciting new work recently begun in Africa.

I'm very proud to be a part of the NPSS and am honored to be its President for the next two years. I would first like to thank our former President and my mentor during the transition into my position, Bob Reinovsky, who provided us with his outstanding leadership during the last two years. Please join me in thanking him for his two years of service as President of the Society. Bob worked diligently to serve the NPSS and demonstrated unfailing sense of fairness and good humor amidst balancing the responsibilities of the Society and some unexpected, daunting challenges at his "day job." I thank Craig Woody and Jane Lehr, our past two Presidents, and Albe Larsen, our Secretary, who generously shared their advice and guidance as I took on the responsibilities of Vice-President, and I am also grateful for and will continue to rely on our Finance

Committee Chairman, Hal Flescher, who provides the AdCom invaluable insight on the inside workings of the IEEE. As we begin 2013, I am joined by our new Vice-President/President-Elect, John Verboncoeur, who served on the AdCom as an elected member of the Plasma Science and Applications (PSAC) Technical Committee. John brings a wealth of experience from his active participation in his technical community and on the AdCom. Craig Woody will become our new Awards Chair and Bob Reinovsky, as our Past President, will become Chair of our Nominations Committee. We also have had changes in Chairpersons and Elected Members on our Technical Committees and in some of our Functional Committee Chairpersons and Liaison Representatives. We have many talented and dedicated people in our organization, and I can report that our Society is in good hands and in a healthy state as we start the New Year. In March the NPSS AdCom will hold its annual retreat where we will discuss topics including concerns about reduced conference support from U.S. federal agencies, promotion of NPSS membership, and goals and new initiatives for 2013. If you have topics that are important to you, please send them to me at jbarth@ieee.org, and we will discuss them at future meetings.

In closing, I would like to thank all of our past Committee members for their devoted efforts in helping NPSS achieve success and wish all the new members all the best in their new positions. I would again like to thank the membership of NPSS for giving me the opportunity to serve as your President for the next two years, and I promise that I will do my best to keep our Society healthy, active and involved with our community as it has been in the past. I look forward to meeting many of you during my term in office and finding ways to help make our Society serve you better.

*E-mail: jbarth@ieee.org
(see page 21 for complete contact information)*

Secretary's Report

The IEEE NPSS AdCom met in Anaheim, CA at the Disneyland Convention Center on November 3rd, 2012. This was the Annual Meeting of AdCom. It is also the meeting at which new officers are announced, and at which new AdCom elected members and committee chairs are identified. It is also the time at which we thank those who have served and whose time on AdCom is over. Elected AdCom members whose terms have ended are Steve Gold (PSAC), Jean-Luc Leray (Transnational) and Tom Lewellen (NMISC). Technical Committee chairs whose terms are over include Dennis Youchison (Fusion), Brendan Godfrey (PSAC), Jane Lehr (PPST) and Dan Fleetwood (Radiation Effects). Please read the following section to meet their replacements. As you have noted, we also have a new president, Janet Barth of NASA Goddard Space Flight Center, and a new Vice President/President-elect, John Verboncoeur of Michigan State University who was elected by a landslide on the first ballot of a four-way competition. We welcome them warmly to their new jobs; their biographies also follow. To all who have served, including our immediate Past President, Bob Reinovsky (see Janet Barth's column above), we offer our heartfelt thanks. Note that some of those whose elected terms have ended will remain on AdCom in appointed positions. See p. 2 of this newsletter, the AdCom roster, to see their new or continuing roles.

Our treasurer, Ron Keyser, reported that NPSS remains fiscally healthy with our 2012 income close to projection. Both TPS and TMI are meeting their page projections. TNS is slightly short of forecast.

We also continue with several conferences late in closing. For the most part, conferences are meeting their projections.

However, registration fees do not cover the full cost of conferences. Support from exhibitors and sponsors make it possible for conferences to succeed financially. In 2012 only Megagauss XIV is expected to have lost money, possibly due to very low attendance, about half its usual. TC chairs are mandated to take direct responsibility for monitoring activities of the conferences their committee sponsors and to ensure that they adhere to best business practices. New budgeting tools that will permit better tracking of income and expenses are being launched by IEEE and all societies will be required to use them. It has also been suggested that conferences increase budgets for student support.

Bob Reinovsky, President, reported that Hurricane Sandy had a big impact on IEEE HQ operations. Although the physical facility received only minor damage, power outages caused a shift to their backup computing site in Arizona. Staff worked valiantly from home but some staff sustained severe damage to their homes. For the first time in my own memory the TAB meeting scheduled for later in November was canceled and the Board of Directors only met by phone and where possible, videoconferencing, to conduct essential business. Piscataway headquarters are now up and running with their usual efficiency.

Bob also discussed the very important subject of increasingly tightening U.S. government restrictions on travel to conferences. This began in May and implementation has been Draconian at some U.S. labs, less so at others. However, the expected impact on the development of science is potentially severe since, as Janet Barth mentioned above, the interactions among colleagues at these meetings frequently generate new

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Albe Larsen
NPSS Secretary and Newsletter Editor

Potty mouth!

The trouble with words is that you never know whose mouths they have been in.

Dennis Potter

But, is the converse true?

*The man who makes no mistakes
usually makes nothing.*

Edward Phelps

Resurrection!

*Plans to breath new life into
town cemetery.*

Headline in *The Bucks Herald*

(continued from page 15)

ideas and new collaborative possibilities as well as fine-tune ongoing work.

Our Division IV Director, Peter Clout, noted he has attended many AdCom meetings as well as the Region 6 meeting. He has tried to instill in various AdComs what NPSS has learned well over the years, that “we is them,” that is, we all are the IEEE. His Division IV Presidents Luncheons have been a success, and his successor, Dr. Jozef W. Modelski, plans to continue them.

TECHNICAL COMMITTEES

The CANPS Committee, under Stefan Ritt, has announced its 2014 Real Time conference in Nara, Japan. Its 2016 conference will most likely be in Italy. The *CERN Courier* carried an article on Chris Parkman’s receipt of the 2012 Real Time award.

Fusion Technology will host the 2014 SOFE conference at the Stanford Court Hotel, San Francisco, CA from June 10th to 14th. Dr. Abbas Nikroo of General Atomics is the recipient of the 2012 Fusion Award.

We thank Dennis for a great job as Fusion TC chair. He will be replaced by Jean Paul Allain of Purdue University.

Tony Lavietes and Tom Lewellen respectively Radiation Instrumentation and 2012 NSS/MIC chairmen, both noted the loss of U.S. government sponsorship funds to the SORMA and NSS/MIC conferences in 2012.

The Radiation Instrumentation NSS awards went to Richard Wigman and to Feng Zhang (early career).

The 2012 NSS/MIC had 2177 total registered attendees with about 80 no shows. There were 512 students and 62 exhibitors. It was the biggest NSS/MIC held in the U.S.

Suleman Surti, chair of the NMISC noted that the steering committee now

has five newly elected members. The Medical Imaging Sciences award was presented to Dr. Simon Cherry and Chi Liu received the Hoffman award.

The next NSS/MIC will be held in Seoul, Korea. For U.S. citizens, only a passport is required. Other attendees, please check on visa requirements in your home country.

The U.S. IPAC, held in New Orleans had 1886 abstract submissions and attendance that was 45% North American, 35% European and 20% Asian, reported Stan Schriber, chair of the PAST committee. He also noted 79 industrial exhibits and generous student support from Asia, Europe and the U.S. Electronic posters were a big success.

The 2013 PAC, scheduled for Pasadena, may be severely impacted by the U.S. government’s travel restrictions so the conference organizers have decreased attendance estimates from 750 to 500. The next U.S. IPAC, in 2015, will maintain current projects for now.

The Plasma Science and Applications chair, Brendan Godfrey, announced Jon Luginsland as their newly elected AdCom member. The storm interfered with their PSAC elections.

ICOPS 2012, held in Edinburgh under the leadership of Dr. Michael Kong, was a great success. See John Foster’s detailed report above. This was the third non-North American ICOPS. The 2013 ICOPS is joint with Pulsed Power (see cover story), the 2014 ICOPS will be joint with the BEAMS conference, and the 2015 ICOPS will be held in Antalya, Turkey with Lufti Oksuz as chair. The date is not yet confirmed.

Jane Lehr, chair of the Pulsed Power TC noted that the web site for the joint PPPS went live on Nov. 12th. There are contingency plans for a 20% attendance decrease and they are seeking places to cut the budget and possibly the social program. Jane is also proposing the

formation of a Conference Information and Promotion group to better advertise the PP conferences. The NSS/MIC group has been highly successful. There is also a thought of an event to elevate people to senior membership status. Many IEEE members are eligible for senior status but don't bother to apply. One has to be a senior member to be considered for Fellow.

The Radiation Effects chair, Dan Fleetwood, noted a bit lower than expected attendance at this year's NSREC. Many attendees (~75%) also attend the short course. They, too, are anticipating further attendance drops because of the current U.S. conference attendance policies, and are also seeing decreases in U.S. government support. Corporate sponsorships are increasing, taking up at least some of the deficit and this year they had a record number of exhibitors.

The upcoming NSREC to be held in San Francisco (see CONFERENCES, above) will be the 50th. Special event commemorations are in the works, including a special short course.

In 2014 NSREC will be held outside North America for the first time ever, in Paris! In 2015 the meeting will be in Boston.

FUNCTIONAL COMMITTEES

Bill Moses, Conferences Committee chair, noted that there is new conference initiation software that allows information to be added. Because of the large rise in technically cosponsored conferences their costs are being evaluated in further detail. It is likely that these conferences will be assessed a higher fee, plus a per paper charge for every paper entered into Xplore. One goal is to increase the quality of these conferences and also to increase the quality of publications arising from them. Plagiarism checks are now required for all papers in Xplore. It is also

recommended that conference program chairs check abstracts for plagiarism.

The Awards chair, Jane Lehr, noted that the Fusion Technology award has been reworded. The deadlines for society awards and for the Curie Award have passed, but Fellow nominations aren't due until March 31st.

Craig Woody has taken over the awards chairmanship as of January 1st.

Sal Portillo, our new Membership chair, noted that our membership is now at ~3000, well above the 2002 level of ~2600. We need better retention methods, and also need a consistent recruiting approach at conferences. We also need to improve student recruiting. NPSS has only about 60 undergraduate and 160 graduate student members. Overall about a quarter of IEEE's 400,000 plus members are students. New people need to become engaged in the society. This is a topic that will see considerable further discussion. Many ideas are afloat.

Steve Gold reported that there are 17 active chapters of 20. Chicago, Boston and Benelux have been inactive; Benelux and Boston are working at reinvigoration. Beijing is continuing its attempt to start a chapter. Inquiries have come from Argentina.

The Distinguished Lecturer program had 20 known lectures in 2012. Of these, only three speakers requested expense reimbursement. Request Distinguished Lecturer brochures or visit the NPSS web site to learn more.

The Fellow Candidate Evaluation chair, Jane Lehr, noted that the 2013 Fellow class would be announced in late November, despite Hurricane Sandy. Please get nominations in.

The Finance Committee, led by Hal Flescher, is looking at best budget review processes.

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Speaking of my wife...

Few things are harder to put up with than the annoyance of a good example.

Mark Twain

Gather ye rosebuds....

Most men that do thrive in the world do forget to take pleasure during the time they are getting their estate, but reserve that till they got one, and then it is too late for them to enjoy it.

Samuel Pepys

(continued from page 17)

The Nominations Committee chair, Craig Woody, announced the three new elected AdCom members: John Luginsland (PSAC), Patrick Le Dû (Transnational) and Ron Jaszczak (NMISC). Barely a quarter of our members voted. Did you? Watch for the 2013 NPSS ballot in your e-mail and vote!

Our Publications chair, Paul Dressendorfer, opened his remarks by asking what the Newsletter should be. This will be discussed at our March retreat. If you have comments or suggestions, please send them to me: amlarsen@slac.stanford.edu.

Paul commented on the continuing issue of plagiarism. A new journal in Asia copied IEEE articles wholesale with no acknowledgment and no permission. Sanctions are being sought.

TNS, for which Paul is Editor-in-Chief, now has 88 editors and exceeds IEEE expectations for time to first decision and time to publication. Most accepted papers are published within a year of initial submission. TPS, reports Editor-in-Chief Steve Gitomer, reaches a first decision a bit more slowly, but again is well within IEEE recommended limits for both first decision and time to publication. In 2013 there will be at least ten special issues of TPS.

Peter Clout, our Communications chair, reminded us that 2013 is the year when we publish a revised brochure. We are also considering new leaflets and other promotional materials. What would you like to see? Let Peter know at clout@vista-control.com. Also send him any fabulous pictures of experiments, people in labs, people interacting at conferences. Ideally pictures should be JPEG or TIFF format and 10-15 MB.

