



2019 IEEE Nuclear Science Symposium and Medical Imaging Conference

26th International Symposium on Room-Temperature Semiconductor X-Ray & Gamma-Ray Detectors

CONFERENCES

NSS MIC 2019	1
NSREC	3

SOCIETY GENERAL BUSINESS

President's Report	4
Secretary's Report	4

TECHNICAL COMMITTEES

Fusion Technology	5
Nuclear Medical and Imaging	5
Plasma Science and Applications	5
Radiation Instrumentation	8

FUNCTIONAL COMMITTEES

Awards	
Particle Accelerator Science and Technology	8
Plasma Science and Applications	9
Pulsed Power and Plasma Science	9
Student Paper Awards	9
Radiation Effects Awards	10
Distinguished Lecturers	10

LIAISONS

Educational Activities Board	12
IEEE Smart Village	12



Paul Marsden
NMISC General Chair

This year's IEEE 2019 Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC), and the 26th International Symposium on Room Temperature Semiconductor Detectors (RTSD), will be held in Manchester and will be the first time the meeting has visited the UK. The technical program has been built by selecting contributions from 1,400 abstracts submitted from 48 countries with the help of over fifty topic conveners and several hundred technical reviewers. The core scientific session will run from Monday, October 28th through to Saturday, November 2nd with a program of short courses from Saturday, October 26th through to Tuesday, October 29th. The meeting will take place in Manchester Central Convention Centre, <https://www.manchestercentral.co.uk/> which was developed from the abandoned historic Manchester Central Railway Station with its spectacular single-span arched roof. Short courses will be held in the nearby Deansgate Hilton hotel

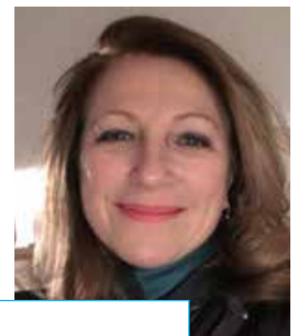


Patrick Le Dû
Deputy General Chair

Manchester is the UK's de facto second city and was at the heart of the industrial revolution. You will come across reminders of its rich heritage on any short walk around the center. More recently, Manchester has become a hub for contemporary art and culture with a profusion of galleries and venues. It has a legendary music scene, and two football (soccer) teams competing at the highest level in Europe. There are all kinds of restaurants, cafes, pubs and wide variety of accommodation across all price ranges, all within an easy distance of the meeting. The city is well connected internationally by air, two hours by train from London, and makes an ideal stepping off point for onward visits to many of the UK's most interesting and scenic regions. A program of tours taking in places of interest in the region has been arranged. Hotels can be booked via the conference website with specially negotiated rates for delegates and visitors.

An overview of the conference is below but please check the conference website <https://nssmic.ieee.org/2019/> regularly for more details and up-to-date information on the program and logistics! The 2019 NSS-MIC organising committee looks forward to welcoming you to Manchester in October!

NSS PROGRAM



Cinzia Da Via
NSS program Co-chair



Yoshinobu Uno
NSS program Co-chair

CONFERENCES Continued on PAGE 2

Conferences Continued from PAGE 1



NSS sessions run from Monday through to Friday, and this year's program has been updated to include the latest trends in detector technology, radiation detection, detector materials, new instrumentation techniques, and their implementation in high-energy and nuclear physics, astrophysics, accelerators, national nuclear security, and many other applications. Four outstanding scientists will describe their work during the plenary sessions. Prof. Philip Diamond from Manchester University will be talking about The Square Kilometer Array Project, and, also from Manchester, Prof Steve Furber will speak on The Human Brain and Spinnaker—a computer incorporating a million ARM processors optimized for computational neuroscience. Prof John Womersley will discuss the European Spallation Source currently under construction in Sweden. In addition, we will also be presenting the 2018 IEEE Marie Skłodowska-Curie Technical Field Award to Prof. David Nygren, who is well known within the NSS community for having invented the Time Projection Chamber and who will be talking about his work.