Our non-North American activities continue to grow and Jean-Luc Leray

and Patrick Le Dû, the Transnational Committee chair and Transnational conference liaison respectively, support these growing activities including a larger number of non-North American conferences and an increasing number of European and Asian attendees at our North American conferences. They are also eager to see an increase in summer schools for graduate students and young researchers in these regions and will try to tie them to conferences where senior scientists are present and might easily extend their stays for a few days to teach in a Summer School. We now have storage and shipping facilities outside Paris, organized by Jean-Luc, to facilitate shipping of booths, banners and brochures and other items within Europe. This has many benefits since initial shipping from the U.S. can be done by inexpensive boat freight and shipment within Europe is less expensive. IHEP in Beijing has offered some help on the Asian front to store and ship materials within Asia. This will be explored further.

Our efforts on the nuclear power and alternative energy activities involved technical cosponsorship of an IAEA conference held in Utah (PLIM) and continues with the ANIMMA series of conferences. TNS is accepting nuclear-power related papers.

LIAISON REPORTS

Our liaison for Social Implications of Technology and Community Solutions, Ray Larsen, reports on modifications to the original SunBlazer trailer mounted solar system deployed in Haiti. Modifications will reduce costs and simplify manufacturing. At the IEEE Power and Energy Society (CSI is a PES/NPSS enterprise, housed in PES) PowerAfrica conference held in Johannesburg considerable interest was shown in adapting the Haiti model for use in Africa. To date there is engagement in South Sudan, Cameroon

and Nigeria. Ray has also been appointed to the IEEE Special Interest Group on Humanitarian Technology (SIGHT) committee that promotes and oversees IEEE's Mission on Humanitarian Activities. More information on SIGHT can be found here: http://www.ieee.org/special_interest_group_on_humanitarian_technology.html.

Sandra Biedron, our liaison to IEEE-USA's R&D Policy committee, noted the big impacts of sequestration and travel restrictions. Export control reformulation is another major issue under study.

Peter Clout, our ICALEPCS liaison, reported that ICALEPCS will meet at the Hyatt Regency San Francisco Oct. 7th to 11th, 2013. An MOU is in progress. Peter and Patrick Le Du have been involved with program development.

Lee Berry, liaison for the Coalition for Plasma Science, joined AdCom for the first time. He outlined CPS's many activities including presentations to congress, a plasma video project, maintaining a web site with resources for K-12 science teachers, including materials evaluations and leaflets. They also participate in Teacher Training Days. They coordinate with the National Research Council's Plasma Science Committee and suggest activities to them. They also offer a plasma science prize at the Intel Science Fair and help coordinate plasma science experts to be judges.

Jim Schwank, our RADECS liaison, noted that RADECS, held in Biarritz, had 390 attendees from 26 countries. There was a data workshop and three plenary and three invited papers. There were also many industrial exhibitors. The 2013 conference is

scheduled for Oxford from Sept. 23rd–27th. Richard Sharp is General Chair.

Randy Brill, our liaison to the IEEE-USA Medical Sciences Committee noted there is nothing at present of interest to us.

Allan Johnston, the liaison to IEEE Women in Engineering, commented on the WIE session at the NSS/MIC conference. Attendance was about 25 people; the meeting was held at a time that wasn't conducive to good attendance.

WIE deals well with students, but not with professional women. Only 5% of IEEE members are women.

Randy Brill and Ron Jaszczak, our TMI liaisons, report that TMI continues as an outstanding journal in its fields. Only ~20% of papers submitted each year are published, but they publish over 200 papers each year. The current Editor-in-Chief will serve three more years, but the quest for a replacement has begun. See the notice in this newsletter (p. 45). The newly elected TMI steering committee chair is Michael Insana of the University of Illinois, Urbana.

BUSINESS CONDUCTED BY ADCOM

- It was moved, seconded and passed that a DVD be pressed of back issues of the BEAMS conference records and that they be distributed to attendees at the BEAMS 2012 along with the proceedings. This is an add-on to motion 11.1.2 passed on March 6, 2010. Spending is capped at the original level.
- Phelps Awards: It was moved, seconded and passed that the NPSS Treasurer will follow these guidelines in the administration of Phelps grants. The candidates will be selected by conference chairmen or their delegates.

Our constant companion

The past isn't dead. It isn't even past.

William Faulkner

You can rely on me

Only mediocrity can be trusted to always be at its best. Genius must always have lapses proportional to its triumphs.

Max Beerbohm

(continued on page 20)

The (mis)measure of man

*The amount of temptation required
differentiates the honest from
the dishonest.*

Paul Eldridge

(continued from page 19)

1. The award is limited to \$750 for each recipient
 2. The number of awards per conference is limited to 3
 3. Support the cost of short course (tutorials) fee at an NPSS Conference
 4. Support the cost of travel and hotel to the NPSS Short Course
 5. Recommended reimbursement procedures include:
 - 5.1 Expenses submitted on an IEEE expense report form, or
 - 5.2 Paid directly from the conference budget to the provider
- It was moved, seconded and passed that NPSS AdCom requests that their author open access fee for the *Transactions on Nuclear Science* and *Transactions on Plasma Science* be set equal to that of the “New Style” Journal—IEEE Access.
 - It was moved, seconded and passed that IEEE NPSS form a subcommittee

to study and make funding recommendations to support specific CSI initiatives in Africa and beyond. This group will work with a new CSI management, marketing and finance committee involving PES, the IEEE Foundation and IEEE corporate. The target date for an initial Africa recommendation is the next regular AdCom meeting.

- PSAC requested a one-time only exception to their bylaws on ExCom voting and 2013 PSAC Award recipient selection protocols due to cancellation of the ExCom meeting as a result of Hurricane Sandy. Approved.
- A motion requesting an additional \$37k for Community Solutions work in Haiti passed. Funds for Africa (Cameroon, Nigeria, South Sudan) were declined.

Albe Larsen, IEEE NPSS Secretary and Newsletter editor can be reached by E-mail at amlarsen@slac.stanford.edu.

New AdCom Officers

JANET L. BARTH

President



Janet Barth
IEEE NPSS President

Janet L. Barth is the Chief of the Electrical Engineering Division (EED) at NASA's Goddard Space Flight Center (GSFC) where she is responsible for the development of technology for and delivery of spacecraft and instrument avionics to NASA's science missions, including the James Webb Space Telescope; the Magnetospheric Multiscale mission; the Global Precipitation Measurement mission; the Hubble Space Telescope repair missions; the Solar Dynamics Observatory; the Ice, Cloud, and Land Elevation Satellite;

and the Lunar Reconnaissance Orbiter. She also oversees development of flight microwave and communications systems and ground network development and, for the Wallops Flight Facility, suborbital avionics systems.

She began her NASA GSFC career as a cooperative education student in the area of radiation environments and effects research. She became a lead radiation hardness assurance engineer for NASA flight projects and supported the Electronic Parts and Packaging Program, which focuses on the electronic parts reliability for space programs. She was

a member of the team that developed NASA's systems engineering approach to radiation hardness assurance for emerging technologies.

Starting in 1999, she was a member of the preformulation/proposal team for NASA's *Living with a Star* Program and the LWS Program Science Architecture Team. In 2001 she was selected to be the manager for the LWS's Space Environment Testbed Project and, in 2002 to 2008, she was a branch manager in the EED.

Ms. Barth is a Senior Member of the IEEE and served as an elected member of the IEEE Nuclear and Plasma Sciences Society Administrative Committee (AdCom) from 2008–2010 and as the Vice-President/President Elect in 2011–2012. She is actively involved with the IEEE Nuclear and Radiation Effects Conference (NSREC), teaching the Short Course in 1997 and serving as the Guest Editor of the IEEE *Transactions on Nuclear Science* from 1998–2000, the Technical Program Chairwoman in 2001, and the General Conference Chairwoman in 2006. She is a regular participant in the European Radiation and its Effects on Components and Systems (RADECS) Conference and has served as a session cochair, the NSREC liaison to the RADECS Conference Technical Committee in 2001, and a Short Course instructor at the 2009 RADECS Conference.

Janet Barth, the NPSS President, can be reached at NASA Goddard Space Flight Center, Code 560, Electrical Engineering Division, 8800 Greenbelt Road, Greenbelt, MD 20771; Phone +1 301 286-5118; Fax: +1 301 220-3118; E-mail: jbarth@ieee.org.

JOHN P. VERBONCOEUR Vice President/President-elect

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 as 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. He has authored/coauthored over 300 journal articles and conference papers, with about 2000 citations, and has taught 13 international workshops and minicourses 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* and *IEEE Transactions on Electron Devices*, as well as a number of other plasma and computational journals. He has served as



John P. Verboncoeur
NPSS Vice President/President-elect

And are away from home

Experts often possess more data than judgment.

Colin Powell

(continued on page 22)

Need a little less, perhaps

Personally, I can't muster up enough faith to be an atheist.

Greg Robinson

(continued from page 21)

a Session Organizer or Technical Area Coordinator for eight IEEE International Conferences on Plasma Science (ICOPS) and one IEEE International Power Modulator and High Voltage Conference. He is currently serving as the Technical Program Cochair for the

2013 IEEE Pulsed Power and Plasma Science Conference. He is an active participant in most technical areas within the NPSS, and has served three years on the NPSS Administrative Committee representing the plasma science and applications community.

John Verboncoeur can be reached by E-mail at johnv@msu.edu

New AdCom Members

Ron Jaszczak was elected to AdCom from the NMI community previously and is a past president of NPSS; John Luginsland returns to AdCom where he previously served as chair of the Plasma Science and Applications Technical

Committee, and Patrick Le Dû has served as chair of the first international NSS/MIC and as liaison to all non-North American conferences. He is the 2012 recipient of the R.F. Shea Distinguished Member award,

New Technical Committee Chairs

JOHN PAUL ALLAIN

Fusion Technology

John Paul Allain, usually called JP, has been appointed as chair of the Fusion Technology technical committee. He is an Associate Professor at Purdue University.

JP Allain can be reached by E-mail at allain@purdue.edu.



Rickey Faehl

RICKEY FAEHL

Plasma Science and Applications

Rickey Faehl has been actively involved in plasma physics research for over 40 years. During this period, his main interests have been pulsed-power applications and intense charged-particle beams. The pulsed-power applications have been directed toward using electromagnetic pulses to compress solid liners, both to study the dynamics and stability of the liners and to study dynamic material properties under the

extreme conditions that imploding liners can generate. The charged-particle beam studies have focused on beam generation and acceleration, high-powered microwave generation, and industrial applications, such as surface-property modification. This work was conducted at several national laboratories, but for the great majority of the time, Rickey was employed at Los Alamos. He has also been actively involved in the IEEE during this period, especially in the last 20 years. He has served previously on the PSAC ExCom, has been an NPSS Chapter Chairman, Treasurer, and has done whatever else has been needed locally (Los Alamos Chapter).

Rickey served as a Guest Editor for a special issue of the *IEEE Transactions on Plasma Science* on megagauss magnetic fields.

Rickey Faehl can be reached by E-mail at afaehl@earthlink.net.

MARTY R. SHANEYFELT

Radiation Effects

Marty R. Shaneyfelt (S'82–M'88–SM'00–F'02) received his B.S. degree in Electrical Engineering from the University of Nebraska, Lincoln, in 1984, and his M.S. degree in Electrical Engineering from the University of New Mexico in 1990. From 1984 to 1990 he worked on technology development and manufacturing of radiation-hardened integrated circuits for Allied-Signal Microelectronics Operation, Albuquerque, NM. Marty joined Sandia National Laboratories in 1990, where he is a Distinguished Member of the Technical Staff in the Radiation Physics, Technology, and Assurance Department. At Sandia, he has been involved in numerous research activities associated with developing radiation-hardened bulk and SOI CMOS technologies, characterizing the physical mechanisms responsible for the radiation response of ICs, and developing hardness assurance approaches. Marty has authored or coauthored more than 175 publications, encyclopedia articles, and short courses, including 11 IEEE Nuclear and Space Radiation Effects Conference (NSREC) Outstanding Conference Papers and two Hardened Electronics and Radiation Technology (HEART) Conference Outstanding Papers. He is presently the Chairman of the Radiation Effects Steering Group overseeing the NSREC. He has served as General Conference Chairman, Publicity Chairman, Local Arrangements Chairman, Session Chairman, and Finance Chairman for the IEEE NSREC and as Vice-Chairman of Publications and Member-at-Large of the Radiation Effects Steering Group. Marty is a Fellow of the IEEE and a member of the NPSS.

Marty Shaneyfelt can be reached by E-mail at shaneymr@sandia.gov.