MIC PROGRAM



Dimitra Darambara
MIC Program Co-chair



Suleman Surti
MIC Program Co-chair

MIC sessions run from Wednesday through to Saturday, but note that this year there will be three joint NSS/MIC/RTSD sessions of interest to MIC attendees on Tuesday, and also a closing MIC session after lunch on Saturday. Scientific sessions will cover the core MIC topics of detectors, systems and data reconstruction/processing for radionuclide and X-ray imaging, however this year new areas have been added — methodology for study standardization, uses of AI, machine learning, deep learning in systems and data processing/interpretation, and novel applications related to targeted radionuclide therapy, new radiotracers and contrast agents. Two outstanding speakers have been arranged for the Wednesday morning plenary session: robotics is having an increasing role in many aspects of medical imaging and Professor Guang-Zhong Yang from Imperial College, London, will be speaking on Medical Robotics – The Role of Imaging and Intelligent Navigation. The second plenary speaker will be Professor Cynthia H. McCollough from the Mayo Clinic, a pioneer of photon counting

CT, who will speak on Bringing Photon-counting-detector CT from the Research Lab into Clinical Practice – Current Experience and Future Directions. The plenary sessions will also include presentations of the 2019 NMISC Edward J Hoffman Medical Imaging Scientist Award, the Bruce H Hasegawa Young Investigator Award and our new Medical Imaging Mid-Career Award

RTSD PROGRAM



Paul Sellin
RTSD Program Co-chair



Michael Fiederle
RTSD Program Co-chair

The RTSD program starts on Monday afternoon following the NSS plenary session—note that this year no RTSD sessions are planned for Friday. Room-temperature semiconductor radiation detectors continue to find increasing applications in such diverse fields as medicine, homeland security, astrophysics and environmental remediation, and the RTSD symposium provides a forum for discussion of the state-of-the-art of the detector technology, including materials improvement, material and device characterizations, fabrication, electronics and applications.

JOINT SESSIONS



Vesna Sossi
Joint Sessions Chair

This year there will be three themed Joint NSS/MIC/RTSD sessions, all on Tuesday, on selected topics of mutual interest:

- New detectors and systems
- New detectors—timing and data acquisition
- New applications and dosimetry

INDUSTRIAL EXHIBITS PROGRAM

Vendors with products and services related to the NSS, MIC, and RTSD are participating in the Industrial Program which comprises an exhibition and technical seminars. The exhibition area is situated in the central hall adjacent to the poster sessions. The exhibitor technical session, where the exhibitors will discuss the workings of their instruments, will be on Wednesday. The Industrial Exhibition will be open

from Tuesday through Thursday and will include a relaxing networking opportunity during the “Happy Hour” exhibitors’ reception on Tuesday evening.

SHORT COURSES



Katia Parodi
Short Course Co-chair

The 2019 NSS-MIC Short Courses program offers six courses on established and emerging areas of interest to NSS, MIC and RTSD attendees, including topics of mutual interest to all communities. All courses are run by experts in their respective fields and include theoretical background alongside applications and practical examples. The program on offer this year includes popular courses from previous years, in addition to brand new courses on *Fast timing detectors for HEP and medical applications and Artificial intelligence for medical image analysis and processing*. The program will run from Saturday 26th to Tuesday 29th of October, with NSS short courses primarily on Saturday and Sunday, and MIC short courses on Monday and Tuesday.

Radiation detection and measurement—Saturday, 26th October & Sunday, 27th October

Integrated circuits for detector signal processing—Saturday, 26th October

Fast timing detectors for HEP and medical applications—Sunday, 27th October & Monday, 28th October

Medical image reconstruction: from foundations to AI—Monday, 28th October

Hybrid nuclear medicine devices: instrumentation and application—Tuesday, 29th October

Artificial intelligence for medical image analysis and processing—Tuesday, 29th October

WORKSHOPS



Dimitris Visvikis
Workshop Co-chair

This year's workshops on topical and emerging areas will include talks given by leading scientists and also provide a venue for researchers to present and discuss their own work. The broad themes of this year's workshops include impactful applications, the results and role of emerging technologies, the optimization of detection and imaging through advanced hardware and software algorithms, the development of multimodality image reconstruction



Chris Steer
Workshop Co-chair

algorithms and platforms, and the use of artificial intelligence in the field of nuclear imaging.

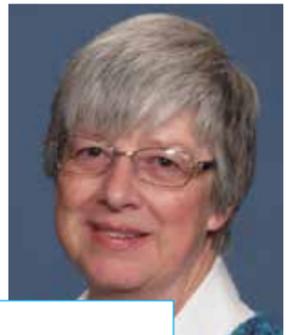
Quantum Technologies and Sensing Workshop—Sunday, 27th October

Open Data Libraries Workshop—Sunday, 27th October

Instrumentation and Measurement in Nuclear Media Workshop—Sunday, 27th October

Robotics and Autonomous Platforms in the Nuclear Industry—Sunday, 27th October

Emergence and perspectives of artificial intelligence (AI) methods in radiation-based imaging sciences—Saturday, 2nd November



Merry Keyser
Scholarship Chair

SCHOLARSHIPS AND GRANTS

A very large number of student grants have been awarded this year. Special thanks to all members of our selection committees for their help with the process.

SOCIAL EVENTS

NSS Dinner—Monday, 28th October

This year's NSS dinner will be held in the very beautiful Manchester Cathedral. This Gothic building is located at the end of Deansgate approximately 15-20 minutes walking distance from the Convention Centre. This will be a good opportunity to explore Manchester city center with its shops and old

VIVE LA DIFFERENCE!

In theory, there is no difference between theory and practice. But in practice, there is.

Jan L. A. Van de Snepscheut

THESE DAYS WE'VE LUCKED OUT

In physics there may one day be a Theory of Everything; in finance and the social sciences, you're lucky if there is a usable theory of anything.

Emanuel Derman

NUCLEAR & PLASMA SCIENCES SOCIETY NEWS

(USPS 000-560) is published quarterly by the Nuclear & Plasma Sciences Society of the Institute of Electrical and Electronics Engineers, Inc. Corporate Office: 3 Park Avenue, 17th Floor, New York, NY 10016-5997, <https://www.ieee.org/about/contact.html>. Printed in the USA. One dollar per member per year is included in the Society fee for each member of the Nuclear & Plasma Sciences Society. Periodicals postage paid at New York, NY and at additional mailing offices. Postmaster: Send address changes to Nuclear & Plasma Sciences News, IEEE, 445 Hoes Lane, Piscataway, NJ 08854.

northern England pubs and to network in a stunning environment. Dinner will take place in the main Cathedral Nave and drinks will be served starting from 18:30. It will be enthralling!

RTSD Lunch—Tuesday, 29th October

Please join us for the RTSD Luncheon, which will be held in the historic Midland Hotel in Manchester, just 2 minutes' walk from the Conference Centre. This informal buffet lunch will be an ideal opportunity to meet colleagues and to network within the RTSD community. Our lunch will be held in the Trafford Room, a beautiful and historic room within the Midland Hotel. The Beatles were famously refused access to the hotel restaurant for being "inappropriately dressed"—fortunately, the current dress code is now informal, and we do not anticipate any similar problems!

Exhibitors' Reception—Tuesday, 29th October

This exhibitor-sponsored reception is open to all attendees and their companions. This is a great opportunity to meet with representatives from the industrial exhibition in a casual atmosphere. Light refreshments will be served.

Conference Reception—Wednesday, 30th October

Join us for the Conference Reception on Wednesday evening in the spectacular Central Hall of the Conference Centre. This complimentary event will feature dinner and drinks for all attendees and their companions. Enjoy the relaxing and fun atmosphere under the grand arch of the old Central Station while meeting with other colleagues and making new friends.