JUERGEN F. KOLB

Pulsed Power Science and Technology

Juergen F. Kolb studied mathematics and physics at the University of Erlangen where he received the Dr. Rer. Nat. in physics in 1999. He continued research on plasma interactions with heavy ion beams at the Technische Hochschule Darmstadt and GSI Darmstadt, Germany, then received a degree to teach secondary school in Bavaria, which he did for two years. In 2002 he joined the Physical Electronics Research Institute and then the Center for Bioelectrics at Old Dominion University (ODU), Norfolk, VA, to study the pulsed electrical breakdown in water for fast high-power switching in compact pulsed-power systems and fast biophysical response mechanisms of nanosecond pulsed electric fields with cells. In 2002 he joined IEEE NPSS and became a senior member in 2008. With Karl Schoenbach and his colleagues at the Center for Bioelectrics he developed pulsed-power technologies for environmental and biological applications, and especially the application in novel medical therapies, such as cancer treatments. In 2006 he joined the Department of Electrical and Computer Engineering at ODU where he became an associate professor in 2011. His teaching focused on graduate courses in pulsed power and bioelectrics. He accepted a joint appointment at the Department of Physics at the University of Rostock, Germany, and the Leibniz-Institute for Plasma Science and Technology in Greifswald, Germany, as Professor for Bioelectrics and Program Manager for Bioelectrics, respectively. At the Leibniz-Institute he also heads the Department of Plasma Source Development. He continues to investigate and apply pulsed-power technologies and nonthermal plasmas for environmental and medical applications.

Juergen Kolb can be reached by e-mail at jkolb@odu.edu or by phone at +49 3834 554 3950.



Marty R. Shaneyfelt



Juergen F. Kolb



Stefan Ritt
CANPS Chair

Computer Applications in Nuclear and Plasma Sciences

Preparations for the upcoming Real Time Conference 2014 are going well. The conference will take place in the lovely deer park inside the city of Nara, Japan, in spring 2014. It will be organized by the University of Osaka, the RIKEN Research Institute and the KEK High Energy Accelerator Research Organization under the chairmanship of Masaharu Nomachi. The historic town of Nara has many old temples and shrines and is a UNESCO world cultural heritage site; it is therefore a major center for tourism in Japan and a perfect place to hold a conference.

In conjunction with the conference we will organize for the first time a summer school for real time applications in particle and nuclear physics. This school will bring together interested students

mainly from Asia and lecturers from our community who have many years of experience in this field. As the course will be held in the week before the conference, it will allow young scientists and engineers to learn the basics of real time applications and then make better use for the following conference.

An updated list of CANPS committee members and a link to a *CERN Courier* article about last year's RT2012 conference in Berkeley can be found at <http://ewh.ieee.org/soc/nps/tc-canps.html>

Stefan Ritt, chair of the Computer Applications in Nuclear and Plasma Science Technical Committee, can be reached at the Paul Scherrer Institute, CH-5232 Villigen, Switzerland. Phone +41 56 310 3728; E-mail: stefan.ritt@psi.ch.



Suleman Surti
NMIS Technical Committee Chair

Nuclear Medical and Imaging Sciences

The 2012 IEEE NPSS Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC) was held successfully at the Disneyland Hotel Convention Center in Anaheim, CA from Oct. 27th through Nov. 3rd, and preparations are already in full swing for the 2013 meeting.

At the 2012 MIC we had the honor of acknowledging the work of two of our colleagues by awarding them with our annual NMISTC awards. This year's winners of the Edward J. Hoffman Medical Imaging Scientist and the Bruce Hasegawa Medical Imaging Conference Young Investigator Awards were Dr. Simon Cherry of University of California, Davis and Dr. Chi Liu of Yale University, respectively. Dr. Cherry received his award "For pioneering

contributions to preclinical PET and molecular imaging." Dr. Liu received his award "For contributions to the imaging physics of SPECT/CT and PET/CT, with emphasis in quantitative imaging and motion correction." I would like to congratulate our two winners from 2012, and also encourage you to take the effort to nominate eligible candidates for this award in the future (deadline for nominations is 15 July). Information about the NMISTC awards and additional NPSS level awards can be found on the NMISC web site (<http://ewh.ieee.org/soc/nps/nmisc/MICAwards.html>).

Preparations are ongoing for the 2013 IEEE NSS/MIC meeting at the Coex Convention Center in Seoul, South Korea from Oct. 27th through Nov. 2nd.

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The theme for this year's meeting will be "Beyond Imagination of Future Science." The conference center is located in the southern part of the city with good transportation access to both downtown Seoul and the airport. Hee-Joung Kim is the General Chair for the meeting, while Jae Sung Lee and Craig Levin will be the MIC Program Chair and Deputy Program Chair, respectively. The organizing committee is actively working for a successful scientific meeting, with several single and joint scientific sessions, plenary talks from industry and academia, and several related workshops. The meeting website is now open online and I would encourage you take a look at it for other details (<http://www.nss-mic.org/2013>).

The 2014 IEEE NSS/MIC meeting will take place in Seattle, WA at the Washington State Convention Center. Tony Lavietes will be the General Chair for the meeting, while Georges El Fakhri and Katia Parodi will serve as the MIC Program Chair and Deputy Program Chair, respectively. The organizers are busy preparing for this meeting and have a preliminary draft of the program format ready.

For the 2015 IEEE NSS/MIC, San Diego, CA has been chosen as the meeting site with Vesna Sossi being the General Chair. The 2016 IEEE NSS/MIC meeting will be held in Strasbourg, France with Maxim Titov as the General Chair.

At the NMISC annual meeting in Anaheim, five new Council members were elected to serve for three-year terms beginning January 1st, 2013. The new Council members are Abhijit J. Chaudhari, Georges El Fakhri, Andrew L. Goertzen, George Loudos, and Taiga Yamaya. We also had an election for an NMISTC representative to the

IEEE NPSS AdCom and I am happy to announce that Ronald J. Jaszczak will be starting his four-year term beginning Jan. 1st, 2013. I would like to thank all of the candidates for volunteering their time to serve the NMISTC membership. If you are interested in becoming more involved in the oversight of the MIC meeting please consider running for an NMISC council position. Five individuals are elected each year for a three-year term. For more information please go to the NMISC webpage (<http://ewh.ieee.org/soc/nps/nmisc/>).

As part of its Constitution, the NMISC is required to review the NMISC Constitution and By-Laws every five years. This review was last performed in 2007 and a five-member subcommittee was formed to undertake this task in 2012. Based on this subcommittee's recommendations we have made three primary revisions to our C&BL. First, Article II of the NMISTC constitution has been amended in order to provide a better description of our field of interest. Second, in Bylaw 3.1 we have placed an explicit two-year term limit on the position of a chairperson for a functional NMISC subcommittee. Finally, in Bylaw 6 we have placed an explicit requirement of two candidates for the NMISC Vice-Chair election in order to be consistent with the IEEE requirement of having 1.5 candidates for each open position. These amendments were voted on and approved by NMISC and AdCom and the amended NMISTC Constitution and Bylaws is published in this newsletter for comments.

Suleman Surti can be reached at University of Pennsylvania, Department of Radiology, 404 Blockley Hall, 423 Guardian Drive, Philadelphia, PA 19104 USA; Phone: +1 215-662-7214; Fax: +1 215-573-3880; E-mail: surti@mail.med.upenn.edu

Proof positive

If there were no God, there would be no atheists.

G. K. Chesterton

Constitution and Bylaws of the Nuclear Medical and Imaging Sciences Technical Committee of the IEEE Nuclear and Plasma Sciences Society

Article I—Name and Object

Section 1. The organization shall be known as the Nuclear Medical and Imaging Sciences Technical Committee of the IEEE Nuclear and Plasma Sciences Society (NPSS), hereafter referred to as the Committee.

Section 2. The Committee shall strive for the advancement of theories and applications of Nuclear Medical and Imaging Sciences and of its allied arts and sciences and 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 Nuclear Science* (TNS), of the *Transactions on Medical Imaging* (TMI) and other IEEE publications that the committee shall deem appropriate, and shall otherwise provide for the needs of its members.

Article II—Field of Interest

Section 1. The field of interest of the Committee is Nuclear Medical and Imaging Sciences, and their related technologies and applications. It shall foster publication or other dissemination of original contributions to the theories, experiments, educational methods and applications of Nuclear Medical and Imaging Sciences. Areas of technical activity will include, but not be limited to the following:

Section 2.

- 1) Radiation sources (including synchrotron radiation)
- 2) Detectors used for imaging and radiotherapy
- 3) Radiation standards and radiation monitoring for biomedical instrumentation and personnel
- 4) Theory, physics and instrumentation of medical imaging modalities including, but not restricted to:
 - a. Planar Nuclear Medicine (NM)
 - b. Single Photon Emission Computed Tomography (SPECT)
 - c. Positron Emission Tomography (PET)

- d. X-ray Computed Tomography (CT)
- e. Magnetic Resonance Imaging (MRI)
- f. Magnetic Resonance Spectroscopy (MRS)
- g. Functional MRI (fMRI)
- h. Digital Radiography (DR)
- i. Imaging in Radiotherapy
- j. Hybrid Imaging Systems
- k. Other imaging modalities, systems and devices
- 5) Modeling and simulation of imaging detectors, devices, systems, and processes
- 6) Image analysis techniques
- 7) Image reconstruction algorithms
- 8) Quantitative imaging methods

Article III—Membership

Section 1. Members of the Committee are members of the IEEE NPSS having an interest in Nuclear Medical Imaging.

Section 2. Affiliates may participate in the activities of the Society as provided by the IEEE Bylaws and subject to the applicable IEEE rules and regulations and to any additional limitations imposed by the Society Bylaws.

Article IV—Administration

Section 1. The Committee shall be managed by a Nuclear Medical and Imaging Sciences Council (NMISC) consisting of elected members-at-large, plus certain ex-officio members as specified herein and in the Bylaws. The number of elected members-at-large shall be 15 members.

Section 2. The terms of office of the elected members-at-large shall be three years. Members-at-large elected to a full term may not succeed themselves, and at least one year must elapse before an individual may be re-elected to the NMISC. Election of members-at-large shall be held annually to fill vacancies for the coming year. The terms of office of the ex-officio members shall be specified in the Bylaws.

Section 3.

(a) The affairs of the Committee shall be managed by a Chairperson, as directed by the NMISC and in accordance with the powers and

duties as defined thereunder and in the Bylaws. In the event of the Chairperson's absence or incapacity, his/her duties shall be performed by a Vice-Chairperson.

(b) The Chairperson shall appoint a Secretary for the NMISC. The Secretary need not be chosen from among the elected members at large.

Section 4.

(a) On alternate years a Vice-Chairperson (who shall be the Chairperson elect) is elected by the voting members of the NMISC from the eligible members-at-large of the NMISC. The term of office for the Vice-Chairperson shall be two years as Vice-Chairperson, followed by two years as Chairperson, and two years as the Most Recent Past Chairperson.

(b) Only those members-at-large having one year or more of their term as elected member-at-large remaining shall be eligible for election as Vice-Chairperson. In the event that a Vice-Chairperson is elected to take office at the beginning of the second or third year of their term as member-at-large, said term shall automatically extend until he vacates the office of Most Recent Past Chairperson. During this extension, that individual shall be considered an ex officio member with voting rights. No individual may serve two successive terms as Vice-Chairperson or two successive terms as Chairperson.

(c) In the event that neither the Chairperson or the Vice-Chairperson is able to take office as prescribed in the Bylaws, or if both are incapacitated or if both offices become vacant, the NMISC shall promptly elect an Acting Chairperson from among the members-at-large to assume the duties of Chairperson until either a Chairperson or Vice-Chairperson takes office or resumes their duties.

(d) The Vice-Chairperson will, except under circumstances deemed unusual by a majority of the voting members of NMISC, become the sole nominee for the succeeding Chairperson election.

Section 5. The Chairperson shall be an ex-officio member of all sub-committees of the NMISC.

Section 6. The Chairperson, as soon as expedient after their election, shall appoint the

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Chairpersons of the sub-committees provided for in the Bylaws.

Article V—Nominations and Election of NMISC Members-at-Large

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

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

Section 3. If a member of the NMISC does not complete their term, the NMISC Chairperson shall appoint a replacement to fill the unexpired portion of the term. When an NMISC member is appointed for a partial term, that person is eligible to run for the next full-term election to the same position.

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.

Section 2. Eight voting members of the NMISC shall constitute a quorum. No member shall have more than one vote by reason of multiple offices or Committee responsibilities.

Section 3. A majority of the legal votes cast by those members of the NMISC attending a meeting shall be necessary for the conduct of its business except as otherwise provided in this constitution.

Section 4. Business of the NMISC may be handled by any written means which includes (but is not limited to) correspondence, fax or e-mail if, in the opinion of the Chairperson, matters requiring prompt action can be adequately handled in that manner. A majority of the voting members of NMISC is required to take action in such a case. Such actions are to be promptly confirmed in writing by the Chairperson to NMISC.

Section 5. The NMISC shall meet as required to conduct business and in accordance with the Bylaws.

Article VII—Amendments

Section 1. Amendments to this Constitution may be initiated by petition submitted by a two-thirds vote of the NMISC, such petition being submitted to the AdCom of the NPSS for approval. After such approval, the proposed amendment shall be publicized in the IEEE TNS or TMI, and/or the NPSS Newsletter, with notice that it goes into effect unless 20 Committee members object 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 the IEEE office. 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, 10 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 NMISC, the proposed amendment shall be submitted to the membership by mail ballot as described above.

Section 3. Committee Bylaws, and amendments thereto, may be adopted by two-thirds vote of the NMISC, provided that notice of the proposed Bylaw or amendment has been sent to each member of the NMISC at least a week prior to such meeting. Alternatively, a Committee Bylaw or amendment may be adopted by a two-thirds mail vote of the members of the NMISC, provided a 30-day period is provided for such responses. In either event, the proposed Bylaw or amendment shall be publicized in the NPSS TNS or TMI, and/or the NPSS Newsletter. 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 NMISC shall appoint a five-person sub-committee no later than January 1, 2007, and every five years hence 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 consider writing a new Constitution and Bylaws appropriate to the existing and anticipated needs of the NMISC.

BYLAWS

1. NMISC: Article IV of the Constitution provides that the NMISC shall consist of a number of elected members-at-large plus certain ex-officio members. The ex-officio members of the NMISC shall be (unless they are already elected members-at-large), the Chairpersons of the Functional Sub-Committees, the Chairperson of the Radiation Instrumentation Technical Committee, the Secretary, the Editors and Associate Editors of the IEEE TNS and other publications as deemed appropriate by the NMISC and such other ex-officio members as are provided for in the Constitution and Bylaws of the NPSS.

1.1 The voting members of the NMISC shall be the elected members-at-large, the Chairperson, Vice-Chairperson, and Most Recent Past Chairperson.

1.2 The NMISC shall meet at least once per year, upon dates determined by the Chairperson at least three weeks in advance of the meeting. Additional meetings may be called at the discretion of the Chairperson or upon request of at least eight voting members of the NMISC 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 NMISC.

1.4 The Annual Meeting of the NMISC will be open to all Committee members.

2. Nomination and Election of NMISC Members: Articles IV & V of the Constitution specify the number of NMISC members-at-large, as well as the term length and restrictions. One third of the NMISC members-at-large posts are to be filled each year by election of the general membership of the Committee.

2.1 The Chairperson of the NMISC is responsible for ensuring that the number of nominations is no less than one and a half times the number of vacant posts (e.g., a minimum of eight nominations are required for five open committee positions). Nominations may be made by any member of the NMISC or any member in good standing of the Committee. Self nominations are allowed.

2.2 The Individual making a nomination must determine in advance that the nominee is willing to serve if elected.

2.3 Nominees receiving the highest number of votes will be elected to the vacant posts.

2.4 The Chairperson of the NMISC shall assure, before April 1, that a call for nominations is conveyed to the whole membership. Additional nominations may be submitted to the nominating committee by July 1 by members of the Committee or by members of the NMISC. Such nominations must include an expression by the nominee of willingness to serve if elected.

2.5 All nominees must be either members in any grade of IEEE and of the Nuclear Medical and Imaging Science Technical Committee or must have submitted applications for membership at the time the nominations are forwarded to IEEE Headquarters.

2.6 The Secretary shall annually arrange for the distribution to the members of the Committee on

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or about July 31, a ballot to elect the candidates to fill vacancies on the NMISC. The ballot shall be accompanied by a short biographical sketch of each nominee with an indication of their Nuclear Medical and Imaging Science activities and former or present IEEE activities.

2.7 Forty-five days after distribution of the ballots, the IEEE Headquarters shall count and tabulate the votes received and report the results to the NMISC.

2.8 The NMISC shall submit to the Secretary of the NPSS AdCom the names of the candidates with the largest number of votes to fill the designated vacancies.

3. Functional Committees: The Chairperson of the Committee, in concurrence with the NMISC, shall appoint the Chairpersons of the following Functional Sub-Committees:

- A Fellows and Awards Sub-Committee.

- Other Sub-Committees as shall be required for the operation of the Committee.

3.1 The term of office of a Chairperson of a Functional Sub-Committee shall be one year, but a Functional Sub-Committee Chairperson may be re-appointed to the same position. After two years he/she is automatically relieved from the Chairperson position.

3.2 The Chairpersons of Functional Sub-Committees must be members of the NMISC.

3.3 The membership of the Functional Sub-Committees shall be appointed by the Chairperson of that Functional Sub-Committee. The membership and activities of the Functional Sub-Committees should be publicized to the membership of the Committee via the NPSS Newsletter, and suggestions for Sub-Committee membership should be invited from Committee members.

3.4 Each of the Functional Sub-Committees shall submit a written report of its activities to the NMISC prior to or at the Annual Meeting.

3.5 The Nuclear Science Symposium and Medical Imaging Conference Oversight Subcommittee shall be a Joint Subcommittee of the RISC and NMISC. Its Chairperson shall be appointed by a Joint Executive Subcommittee of the RISC and NMISC consisting of the

current Chairpersons, the Most Recent Past Chairpersons, and Vice Chairpersons of the RISC and NMISC. The Chairperson of the Oversight Subcommittee must be a member of either the RISC or the NMISC. The Chairperson of the Oversight Subcommittee shall appoint the committee's membership, subject to the approval of the Joint Executive Subcommittee. The charge of the Oversight Subcommittee shall be to provide for the continuation and long term planning of the NSS/MIC conference, including the selection of the sites and General Chairpersons of future conferences. The General Chair of a given year's conference shall, in consultation with the Oversight Subcommittee, the RISC and the NMISC, also select the NSS Program Chair and MIC Program Chair for that year's conference. The term of office of the Chairperson of the Oversight Subcommittee shall be one year, but the Chairperson may be re-appointed to the same position.

4. Ballots: All ballots, whether for purposes of election or changes in the Constitution, shall be issued to the voting members by the Secretary pursuant to action by the NMISC. No ballot shall be counted unless unambiguously marked by a qualified voter to indicate their choice, and sent in a sealed envelope bearing the voter's name on or before the specified deadline date. This specified deadline date shall be at least thirty days subsequent to the date of the mailing of the ballots. The distribution and counting of the ballots shall be entrusted to IEEE Headquarters. The IEEE Headquarters will report the results of the election to the Secretary of NMISC, in turn, shall report the results to the NMISC.

5. Beginning of Terms of Office: All terms of office of elected Members-at-Large of the NMISC shall begin January 1 of the year immediately following their election.

6. Election of the Vice-Chairperson of NMISC: The Vice-Chairperson of NMISC shall be nominated and elected from among the eligible members-at-large of the NMISC. A minimum of one month before the annual meeting of the NMISC, the NMISC Secretary will notify all current NMISC members of the upcoming election and solicit nominations (self-nominations are allowed). The nominations will be closed two weeks before the annual meeting of the NMISC, and the Chairperson of the NMISC

is responsible for ensuring that at least two nominations for Vice-Chairperson are received by this time. The Secretary of NMISC shall announce to all voting NMISC members-at-large the identities of the candidates at least one week before the annual meeting, and also inform them of the procedure for casting a ballot if they are unable to attend the NMISC annual meeting. The vote will occur during the annual meeting of the NMISC. A secret ballot will be taken during the annual meeting and the Chairperson shall designate tellers to immediately count the ballots. Voting NMISC members-at-large who are not attending the annual meeting of the NMISC may submit a ballot by notifying the NMISC Secretary of their choice. The results of the vote shall be announced and the nominee receiving a majority of votes cast shall be declared elected. In the event that no candidate receives a majority of votes cast, runoff elections shall be conducted by secret ballot at the Annual meeting of NMISC among the candidates receiving the two highest number of votes until one candidate receives a majority of the votes cast. For these runoff elections, only those NMISC members in attendance may cast a vote.

7. Records: The secretary shall maintain a permanent record of all non-routine motions passed by the NMISC, written minutes of the Annual Meeting of the NMISC, a roster of all NMISC members, and a membership roster of all NMISC sub-committees. The secretary must provide a tabulation of the most recent five years of motions and a copy of the NMISC constitution and bylaws to each newly elected member-at-large to the NMISC.

8. Alternates:

8.1 Members-at-Large: An elected Member-at-Large may designate any member in good standing of the NMISC to represent the Member-at-Large at the NMISC meeting. The representative shall have the privilege of the floor, but may not vote on any matters coming before the NMISC.

8.2 AdCom Representation: If the NMISC Chairperson is unable to represent the NMISC at the NPSS AdCom, the Chairperson may designate the Vice-Chairperson or the Most Recent Past Chairperson as his/her alternate. This alternate has the privilege of the floor and may vote on all matters coming before AdCom.

Particle Accelerator Science and Technology

Stan Schriber serves as the Chair of the Particle Accelerator Science and Technology (PAST) Technical Committee (TC) through December 2013.

The PAST TC is organized with the following responsibilities. As the past PAST Chair, Ilan Ben-Zvi (BNL) is in charge of the Fellows and Awards subcommittee and is responsible for nominating our PAST award candidates and fellows. As the former past PAST Chair, Bruce Brown (FNAL) is in charge of our Web and Communications subcommittee and is responsible in part for our PAST TC web site. Our elected PAST TC member for IEEE-NPSS AdCom, Bob Zwaska (FNAL), is chair of our Nominating, Education and Outreach subcommittee (includes Women in Science and Engineering events) working with the previous PAST TC elected member Sandra Biedron (Colorado State) who is responsible in part for nominating members who might be elected to serve on the IEEE NPSS AdCom, and for managing and operating our IEEE booths at NA-PAC and IPAC conferences held in North America. And finally, Paul Schmor (TRIUMF) is chair of our Conferences subcommittee. Anyone interested in participating in any of these subcommittees should get in touch with the subcommittee chair.

Other members of the PAST TC committee are PAC'11 chair Thomas Roser (BNL), IPAC'12 chair Vic Suller (LSU), NA-PAC'13 chair Steve Gourlay (LBNL), IPAC'15 chair Andrew Hutton (JLab), NA-PAC'16 chair Marion White (ANL) and IPAC'18 chair Lia Merminga (TRIUMF).

A significant change to the Particle Accelerator Conferences (PACs) held

in North America which are jointly sponsored by IEEE-NPSS and APS-DPB, has been managed successfully. A new series of international particle accelerator conferences was initiated with agreements among Europe, Asia and North America. The first international conference IPAC'10 was held in Kyoto, Japan in May 2010, the second was held in San Sebastian, Spain in September of 2011 and the third was held in New Orleans, Louisiana in May of 2012. The world location cycle will continue every year in the spring, repeating the order of Asia, Europe, North America, etc. In addition, because three years was considered too long a period of time between particle accelerator conferences held in North America, the PAC conferences will continue as regional NA-PAC conferences midway between the IPACs that will be held in North America, except for PAC'11 which was planned before the IPACs were formalized. So, there will be an accelerator conference held in North America every 18 months with the regional NA-PACs held in the fall and the IPACs held in the spring—e.g. IPAC'12 spring 2012, NA-PAC'13 fall 2013, IPAC'15 spring 2015, NA-PAC'16 fall 2016, IPAC'18 spring 2018, etc.. IEEE-NPSS and APS-DPB will cosponsor all NA-PACs as well as the IPACs held in North America.

IPAC'12

Conference Chair:

Vic Suller, LSU

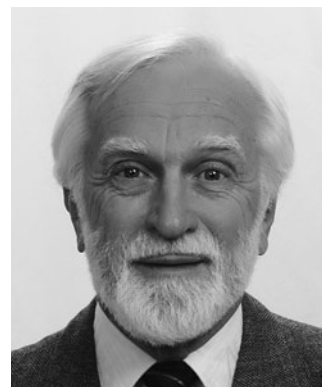
Scientific Program Chair:

Jeff Corbett, SLAC

LOC Chair:

Kevin Morris, LSU

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Stan Schriber
Chair

And they are away from home

No lesson seems to be so deeply inculcated by the experience of life as that you should never trust experts.

Lord Salisbury

TECHNICAL COMMITTEES

Don't confuse me with the facts

Convictions are more dangerous enemies of truth than lies.

Friedrich Wilhelm Nietzsche

Let me think about this

There is no exception to the rule that every rule has an exception

James Thurber

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Treasurer:

Donna Torres, LSU

Editor:

Cathy Eyberger, ANL

Date of Conference:

May 20th–25th, 2012

Location:

Ernest N. Morial Convention Center, New Orleans, LA

IPAC'12 was the third in the new international series of IPAC conferences and the 25th in the series of xPAC conferences held in North America. IPAC'12 was hosted by LSU at the Ernest N. Morial Convention Center in New Orleans, Louisiana, and was an outstanding conference scientifically, culturally, educationally and financially.

Sessions included topics related to Accelerator Technology, Beam Dynamics and EM Fields, Instrumentation and Controls, Light Sources and FELs, Sources and Medium Energy Accelerators, and other related topics. As a new program format, the conference included a number of electronic posters (15 per day, selected from the poster submissions) that were presented on large screen monitors, a format which was successful and recommended for future use. The overall program was an outstanding success, as was the student poster session on Sunday and the Teacher's Day on Wednesday. The Women in Engineering/Science event on Wednesday evening was well attended and another successful part of the conference.

A total of 1100 participants (35% from Europe and 25% from Asia) attended the conference, as well as 198 exhibitors who manned 89 exhibits. Grants were provided to 86 graduate students in addition to those sponsored by specific laboratories.