MIC Dinner—Friday, 1st November

The MIC dinner promises to be an exciting social function taking place in Manchester's most celebrated building, the Free Trade Hall (converted to Radisson Blu Edwardian, Manchester Hotel) situated right next the Conference Centre. This historic landmark combines award-winning modern style, elegance and Venetian palazzo architecture. The dinner will be in the magnificent Halle Suite, rich in history this is a beautifully decorated space with inspiring works of art, original artefacts and natural light.

SPECIAL EVENTS

Women in Engineering Luncheon—Thursday, October 31st

The program for this event will focus on Equality and Diversity "in action" and will explore what large organizations are doing to tackle this important and timely issue. The newly Elected IEEE WIE Chair, Lisa Lazareck-Asunta will present the IEEE WIE action plans for the next two years. This will be followed by presentations on the JUNO project, which successfully promoted best practices in UK Universities, and on the 30% Club, an organization started in the financial sector aiming at having at least 30% women serving on corporate boards. Lunch will be provided and tickets will be available for collection during registration on a first come, first served basis.

STIR Users' & Developers' Meeting—Thursday, October 31st

STIR is Open Source software for use in tomographic imaging. Its aim is to provide a Multi-Platform Object-Oriented framework for all data manipulations in tomographic imaging. Currently, the emphasis is on image reconstruction in emission tomography (PET and SPECT) but other imaging modalities can be added in the future. During this annual meeting experienced users and developers will present their recent work with STIR with technical emphasis on software and algorithmic development. Additional time will be allowed for discussion between the speakers and the audience. If interested in presenting please contact the chairs (Nikos Efthimiou & Charalampos Tsoumpas) before the 15th of September. More information can be found in STIR website: <http://stir.sf.net>

COMPANION PROGRAM



Nancy Watson
Companion Program Chair

Manchester is a vibrant city with so much to do and see! It has a rich social and cultural history for you to explore and we're offering tours that highlight the stories of the distant to recent past, as well as the energy, imagination, inventiveness, and beauty of the city and nearby areas. Five tour options have been arranged:

Manchester Highlights Coach Tour—Monday, October 28th (am)

Liverpool and the Beatles' Story—Tuesday, October 29th

Walking Tour of Manchester City Center—Wednesday, October 30th (am)

Historic Chester and The Benedictine Cathedral—Thursday, October 31st

The Tatton Estate (English Manor House)—Friday, November 1st (am)

Please see <https://nssmic.ieee.org/2019/tours> for up-to-date tour information

PUBLICATIONS



Andrew Goertzen
Publications Co-chair



Gian-Franco Dalla Betta
Publications Co-chair

All presentations will be eligible for publication in the Conference Record that will subsequently be made available in the Xplore IEEE Digital Library. This year there will also be the possibility to modify the submitted summary of your presentation on-line—summaries will be made available (to attendees only) for a limited period before, during and after the meeting (see the conference website <https://nssmic.ieee.org/2019> for more details).

REGISTRATION

Registration is handled via the conference website <https://nssmic.ieee.org/2019> where you can register for the conference, short courses, workshops, NSS and MIC dinner and RTSD luncheon, and the Companion Program. Manchester is an extremely popular destination so early registration and hotel booking is strongly recommended! (Information on visa requirements for visiting the UK can be found here <https://www.gov.uk/check-uk-visa>)

In addition to all those above, the General Chair and Deputy General Chair would like to thank Ralf Engels, Paul Nolan, Ron Keyser, Dick Kouzes, Brian Hutton, Malcolm Joyce, Val O'Shea and John Simpson for their massive behind-the-scenes contributions in organising NSS-MIC 2019.

Paul Marsden, 2019 NSS MIC General Chair can be reached by E-mail at paul.marsden@kcl.ac.uk.

LUCKY GUY

Money is not the most important thing in the world. Love is. Fortunately I love money.
Jackie Mason

IT'S PHYSICS – LIKES REPEL

Bores have one thing in common with bores: they recognize at sight and avoid one another, fearing competition.
Hesketh Pearson

GIVE IT ALL BACK IF YOU FAIL?