One remarkable accomplishment of this conference was that conference papers, as well as most of the slides presented during oral presentations, were available on the conference web site by the end of the conference. The full conference proceedings, including sets of oral presentation slides and conference photos, are now available at the JACoW site, <http://www.jacow.org/>. The conference program spanned four and a half days, with plenary sessions on Monday and Friday mornings, and Thursday afternoon. All other sessions were composed of two oral sessions in parallel in the morning and three oral sessions in parallel in the afternoon, with the poster sessions scheduled alone at the end of each afternoon. There were 59 invited talks and 48 contributed oral presentations, as well as 1250 posters and 53 electronic posters (e-posters) scheduled during the lively poster sessions. The industrial exhibition took place during the first three days of the conference.

During the Louis Costrell Awards Session, the two IEEE-NPSS Particle Accelerator Science and Technology (PAST) awards were presented to individuals who have made outstanding contributions to the development of particle accelerator science and technology; one of the two awards given to an individual early in his/her career. Hasan Padamsee (Cornell University) was presented an award "For contributions to the science and technology of RF superconductivity." Vitaly Yakimenko was granted an award "For contributions to high brightness electron beams and to their application to advanced accelerators and light sources." In addition, the IEEE-NPSS Particle Accelerator Science and Technology Doctoral Student Award (to individuals who have made outstanding thesis research in particle accelerator science and technology) was presented to Erdong

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Wang (BNL) “For contributions to the physics of high quantum-efficiency photocathodes.”

NA-PAC’13

Conference Chair:

Steve Gourlay, LBNL

Scientific Program Chair:

Alex Chao, SLAC

LOC Chair:

Chan Joshi, UCLA

Treasurer:

Glenna Rogers, LBNL

Editor:

Joe Chew, LBNL

Conference Secretary:

“Sam” Vanecek, LBNL

Conference Management:

Paula Pair, Centennial Conferences

Scientific Secretary:

Todd Satogata, JLab and Christine Petite-Jean Genaz, CERN

Date of Conference:

September 29th–October 4th, 2013

Location:

Pasadena Convention Center,
Pasadena, CA

The Second North American Particle Accelerator Conference (NA-PAC’13) (the 26th in xPAC conferences in North America) will be organized jointly by the Lawrence Berkeley National Laboratory (LBNL) and the SLAC National Accelerator Laboratory (SLAC). The conference will take place September 29th–October 4th, 2013 in the Pasadena Convention Center. Contracts with the Convention Center and hotels (Pasadena Inn, Sheraton and Hilton) have been signed. Government rates have been secured for all conference hotels. Projected attendance is 550 based on the outcome of PAC’11 and recent U.S. government travel regulations. The conference program will be geared toward early career scientists, engineers,

technologists and students, but will retain the historic international flavor with invited speakers from around the world. We plan to offer a number of tutorials on the day before the conference and envision providing limited support to encourage attendance of minorities and students. A contract has been placed with Centennial Conferences for conference management.

IPAC’15

Conference Chair:

Andrew Hutton, JLab

Scientific Program Chair:

Stuart Henderson, FNAL

LOC Chair:

Fulvia Pilat, JLab

Editor:

Todd Satogata, JLab

Date of Conference:

May 3rd–8th, 2015

Location:

Greater Richmond Convention Center,
Richmond, VA

This conference hosted by TJNAF and FNAL will be of historic significance because this will be the 50th anniversary of the PAC series of conferences in North America, which began in 1965. IPAC’15 will be the 6th conference in the IPAC series and the 27th in xPAC conferences in North America. Contracts have been signed with six major hotels in downtown Richmond, Virginia, all within easy walking or driving distance to the Greater Richmond Convention Center, where the conference will be held. The City of Richmond has offered to provide transportation between the hotels and the Convention Center at no charge to the conference, depending on the number of rooms picked up at the hotels.

With anticipated attendance of about 1,250, the combined number of rooms blocked at the six hotels is adequate —

(continued on page 32)

Experience is NOT the best teacher

An overreliance on past successes is a sure blueprint for future failures.

Henry Petroski

Beware of men of principle

Nobody ever did anything very foolish except from some strong principle.

Lord Melbourne

TECHNICAL COMMITTEES

Successful field test

Camping is nature's way of promoting the motel business.

Dave Barry

(continued from page 31)

Marriott (skywalk to convention center), Hilton Garden Inn, Crowne Plaza Richmond Downtown, DoubleTree Hotel, Omni Richmond, and the historic Jefferson Hotel, where the Chairman's Reception will be held.

For IPAC'15 we are holding 67,549 sq. ft. for exhibits/posters, 34,437 sq. ft. for general sessions plus an additional 37,732 sq. ft. for parallel and breakout sessions. We also have reserved an additional 10 small meeting rooms at the Marriott for ancillary events.

NA-PAC'16

Conference Chair:

Marion White, ANL

The third regional North American Particle Accelerator Conference (NA-PAC'16) will be cohosted by the Argonne National Laboratory together with the Fermi National Accelerator Laboratory and Michigan State University. The proposed dates for the conference are October 9th to October 14th, 2016 with a proposal to be held at the Sheraton Chicago Hotel

and Towers. Details for this conference are being looked into by the Chair for the conference, Marion White of ANL. Projected attendance is 700 and the conference program will be geared toward early career scientists, engineers, technologists and students.

IPAC'18

Conference Chair:

Lia Merminga, TRIUMF

The ninth International Particle Accelerator Conference (IPAC'18) will be hosted by TRIUMF in Vancouver, BC, Canada. The conference will take place in the spring of 2018 and will be held in downtown Vancouver, BC with possible venues being the Hyatt Regency Vancouver hotel and the Vancouver Convention Center. Details for this conference are being looked into by the Chair for the conference, Lia Merminga of TRIUMF. Projected attendance is 1,250 and the conference program will be geared toward scientists, engineers, technologists and students

Stan Schriber can be reached at his home in Eagle, ID 83616 USA; Phone: +1-208-631-8208, E-mail: schriber@nscl.msu.edu

Plasma Science and Applications

The PSAC ExCom election results from last fall's election are now official. The NPSS Plasma Science and Applications Committee (PSAC) is managed by an Executive Committee (ExCom), consisting of eighteen members elected directly by the overall membership of PSAC, and of the officers that they, in turn, select. These elected ExCom members serve a term of three years, and are not eligible for immediate reelection. They may, however, run in future elections after a one-year break. Six new members are elected each year. The new ExCom members elected this past fall are John Giuliani,

Michael Kong, Mark Kushner, Mounir Laroussi, Tom Mehlhorn, and Peter Stolz. They replace the six members whose terms expired on the final day of 2012, Monica Blank, Jeremy Chittenden, John E. Foster, Joseph M. Kindel, Scott Kovaleski, and Manfred Thumm. To those whose service is now completed, PSAC extends its collective and heartfelt thanks for your many contributions.

The nomination call for this coming year's election is now open and will remain so until 31st May 2013. PSAC members are encouraged to nominate those felt to be worthy of steering our

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organization, including themselves. These nominations are simply executed by contacting either David Abe, the Nominations Subcommittee Chairman at david.abe@nrl.navy.mil, Steven Gold, PSAC Secretary at steven.gold@nrl.navy.mil, or Rickey Faehl, PSAC Chair at afaehl@earthlink.net. GOLD members and members living outside North America are especially encouraged to apply. The election slates placed before our membership have excelled in both quality and quantity. For additional information about the current ExCom membership or about our various activities, please consult the PSAC website at <http://ewh.ieee.org/soc/nps/tc-psac.html>.

Our next technical conference will be a combined meeting of the Pulsed Power Conference and the International Conference on Plasma Science (ICOPS), designated Pulsed Power and Plasma Sciences (PPPS 2013). Bryan Oliver of Sandia National Laboratories is the Conference Chair, and Mark Crawford and John Verboncoeur, the Technical Program Chairs for Pulsed Power and Plasma Sciences, respectively. The dates of this conference are 16th–22nd June 2013 at the Hyatt Regency Hotel in San Francisco. See the cover story in this issue for additional information on abstract submission, conference and hotel registration or visit the website www.ece.unm.edu/ppps.2013 for the latest news.

Rickey Faehl, PSAC chair, can be reached by E-mail at afaehl@earthlink.net.



Rickey Faehl
PSAC Chair

Radiation Instrumentation

It is a pleasure to introduce and congratulate the most recent Radiation Instrumentation Steering Committee (RISC) members: Lorenzo Fabris, Michael Fiederle, Michael Hynes, Paul Lecoq, and Craig Woody. Each was elected for a three-year term (2013–2015)—they join present RISC members Etienne Auffray, Ralf Engels, Ingrid-Maria Gregor, Ralph James, Susanne Kuehn, Dick Lanza, Bill Moses, Anatoly Rosenfeld, Maxim Titov, and Gary Varner. As of 1 January 2012 the RISC officers were: Ed Lampo, Chair; Tony Lavietes, Vice-Chair; and Chuck Melcher, Past-Chair. Following Ed's election as an RITC AdCom Member, he stepped down as RISC Chair in July and Tony Lavietes became the Chair. This November, RISC elected Patrick Le Dû as the Vice Chair. Continuing for 2013 are Brad Roscoe, RISC Secretary and Sara Pozzi, RISC Awards Chair. Thank you to outgoing RISC members: Gyuseong Cho, Dora

Merelli, Patrick Le Dû, Jose Manuel Perez, and Graham Smith for their three years of service.

The Radiation Instrumentation community had many awards in 2012. Some of these awards were presented during 2012 Nuclear Science Symposium.

IEEE/NPSS 2012 AWARDS

Patrick Le Dû—*Richard F. Shea Distinguished Member Award*

1st Lt. James Bevins—*Graduate Scholarship Award*

IEEE FOUNDATION AWARD

Valentin Jordanov—for endowing the “Valentin T. Jordanov Radiation Instrumentation Travel Grant”

RISC 2012 AWARDS

Richard Wigman—*Outstanding Achievement Award*, for his original

(continued on page 34)

Nor well-argued ones worthy

There is no greater mistake than the hasty conclusion that opinions are worthless because they are badly argued.

Thomas Huxley

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Tony Laviertes
RITC Chair

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and profound contributions to high energy physics calorimetry, in particular hadronic calorimetry, including compensating and dual-readout calorimeters, novel geometry, and education of young colleagues

Feng Zhang—*Early Career Award*, for his contributions to the field of room-temperature semiconductor imaging gamma-ray spectrometers

NSS/MIC HISTORY: 2000 – 2012

Of the ~2,000 preregistrations for the 2012 NSS/MIC/RTSD, one-third were from North America, another third from Europe, and the remaining third split equally between Asia and the rest of the world. In 2011, when the NSS/MIC was held in Europe (Valencia, Spain), there were more than 1.5 times as many European attendees as from North America. In 2010, when the conference was in the USA (Knoxville, TN), there were then more than half the attendees

from the USA. For many years this conference has been transnational, as measured both by attendance and location. The Table below lists the location and overall attendance for recent conferences.

UPCOMING CONFERENCES

2013: 28th Oct–2nd Nov

Seoul, South Korea

Hee-Joung Kim, General Chair

Gyuseong Cho, NSS Program Chair

2014: 10th Nov–15th Nov

Seattle, Washington

Tony Laviertes, General Chair

Ingrid-Maria Gregor, NSS Prog. Chair

2015: 1st Nov–7th Nov

San Diego, California

Vesna Sossi, General Chair

2016: 29th Oct–5th Nov

Strasbourg, France

Maxim Titov, General Chair

Tony Laviertes, chair of the Radiation Instrumentation steering committee, can be reached by E-mail at a.laviertes@gmail.com

NSS/MIC DATA: 2000 TO 2011

Year	Location	Attendance
2000	Lyon, France	1,200
2001	San Diego, CA	922
2002	Norfolk, VA	805
2003	Portland, OR	1,280
2004	Rome, Italy	1,624
2005	San Juan, Puerto Rico	1,244
2006	San Diego, CA	1,441
2007	Honolulu, HI	1,678
2008	Dresden, Germany	2,100
2009	Orlando, FL	1,757
2010	Knoxville, TN	1,985
2011	Valencia, Spain	2,025

Is starving fulfilling?

*A man may be very industrious,
and yet not spend his time well.
There is no more fatal blunderer
than he who consumes the greater
part of his life getting his living.*

Henry Davis Thoreau

Awards

CLASS OF 2013 NPSS 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 and 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 2013 Fellows, and wish them each our heartfelt congratulations.

CARTER M. ARMSTRONG

Carter M. Armstrong is the vice president of engineering at the Electron Devices Division of L-3 Communications. He received his undergraduate degree in physics at Rutgers University and his Ph.D. in nonneutral plasma physics at the University of Maryland. After a postdoctoral fellowship in the laser-plasma group at the Naval Research Laboratory (NRL), he joined the physics faculty at North Carolina State University where he studied nonneutral plasma stability and collective ion acceleration. Upon returning to NRL, Carter led exploratory research and development on novel fast-wave coherent radiation sources, including gyro-TWTs and gyro-klystrons, harmonic gyropeniotrons, and ubitrons. It was during this period that Carter rediscovered the vacuum device roots of nonneutral plasmas and became a "tube guy"—well, at least a fast-wave devices guy. It would be later while working in industry—first at the Northrop Defensive Systems Division (now Northrop Grumman), then later at Litton Electron Devices (now L-3 Communications)—that the fun and challenge of working on slow-wave devices—TWTs, klystrons and microwave power modules (MPMs)—would commandeer his career.