All I ask is the chance to prove that money can't make me happy.
Spike Milligan

I HAVE A GREAT IDEA

Nothing is so good as it appears beforehand.
George Eliot

NOR SUFFICIENT

It is not necessary to be an idiot to act like a fool.
Emmanuel Auvergen-Rey (Defence Lawyer)

DON'T THINK THE APES FEEL FLATTERED

An hour at the zoo is enough to convince most people that apes and monkeys are close kin to humankind. Some say that an hour watching proceedings in any parliament is enough to show that humans are close kin to monkeys.
A.C. Grayling

2020 IEEE NSREC Is Planning for Santa Fe, New Mexico

The IEEE Nuclear and Space Radiation Effects Conference will be held July 20th–24th, 2020, Santa Fe, New Mexico at the Hilton Buffalo Thunder Resort. The conference will feature a Technical Program consisting of ten sessions of contributed papers (both oral and poster) that describe the latest observations and research results in radiation effects, an up-to-date Short Course offered on July 20th, a Radiation Effects Data Workshop, and an Industrial Exhibit.

The Hilton Buffalo Thunder Resort is located just outside downtown Santa Fe and provides access to many beautiful and historical Northern New Mexico attractions including the High Road Trip to Taos, Bandelier National Monument, Jemez Mountains, and many other world-renowned attractions. There is a rich and inspiring history in Northern New Mexico with influences from Hispanic, Anglo, and Native American cultures that are apparent in everything from the architecture to the food to the art. Santa Fe is known as a center for arts and culture and ranks as the country's third largest art market. You will find nearly 300 art galleries and the third-largest

State Museum system in the country featuring culture, history, and traditions of the Southwest. Treat yourself to the colorful markets and experience why Santa Fe has been considered a trading hub for hundreds of years. With a backdrop of the Sangre de Cristo Mountains, Santa Fe is also the home of the world-class Santa Fe Opera.

Santa Fe was nationally recognized as one of the top 15 cities in the US by 2018 *Travel and Leisure World's Best Awards* and was one of the top 30 US cities to visit in 2018 according to Trip Advisor. Santa Fe has also earned a stellar reputation with food-lovers ranging from local New Mexican flavors to authentic world cuisines in recent years. The Santa Fe Margarita Trail Tour was recently recognized as one of the 10 Best Food and Drink Trails to Explore according to *Pop Sugar*.

For the outdoor enthusiast, Northern New Mexico provides hiking and biking year-around amongst beautiful backdrops and historical sites. The great outdoors and open sky also allow everyone to relax and enjoy activities such as golf, white-water river

rafting, horseback riding, and fly-fishing. Remember, we are going to be at an elevation of 7,000 feet and likely in sunny weather.

TECHNICAL PROGRAM

Chaired by Philippe Adell, Jet Propulsion Laboratory, papers to be presented at this meeting will describe the effects of space, terrestrial, or nuclear radiation on electronic or photonic devices, circuits, sensors, materials and systems, as well as semiconductor processing technology and techniques for producing radiation-tolerant devices and integrated circuits. The conference will be attended by engineers, scientists, and managers who are concerned with radiation effects.

The conference committee is soliciting papers describing significant new findings in the following or related areas:

Basic Mechanisms of Radiation Effects in Electronic Materials and Devices

- » Single Event Charge Collection Phenomena and Mechanisms
- » Radiation Transport, Energy Deposition and Dosimetry
- » Ionizing Radiation Effects
- » Materials and Device Effects
- » Displacement Damage
- » Processing-Induced Radiation Effects
- Radiation Effects on Electronic and Photonic Devices and Circuits**
- » Single Event Effects
- » MOS, Bipolar and Advanced Technologies
- » Isolation Technologies, such as SOI and SOS
- » Optoelectronic and Optical Devices and Systems

Conferences Continued from PAGE 3

- » Methods for Hardened Design and Manufacturing
- » Modeling of Devices, Circuits and Systems
- » Cryogenic or High Temperature Effects
- » Novel Device Structures, such as MEMS and Nanotechnologies