Carter first became involved with the MPM—an ultra-high power density RF amplifier marrying solid-state, vacuum electronics and power electronics technologies—at Northrop, where he oversaw the development of high efficiency and wideband vacuum power booster TWTs. His involvement with MPM technology only increased with his subsequent move to L-3 Electron Devices, where he led the successful extension of the approach into the millimeter wave.

Carter has served on numerous government advisory committees, including the prior DoD Advisory Group on Electron Devices (AGED). It was while on AGED that Carter cochaired a review on compact THz sources. He recently published a feature article on the general technical pursuit in the 2012 September issue of *IEEE Spectrum*, entitled "The Truth about THz."

Carter has been an adjunct professor in the ECE Department at the University of Wisconsin-Madison since 1996.

Citation: for technical leadership in the development of high power microwave and millimeter-wave radiation sources, especially their power modules.

Carter Armstrong can be reached at carter.armstrong@L-3.com

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Carter Armstrong

How about the realist?

A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty.

Winston S. Churchill

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Joel Karp



Paul W. Marshall

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JOEL KARP

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 Radiology faculty at the University of Pennsylvania in 1983, 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 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 led to the development of fully-3D PET scanners that eventually were commercialized for human and small-animal imaging. Over the years, he incorporated new scintillators and detector designs to improve spatial resolution and sensitivity of the scanners, and most recently detectors to enable time-of-flight (TOF) imaging. Dr. Karp's work with industry led to adoption of TOF in modern PET/CT scanners, and helped promote the broad application for clinical studies by characterizing the benefit of TOF. 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 prototype instruments with superior performance.

Dr. Karp has held various committee positions in the Society of Nuclear Medicine and the IEEE NPSS.

He served as MIC Chair of the NSS/MIC Symposium in 1996, and as General Chair in 2002. Since 2004 he has served as the Senior Editor of the *IEEE Transactions on Nuclear Science: Nuclear Medical Imaging Sciences* journal.

Citation: For contributions to quantitative imaging of positron emission tomography.

Joel Karp can be reached by E-mail at joelkarp@mail.med.upenn.edu.

PAUL MARSHALL

Paul Marshall received the B.S., Magna Cum Laude with Distinction in Physics from James Madison University in 1980, the M.S. in Radiation Biophysics from The Medical College of Virginia in 1982, and the Ph.D. in Nuclear Engineering & Engineering Physics from the University of Virginia in 1985. Paul's career has focused on applied problems associated with the interactions of particle radiation within satellite subsystems.

Research activities have included investigations of basic mechanisms of radiation damage in microelectronic, optical, and optoelectronic technologies critical to satellite guidance and control, imaging, and high-speed secure communications. Particle-induced displacement damage and Single Event Effects are of primary concern. Evaluation of these novel problems requires knowledge of natural space-radiation environments; state-of-the-art microelectronic, optical, and optoelectronic technologies; charged particle effects in related materials and devices; radiation dosimetry; experimental procedures to determine the response of components under laboratory conditions; and analytical techniques to assess on-orbit performance.

The emphasis in this work has been on development of analytical and experimental capabilities leading to risk mitigation for satellites relying on emerging technologies, and successes

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to this end have resulted in over 200 published papers including over 140 refereed papers in the *IEEE Transactions on Nuclear Science*. Paul has recently concluded five years as Associate Editor for these Transactions. Professional awards include four “Outstanding Paper Awards” from the IEEE Nuclear and Space Radiation Effects Conference. Paul continues to enjoy ongoing investigations as a consultant at the Naval Research Laboratory and NASA Goddard Spaceflight Center. Recent studies have included CCD, CMOS, and hybrid infrared imaging arrays, scaled Radiation Hardened By Design CMOS at 45 nm, 32 nm, and 22 nm feature size, SiGe technology insertion for multi Gigabit per second communications, deep cryogenic particle-induced latch up, and optical data bus intrasatellite communication subsystems.

Citation: for contributions to understanding the impact of particle radiation on satellite reliability and survivability.

Paul Marshall can be reached by E-mail at PWMarshall@aol.com.

LUCIO ROSSI

Lucio Rossi is a recognized expert in the domain of Large-scale superconducting systems. Born in 1955, he studied Physics at University of Milan where he got a doctorate in plasma physics in 1981. His early work was done on the first European Superconducting Cyclotron at the University of Milan; later he was in charge of the construction of the first LHC superconducting dipole prototype in collaboration between the Italian Institute for Nuclear Physics (INFN) and CERN. The dipole exceeded 9 T during its first test in 1994 and was the basis for LHC approval.

He then led the development of the 50 kA superconductor for ATLAS, the largest of the experimental detectors at LHC, and the construction of the first

25-m-long superconducting coils for ATLAS. In 2001 he moved to CERN (on leave as Professor of Experimental Physics at the University of Milan) to lead the industrialization and construction of the main superconducting magnets for the LHC machine, the largest project in superconductivity: 1200 tons of Nb-Ti/Cu cable was used for the 1,700 large superconducting magnets that have been manufactured, installed and commissioned. The proton-proton collisions at LHC have allowed two experiments (ATLAS and CMS) to detect the famous Higgs boson, the cornerstone of the Standard Model, as announced on July 4th, 2012.

Since 2011 L. Rossi has led the project High Luminosity LHC. Aimed at increasing by a factor of 5 to 10 the particle collisions after 2020, the project requires the development of new high-field superconducting magnets, special compact superconducting RF cavities and long superconducting cables rated for 150 kA.

In 2007 he was awarded the IEEE-Council on Superconductivity Award for sustained and significant contributions in the field of applied superconductivity and he has been selected by the IEEE-Council on Superconductivity as 2013 Distinguished Lecturer.

Citation: for leadership in developing magnetic systems for the Large Hadron Collider.

Lucio Rossi can be reached by E-mail at lucio.rossi@cern.ch

JOHN P. VERBONCOEUR

John P. Verboncoeur received his 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 postdoctoral fellow at Lawrence Livermore National



Lucio Rossi



John P. Verboncoeur

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Laboratory and UCB in Electrical Engineering and Computer Science (EECS), he joined UCB-EECS as Associate Research Engineer, and the UCB Nuclear Engineering faculty in 2001. 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. He pioneered the theory of self-consistent interaction of circuits with plasma, enabling the simulation of real

plasma devices. He also pioneered the application of object-oriented methods to plasma simulation. He is the author/coauthor of the MSU (formerly Berkeley) suite of plasma codes, used by over 1,000 researchers worldwide in over 350 journal publications in the last decade. He has authored/coauthored over 300 journal articles and conference papers, with about 2,000 citations, and has taught 13 international workshops and minicourses on plasma simulation.

Citation: For contributions to computational plasma physics and plasma device applications.

John Verboncoeur can be reached by E-mail at johnv@msu.edu.

SOCIETY AWARDS

2012 Fusion Technology Award



Abbas Nikroo
2012 Fusion Technology
Award recipient

ABBAS NIKROO

Each year, the NPSS Fusion Technology Committee recognizes outstanding contributions to research and development in the field of Fusion Technology through the distribution of the Fusion Technology Award. This year we were met with a large pool of nominees, which speaks volumes about the numerous notable innovations being made in fusion technology.

Today we are pleased to announce that the 2012 award recipient is Dr. Abbas Nikroo of General Atomics. The enthusiastic nomination of Dr. Nikroo was accompanied by several glowing letters of support detailing his many exemplary technical contributions and leadership initiatives in the field of IFE target fabrication techniques including those to LLNL's NIF, University of Rochester's OMEGA, and Z at Sandia.

Dr. Nikroo received his Ph.D. in condensed matter physics from University

of California, Santa Barbara in 1990. He joined General Atomics (GA) in 1991, initially performing laser spectroscopy research in GA's Institute for Advanced Studies. He joined GA's IFT division in 1995, where he has played a critical role in development of materials and metrology techniques for targets for the Inertial Confinement Fusion (ICF) program. In 2005, he became the Deputy for the National Ignition Campaign's Integrated Target System for the National Ignition Facility (NIF). In this capacity, he led a team composed of scientists and engineers from both GA and Lawrence Livermore National Laboratory (LLNL) in development and fabrication of many of the critical NIF target components such as capsules and hohlraums involving beryllium and uranium, respectively. Nikroo received the Fusion Power Associates Excellence in Fusion Engineering Award in 2003 and has served as the director of GA's IFT division since 2009.

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Dr. Nikroo will be officially recognized at the 2013 SOFE Conference banquet in San Francisco, CA, to be held between June 10th and 14th. Please join me in the congratulation of our peer, 2012 Fusion Technology Award recipient, Dr. Abbas Nikroo.

Citation: *For his many exemplary technical contributions and leadership initiatives in the field of IFE target*

fabrication techniques in support of the National Ignition Campaign.

Abbas Nikroo, the 2012 Fusion Technology Award recipient, can be reached by E-mail at Nikroo@fusion.gat.com and Dennis Youchison, past chair of the Fusion Technology committee who submitted this article, can be reached by E-mail at dlyouch@sandia.gov.



Dennis Youchison
Fusion Technology Technical Committee

NSREC 2012: Outstanding Paper Awards

OUTSTANDING CONFERENCE PAPER:

“Radiation Effects in Pinned Photodiode CMOS Image Sensors: Pixel Performance Degradation Due to Total Ionizing Dose,” V. Goiffon, M. Estribeau, O. Marcelot, P. Cervantes, P. Magnan, M. Gaillardin, C. Virmondois, P. Martin-Gonthier, R. Molina, F. Corbière, S. Girard, P. Paillet, C. Marcandella.

OUTSTANDING STUDENT PAPER:

“Impact of Back-Gate Bias and Device Geometry on the Total Ionizing Dose Response of 1-Transistor Floating Body RAMs,” N. N. Mahatme, E. X. Zhang, R. A. Reed, B. L. Bhuvva, R. D. Schrimpf, D. M. Fleetwood, D. Linten, E. Simoen, A. Griffoni, M. Aoulaiche, M. Jurczak, G. Groeseneken.

OUTSTANDING DATA WORKSHOP:

“On-Orbit Results for the Xilinx Virtex-4 FPGA,” H. Quinn, P. Graham, K. Morgan, Z. Baker, M. Caffrey, D. Smith, R. Bell.

THE QUANTUM'S PLIGHT

*A lively little quantum went darting through the air,
Just as energetic quanta go speeding everywhere.
He had traveled far — this quantum — urged as if by some far call,
When he saw a lonely atom with no signs of pep at all,
And he started for that atom in the highest of elation,
Said he: “Here’s where I show the world a trick of transmutation.
I’m going to hit that atom such an awful, awful whack,
That I’ll knock out its electrons so far they can’t get back.”
So he gave that peaceful atom such an energetic shove,
That its outermost electrons soared to levels far above.
Then the atom got excited, and it held the quantum fast,
Until the last electron came tumbling back at last.
Then the quantum was released again, and fled in degradation,
While the atom got the credit for a lot of radiation.*

—E.H. Johnson

Any truths?

*In nature there are neither
rewards or punishments —
there are consequences.*

Robert Ingersoll

SwissFEL: The Next Large-research Facility at PSI



**P. Craievich (Senior Member IEEE),
for the SwissFEL team**

The new X-ray laser project at Paul Scherrer Institute (PSI, Switzerland), known as SwissFEL, will be an important addition to the existing complex of PSI facilities that will serve interdisciplinary and international research teams from academia and industry [1, 2, 3]. The SwissFEL X-ray laser will be an advanced light source, to expand the frontiers of knowledge at the

nanoscale, of ultrafast phenomena and in complex materials. It will be composed of the accelerator complex and two undulator beam lines which will cover the photon energy ranges from 12.4-keV to 1.8-keV and from 1.8-keV to 0.18-keV for Aramis and Athos lines, respectively. The principal areas of application are nanoscale magnetization dynamics, solution chemistry and surface catalysis, coherent diffraction by nanostructures, ultrafast biochemistry and time-resolved spectroscopy of correlated electron materials. The SwissFEL linear accelerator layout is illustrated in figure 1 together with simulated beam parameters for the 200-pC operational mode. It will employ a laser-driven photo-cathode radio-frequency (RF) electron gun to generate electrons to be accelerated in a S-band booster up to the first magnetic bunch compressor at 330-MeV. The following electron linear accelerators (linac 1, 2, 3 and Athos linac) will use a 5.7-GHz C-band RF system and will be the first large-scale linac of this type in Europe. A second magnetic bunch

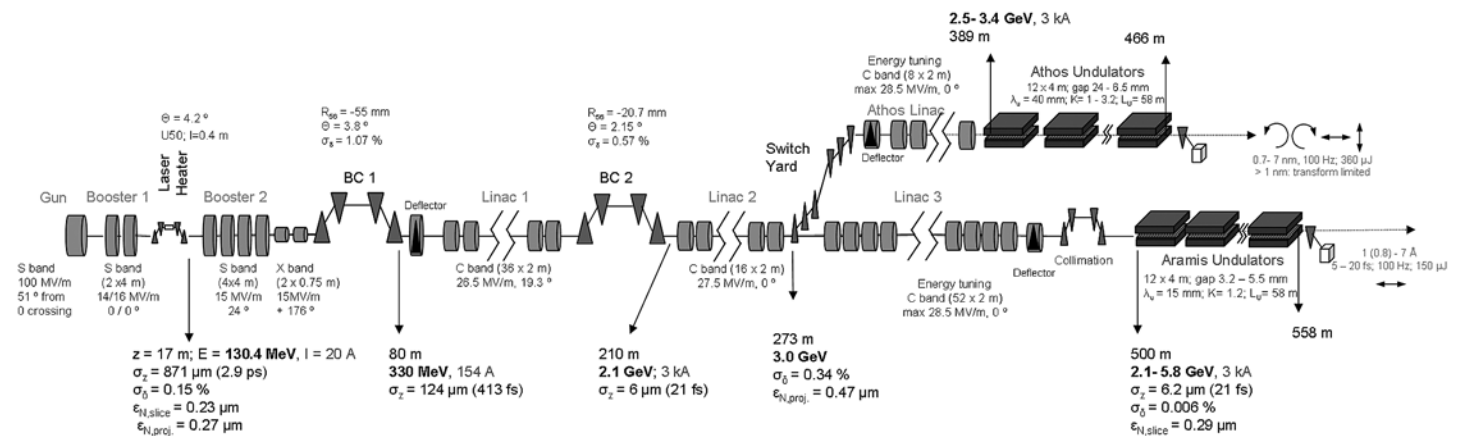
compressor is foreseen at 2.1-GeV to allow a time compression of electron pulse to 25-fs and 6-fs for the long and short pulse, respectively.

The SwissFEL linac will operate with a repetition rate of 100 Hz and at each linac pulse, two micro-bunches are accelerated with spacing of 28-ns.

While the first pulse will go straight to the Aramis FEL line, the second is deviated to the Athos FEL line by a fast kicker in the switch yard between Linac 2 and Linac 3 at 3.0-GeV.

This timing scheme allows both FEL lines to be operated simultaneously at 100-Hz, thus doubling the number of photon pulses sent to the experiments. An additional small linac in the Athos line ensures that the wavelength tuning of the two FEL lines can be performed independently. The SwissFEL Injector and accelerator will permit a wide range of electron beam parameters and two basic modes, long pulse and short pulse, are defined as the standard operation modes. The beam parameters for these modes are summarized in table 1.

Figure 1: Schematic of the SwissFEL Accelerator and two FEL beamlines. The simulated beam parameters for the 200-pC operational mode are also shown. Total length is about 550-m from rf gun to undulator end.



ARTICLES

Figure 2 shows the time schedule for Swiss FEL project as presented in December 2011. By the middle of 2016, installation of the injector, the linac and the Aramis line will be completed, and commissioning of SwissFEL will start in fall 2016 with the goal of having first FEL lasing of Aramis by spring 2017 and user operation by the middle of 2017. The Athos undulator line will be installed during a shutdown period in 2018 and subsequently commissioned.

It is worthwhile to note that the SwissFEL Injector Test facility is currently used as a test bed for most beam related components and has recently

reached its design energy of 250-MeV. Measurements of normalized projected and slice emittance give values below 0.5-mm mrad and 0.3-mm mrad at 200-pC, respectively. Furthermore, first experiments with the bunch compressor indicate a reduction of the bunch length by a factor of 20 [4, 5, 6]. In 2015, the complete injector will be moved from actual test hall to the new SwissFEL tunnel.

REFERENCES

- [1] <http://www.psi.ch/swissfel/swissfel>
- [2] R. Ganter et al., *SwissFEL CDR*, PSI Bericht Nr. 10-04, April 2012.
- [3] B. D. Patterson et al., *Ultrafast Phenomena at the Nanoscale: Science opportunities at the SwissFEL X-ray Laser*, PSI Bericht Nr. 09-10, September 2009.
- [4] M. Pedrozzi et al., *Accelerator test facility for SwissFEL*, PSI Bericht Nr. 10-05, Juli 2010.
- [5] H. H. Braun et al., *Proceedings of the 2012 Free Electron Laser Conference, Nara, Japan*.
- [6] T. Schietinger et al., *Proceedings of the 2012 International Particle Accelerator Conference, New Orleans, Louisiana, USA*.

Table 1: Expected performance of SwissFEL

Parameter	Long pulses	Short pulses	Unit
Maximum beam energy	5.8	5.8	GeV
Charge per bunch	200	10	pC
Projected emittance	0.65	0.25	mm.mrad
Peak current	2.7	0.7	kA
Repetition rate	100	100	Hz
Bunch length (rms)	25	6	fs
Bunch compression factor	125	240	
Aramis line (SASE and self seeded operation)			
Beam energy	2.1 – 5.8		GeV
Wavelength range	1 – 7		Å
Undulator type	In-vacuum		
Polarization	linear		
Athos line (SASE and self seeded operation)			
Beam energy for Athos	2.5 – 3.4	-	GeV
Wavelength range	7 – 70	-	Å
Undulator type	Apple II	-	
Polarization	Fully variable	-	

Figure 2: Schedule for SwissFEL

2012	2013	2014	2015	2016	2017
Component procurement accelerator and ARAMIS FEL				Preparation ATHOS FEL	
Preparatory work	Buildings construction		Accelerator and ARAMIS FEL installation interleaved with injector commissioning	Linac and ARMIS Commissioning	Friendly users

Career Focus: Semiconductors

Point of no return?

The only way of discovering the limits of the possible is to venture a little way past them into the impossible.

Arthur C. Clarke

Flight of fancy

His imagination resembled the wings of an ostrich. It enabled him to run, though not to soar.

Lord Macaulay

By John R. Platt

From IEEE-USA *Today's Engineer*, January 2013

Statistically speaking, quite a few of the people reading this article are probably doing so on new tablet computers that they picked up or received over the holidays. Those tablets—which didn't exist just a few years ago—would not be possible without the semiconductor industry. At the same time, the growth of the modern semiconductor industry has been fueled by the rapid development of new technologies—tablets, smartphones, and hundreds of other connected devices—that can be found in almost every facet of our daily lives.

After an off year in 2012, the semiconductor industry is expected to grow 4.5% in 2013 to \$303 billion, according to recent projections from World Semiconductor Trade Statistics (WSTS). With that growth the industry also has a tremendous need for new employees. According to the Semiconductor Industry Association, nearly a quarter of a million people in the U.S. alone are employed by the semiconductor industry, and that number is growing three times faster than the rest of the U.S. economy.

A BOOM AND BUST INDUSTRY

The expected growth for 2013 follows a 3.2% drop in 2012, the latest sign that the semiconductor industry has, historically, experienced a fairly high level of volatility. "This is definitely a boom and bust industry," says Paul Kostek, former president of IEEE-USA. "Over the past 30 years, I don't think there's one other industry, not even aerospace, which has ups and downs as spectacular as the semiconductor industry."

WSTS places some of the blame for the recent swings on the world economy, but Kostek feels the industry's very success also creates boom and bust periods.

"The pressures on the semiconductor industry are much higher than it is on other industries," he says. "The producers of semiconductors are in a constant cycle to get smaller, faster and more powerful. I think a lot of the boom and bust is just dealing with the challenge of that quick pace."

That pace creates change, but experts say it doesn't necessarily translate into risk for employees. "The world is an evolving place," says Ray Upton, vice president of sales-Americas for Texas Instruments. "Smartphones and tablets and things like that tend to boom very big when they boom. And then you see products and technologies for things like industrial applications and medical applications and energy-based applications and automotive applications—those tend to have a whole lot less cyclicity to them."

The rapid pace of the industry does mean that engineers need to keep up with the changes in their field. "I think it's important to always stay fresh on technology. It does expire," says Cindi Harper, Intel's greater Americas talent delivery manager. "The employees that always want to be on that leading edge, they'll go further because they're constantly staying marketable in their technology space. They're evolving as the technology evolves. The people who are willing to go out and try things and take risks, they're the ones that are going to make it in the long run."

JOBS FOR ENGINEERS FROM MANY DISCIPLINES

"A surprising number of disciplines are needed to create complex chips, from electronic, mechanical, chemical,

to software, applied physics and system engineers,” says John E. Blyler, editorial director of Extensionsmedia. “These disciplines must work together to meet time-to-market, cost and quality demands in vertical spaces like consumer, communication, automotive, medical, space—any area that relies on semiconductor and embedded electronics.”

Talented employees are needed in both design and manufacturing, says Harper, who points out that all semiconductor companies are competing for the same people in a limited job pool due to the industry’s rapid growth and a shortage of new engineers coming out of the U.S. school system. “In our field we’re looking at software and hardware engineers, both from recent graduate levels and deep expertise and experience.”

Although all kinds of engineers are needed, Harper reports that the majority of Intel’s 2013 hires will be software-related, a shift echoed by others. “Software today is the key differentiator for companies across devices and platforms,” says Amanda McPherson, vice president of The Linux Foundation. “Hardware has become a commodity; the software is what drives the user experience and functionalities of any device. Because of this, software programmers are in higher demand than ever before. We expect job prospects to be good for software engineers in the year ahead, especially as Android and other Linux variants drive new consumer devices into the market and new user experiences on those devices.”

Harper says opportunities are available for engineers of all education levels. “In the college graduate space we look at computer science, computer engineering and electrical engineering, whether they want to down the hardware or software path. When you look at the latest gadgets they’re really combining hardware and

software, so really being able to partner together with hardware or software.”

Higher degrees and practical experience matter, Harper says. “In computer science, computer engineering and electrical engineering we would prefer them to have more advanced degrees—the master’s or PhD level—and some kind of lab experience.” In addition, cross-pollinating your experience with other disciplines makes a potential employee extremely valuable. “If you’re going into software, have some level of hardware lab experience, or vice-versa,” she suggests.

SKILLS AND PERSONALITY MATTER

With its broad technical focus and coworkers from a wide range of backgrounds, engineers in the semiconductor field need to have the ability to work well with others. “Today’s engineer must possess an above average mental and emotional IQ,” Blyler says. “He or she must be technically competent in their field and be skilled in social interactions since most of today’s designs rely on global teams.”

Ben Sherman, who recently started as a tech with Intel, says it’s important to be open-minded and to understand the multi-cultural nature of today’s workforce. “Intel has employees from everywhere around the world. You’ve got to be prepared and understandable and open to work with people who don’t share common ideas with you,” he says.

Andy Femrite, North American engineering solutions center manager for Arrow Electronics, says he looks for several personality traits when hiring. “Beyond obvious technical skills desired or required for certain roles, I emphasize flexibility, enthusiasm, communication and resourcefulness. That often swiftly narrows the field of candidates!”

(continued on page 44)

Tell that to our courts

In matters of conscience the law of the majority has no place.

Ghandi

Agenda be damned

... definition of a meeting: a collection of people who prefer to substitute the pleasure of talk for the responsibility of action or the ardour of decision.

P. D. James

(continued from page 43)

People with a constant desire to learn and innovate are well suited for the industry. “If you’re not moving you’re dead,” says Thomas Coughlin, founder of Coughlin Associates. “People need to be constantly learning and paying attention.” He suggests staying keyed into the latest advancements coming out of academia and conferences as well as any new R&D work being done at your company or their partners.

Coughlin says many people in the field eventually specialize, but starting with a broad range of knowledge and hands-on experience is essential. “You need to get some practical experience and find out how this stuff works and is being implemented. Then you can broaden your knowledge. You need to learn design skills, you need a good knowledge of circuitry, you need a general knowledge of materials and how they interact, as well as what kinds of materials are being used in the semiconductor industry.”

Although some employers may invest a year or more getting their employees up to speed in their new careers, it’s also important to be able to hit the ground running. “With these fast-paced industries, training is something a lot of companies doing have time for,” Coughlin says. “You’re going to need to spend time or earn your spurs to do a good job.”

GETTING STARTED

Upton says a background in analog technologies is a good place to start for anyone interested in entering the semiconductor field. “Take coursework in analog technology and microcontroller technology—any coursework that enables the real-world systems” he suggests. “Irrespective of market dynamics or semiconductor industry cyclicity, analog and microcontrollers specifically are always in demand.” He also advises taking “what would

often be referred to as fourth-year or fifth-year work around project-oriented, real-world systems.”

Kostek points out that you might need to relocate to find the best opportunities. “If the market crashes in Oregon for semiconductor jobs, for example, you’re probably a lot more limited than if you are in the Silicon Valley.”

If you’re still in school, Sherman suggests getting involved with your local IEEE student section. “It gave me a lot of opportunities to show both leadership and my public speaking abilities. Those are hard qualities to demonstrate if you haven’t already had a job.”

Consider taking a few internships to get hands-on experience and a broader industry perspective, says Kyle Burk, a technical sales representative for Texas Instruments, who took three internships with TI before landing his current job. “It gave me a really good understanding of how our product groups work and what it takes to develop a product,” he says.

No matter how you get in, Coughlin suggests engineers might find the semiconductor industry uniquely satisfying. “I think it’s been a very rewarding field for the people that are in it because you can see the fruits of your labor in almost everything that you touch,” he says. “Every consumer electronic device, every computer, every mobile device, every server, every time you get on the internet you’re interacting with electronic circuits. It’s got to be a very rewarding experience because it does so much for everybody.”

FOR FURTHER READING AND VIEWING

- Solid State Technology has a list of 2012’s top 25 semiconductor companies
- Texas Instruments has posted several “A Day in the Life” videos about engineering careers in the semiconductor industry.

I only need to speak less

It’s easy to get a reputation for wisdom. It’s only necessary to live long, speak little and do less.

P. D. James

SEEKING NOMINATIONS FOR:

Editor-in-Chief for the *Transactions on Medical Imaging*

SUMMARY:

The Steering Committee for the *IEEE Transactions on Medical Imaging* invites nominations for the position of Editor-in-Chief for the *IEEE Transactions on Medical Imaging*. The appointment is for three years, January 1, 2015–December 31, 2017.

Nominations should be submitted to Dr. Elsa Angelini, Chair of the IEEE-TMI Steering Committee, via elsa.angelini@telecom-paristech.fr. Nominations consist of (a) brief biography of no more than one page that includes a statement of the candidate's past editorial experience; (b) the candidate's full CV; and (c) a statement of interest of up to 500 words stating the nominee's vision for the journal and special qualifications for the position. Nominations must be received no later than July 15, 2013.

FULL DETAILS ARE AS FOLLOWS:

- The Steering Committee for the *IEEE Transactions on Medical Imaging* invites nominations for the position of Editor-in-Chief of the *IEEE Transactions on Medical Imaging* (IEEE-TMI). The initial term is for three years beginning January 1, 2015.
- The Journal is managed by four IEEE Societies; Engineering in Medicine and Biology (EMBS), Nuclear and Plasma Sciences (NPSS), Signal Processing Society (SPS), and Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC).
- The nominee must be a member in good standing of IEEE and of at least one of the member societies. S/he must have served as an associate editor or in a management capacity for an archival journal.
- The duties include the identification of associate editors to serve across the scope of the *Transactions*; management of the day-to-day operations of the *Transactions* through Manuscript Central with the assistance of publications staff; monitoring of quality and timeliness of publications; identification of areas that require strengthening; and working with the Sponsoring Societies and their technical committees to achieve that goal.

- The Editor-in-Chief will report to the Steering Committee. S/he chairs the Editorial Board for the *Transactions*, and meets at least annually with the Steering Committee. The Editor-in-Chief is expected to contribute actively to decisions about publication policies and priorities. The term of service is three years, 1/1/2015 to 12/31/2017, and may be renewed once.

Please submit nominations to Dr. Elsa Angelini, Chair of the IEEE-TMI Steering Committee, at elsa.angelini@telecom-paristech.fr. Nomination must include a brief biography of no more than one page, the candidate's full CV, and a 500-word statement of the candidate's vision for the journal and special qualifications for the position.

Desirable qualities: Solid technical accomplishments, leadership, integrity and ethical standards, organizational and management skills, and eagerness to continue to move the journals forward to higher levels of accomplishment. A statement of support from the candidate's home institution is welcome.

NOMINATION DEADLINE: JULY 15, 2013

NOMINATION FORM

EDITOR-IN-CHIEF for *IEEE Transactions of Medical Imaging*

1. Name of candidate
2. A brief biography
3. Full CV
4. A personal statement by the candidate
(optional, limited to 500 words)





Professor Igor Alexeff

Professor Igor Alexeff 1931–2012

Professor Igor Alexeff died at his home in Oak Ridge, TN on Oct. 25th, 2012 at the age of 81 from ALS, also known as Lou Gehrig's disease. Anne Alexeff, his wife and partner of 58 years, was at his side until the end. He is also survived by his son Alexander, daughter-in-law Monika Dimmel-Alexeff, both of Malibu, CA; daughter, Helen Alexeff, of Knoxville; granddaughters, Zoe, Ivy and Noa Alexeff, of Malibu and Jasmine Alexeff-Little, of Knoxville.

Igor was born in Pittsburgh, PA on January 5, 1931, the son of Alexander Alexeff and Tamara Tchirkow Alexeff. He had a lifelong interest in science and mathematics, and was both an outstanding engineer and a dynamic leader of the plasma science and engineering community. During his career, he worked in many areas of plasma science and engineering. He made the first observation of ion acoustic waves in a plasma (1963) and invented the Orbitron maser, a microwave oscillator in which electrons in orbit around a positively charged wire bunch, via a negative mass instability, and generate radiation at up to 1 THz. More recently, he worked extensively on ball lightning and atmospheric pressure plasma discharges, with applications including plasma stealth antennas and medical sterilization. A recent Web of Science search found 371 citations for I. Alexeff, including more than 140 journal articles, beginning with a 1955 *Physical Review* paper on "Evapor-Ion Pump Developments." He was also a prolific inventor, and received more than 20 U.S. patents during his career.

Igor received a B.A. in Physics with honors from Harvard in 1952, and received his Ph.D. from the University of Wisconsin in Nuclear Physics in 1959. He also passed the Tennessee State

License Exam, and was a registered professional engineer. He worked at the Westinghouse Research Laboratory from 1952 to 1953, where he helped develop the first nuclear submarine. From 1960 to 1970, he worked on controlled thermonuclear fusion at the Oak Ridge National Laboratory. From 1971 to 1996, he was a Full Professor in the Department of Electrical Engineering of the University of Tennessee, working in industrial plasma engineering. During his career, he also worked overseas for extended periods in Switzerland, Japan, India, South Africa, and Brazil. He was also a founding member of the Tennessee Inventors Association, which was formed in 1983, and its President in 1984, and Secretary-Treasurer of the American Physical Society's Division of Plasma Physics from 1983 to 1984. He retired from teaching in 1996, but retained his office and research laboratory as an emeritus professor, and continued his work until 2011. During this period, he consulted for private industry while licensing some of his inventions.

As a professor at the Department of Electrical and Computer Engineering of the University of Tennessee, Igor was known as an outstanding teacher and mentor. His plasma physics courses were some of the most popular courses in the department and inspired many a student to pursue their research in plasma science and engineering. Students particularly enjoyed watching Igor conducting small but spectacular experiments on top of the classroom desk to illustrate some of the plasma physics principles that he had just taught them. Some of these "shows" included bringing his telescope, when a special astronomical event was taking place, probing the skies, and making a connection between what the students observed and plasma physics concepts. In his research laboratory, Igor was

In many I know

*Swans have an air of being proud,
stupid and mischievous — three
qualities that go well together*

Denis Diderot

OBITUARY

a hands-on supervisor who took part in all the experiments and enjoyed demonstrating to his graduate students the art and science of conducting scientific experimentation. He always treated the members of his research group as family and often on weekends and holidays invited them to his farm, located in the countryside outside of Knoxville, where they all enjoyed food, games, and good company. Igor was very fond of his farm, where he kept various animals (cows, a pony, cats, and geese). He spent as much time as he could at the farm, where he took care of his animals and enjoyed using his Russian-made tractor to work the land.

Igor had a long relationship with the IEEE and the NPSS. He was a member of the "Organizing Group of Petitioners for a Plasma Group" whose petition was submitted to the AdCom of the IEEE Nuclear Science Group at a meeting on March 2, 1972. That meeting approved the submission of a petition to the IEEE to form the Nuclear and Plasma Sciences Society from the Nuclear Science Group and the Plasma Organizing Group, with a new Plasma and Fusion Science technical committee formed and headed by Leon Shohet. Igor was present as a representative of the Plasma Sciences and Applications technical committee at the first meeting of the AdCom of the newly formed Nuclear and Plasma Sciences Society on December 5, 1972 at the Deauville Hotel in Miami Beach. At this meeting, "I. Alexeff indicated that the Plasma Sciences Technical Committee planned to establish their 1st Plasma Sciences International Conference in May or June 1973 at the University of Tennessee. This would be a three-day meeting which would draw on ORNL for help. They expect 200 attendees and plan a registration fee of \$25 for members, \$30 for non-members. They plan on publishing abstracts in any case and, depending on response, may publish complete papers as an issue

of the *Transactions on Plasma Sciences*. They would desire that the Nuclear and Plasma Sciences Society cover any deficit which may be incurred by this meeting." The first International Conference on Plasma Science (ICOPS) was actually held in May 1974 in Knoxville, TN. Igor chaired the conference, and at the May 16, 1974 AdCom meeting, "I. Alexeff reported that the conference was quite successful with about 140 to 150 persons registered and 130 papers submitted. They expect to break even financially." This year's ICOPS, joint with the Pulsed Power Conference, will be the 40th in the successful series that Igor began.

Igor was President of the NPSS from 1999 to 2000, Vice-President on two occasions (1983 and 1998), and an elected member of AdCom from 1980–1983 and 1996–1999. He also chaired a number of AdCom committees, including Awards, Chapters and Local Activities, Nominating, and Fellow Candidate Evaluation. In addition, he was an elected member of the Executive Committee (ExCom) of the NPSS Plasma Science and Applications Committee on a number of occasions from the early 1970s through the early 1990s, Secretary from 1979–1981, Vice-Chair in 1978 and 1989, and Chair of ExCom from 1983 to 1984. He remained involved with PSAC activities until his death, and was a frequent guest at ExCom meetings and receptions. As noted above, he was the General Chair of the first IEEE International Conference on Plasma Science, which was held in Knoxville, TN in 1974. He was also a member of the IEEE Fellow Committee from 1983 through 1986 and, following his term, frequently assisted other NPSS members by reading and critiquing their fellow nominations. Along with Victor Granatstein, he organized a minicourse on "Generation of High-Power Microwaves, Millimeter-Waves,

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How odd!

*Every custom was once
an eccentricity.*

Holbrook Jackson

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(continued from page 47)

and Submillimeter-Waves” at the 1986 ICOPS in Saskatoon, Canada, and they together edited a subsequent book **High Power Microwave Sources** that was published by Artech House in 1987. From 2008 until his death, he was also an NPSS Distinguished Lecturer. He gave lectures on topics such as nuclear fusion and ball lightning to many different audiences on behalf of the NPSS, including four lectures during two trips to Kharkov in the Ukraine in the winters of 2010 and 2011 to visit the Institute of Radiophysics and Electronics of National Academy of Science of Ukraine as well as the NPSS East Ukraine Joint Chapter. A collaboration that resulted from his visit to Kharkov resulted in what may be his last technical paper, “Negative Mass Instability in Low Voltage Cyclotron Resonance Maser,” by I. Alexeff et al., which was published in the Proceedings of the 2012 International Conference on Mathematical Methods in Electromagnetic Theory. Igor presented his final two Distinguished Lectures on “The Van Allen Hypothesis” in April 2012, one “at an old movie theater” and

the second at Roane State Community College in Harriman, TN.

Igor received a number of significant awards during his career. He was a Fellow of the American Physical Society and a Life Fellow of the IEEE. He received the IEEE Centennial Medal in 1984. He received R&D 100 Awards in 1989 and 1991. He received the NPSS Richard F. Shea Distinguished Member Award in 1993 “for contributions to NPSS, including his leadership role on the IEEE Plasma Science and Applications Committee and his service as first chairman of the IEEE Conference on Plasma Science.” He received the NPSS Plasma Science and Applications Award in 2002 “for outstanding contributions to plasma science, including pioneering work on ion acoustic waves and on plasma sheath expansion, substantial impact on the development of high power microwave sources, dedicated mentorship and education of generations of students, and extraordinary professional service, including cofounding of the IEEE Nuclear and Plasma Sciences Society in 1972.” In recognition of his career and service, the NPSS Outstanding

Student in Plasma Science award is being renamed the Igor Alexeff Outstanding Student in Plasma Science award. As this is written, this action was awaiting final approval by TAB.

Igor was also an amateur magician who took great delight in performing a variety of impressive magic tricks for children and adults alike. One especially memorable show was Igor’s performance at the ICOPS conference banquet in 2002, where, during his PSAC Award lecture entitled “Outrageous Personal Plasma Projects,” he put on a magic show with the assistance of his wife, Anne, and at the end, actually disappeared from the stage! A few moments later, he returned to the stage from the back of the room to finish the show. Igor Alexeff was a true gentleman, scholar, teacher, and human being, beloved by friends, colleagues and students. He will be sorely missed.

Prepared by Steve Gold, Mounir Laroussi, and Steve Gitomer who can be reached by E-mail, respectively, at steven.gold@nrl.navy.mil, mlarouss@odu.edu and sgitomer@aol.com.