- » Techniques for Hardening Circuits and Systems

Space, Atmospheric, and Terrestrial Radiation Effects

- » Characterization and Modeling of Radiation Environments
- » Space Weather Events and Effects
- » Spacecraft Charging
- » Predicting and Verifying Soft Error Rates (SER)

Hardness Assurance Technology and Testing

- » New Modeling and Testing Techniques, Guidelines and Hardness Assurance Methodology

- » Unique Radiation Exposure Facilities or Novel Instrumentation Methods
- » Dosimetry

New Developments of Interest to the Radiation Effects Community

RADIATION EFFECTS DATA WORKSHOP

The Radiation Effects Data Workshop is a forum for papers on radiation effects data on electronic devices and systems. Workshop papers are intended to provide radiation response data to scientists and engineers who use electronic devices in a radiation environment, and for designers of radiation-hardened or radiation-tolerant systems. Papers describing new simulation facilities are also welcomed.

PAPER SUBMITTAL

Information on the submission of summaries to the 2020 NSREC for either the Technical Sessions or the Data Workshop can be found at www.nsrec.com. The deadline for submitting summaries is February 7, 2020.

SHORT COURSE

Attendees will have the opportunity to participate in a one-day Short Course on Monday, July 20. The short course is being organized by Kenneth Galloway, Vanderbilt University. The course will be of interest both to radiation effects specialists and newcomers to the field.

INDUSTRIAL EXHIBIT

An Industrial Exhibit will be included as an integral part of the conference and will be chaired by Scott Jordan, JSTF. Exhibitors will include companies or agencies involved in manufacturing electronic devices or systems for applications in space or nuclear environments, modeling and analysis of radiation effects at the device and system level, and radiation testing.

Conference Committee

General Chair

Hugh Barnaby, Arizona State University, hbarnaby@asu.edu

Technical Program Chair

Philippe Adell, Jet Propulsion Laboratory, Philippe.C.Adell@jpl.nasa.gov

Short Course Chair

Kenneth Galloway, Vanderbilt University, kenneth.f.galloway@vanderbilt.edu

Local Arrangements Chair

Michael McLain, Sandia National Laboratories, m1mclai@sandia.gov

Publicity Chair

Teresa Farris, Archon LLC, teresa.farris@archon-llc.com

Finance Chair

Daniel Loveless, University of Tennessee Chattanooga, Daniel-Loveless@ut.edu

Awards Chair

Marta Bagatin, University of Padova, marta.bagatin@dei.unipd.it

Industrial Exhibits Chair

Scott Jordan, JSTF Inc., jordans1@jazztrusted.com

For more information contact

Teresa Farris, Publicity Chair, by E-mail at teresa.farris@archon-llc.com

President's Report



Ron Schrimpf
IEEE NPSS President

The Nuclear and Plasma Sciences Society AdCom recently met in Orlando, following the 2019 IEEE Pulsed Power and Plasma Science Conference. In recent years, the summer AdCom meeting typically has been held in conjunction with the IEEE Nuclear and Space Radiation Effects Conference, but was not because of scheduling issues. We like to have the AdCom meeting after the IEEE Technical Activities Board (TAB) meeting has taken place, so we can discuss any issues that are raised there. It was a good opportunity to meet with one of the other large NPSS conferences as it was held after this year's June TAB meeting.

One of the highlights of the TAB meeting was the selection of Peter Clout for the Technical Activities Board Hall of Honor. Peter has been very active in NPSS and currently chairs the NPSS Communication Committee. Please congratulate Peter!

The NPSS underwent a review by the Society and Councils Review Committee of the IEEE in February and the review was accepted at the TAB meeting. As I reported in the previous newsletter, NPSS is doing very well. The main recommendation of the SCRC is that we should consider developing an NPSS strategic plan, and we began the process at the recent AdCom meeting. Steve Meikle, the NPSS Vice President, is leading the strategic planning activity. Your thoughts and input related to the plan are welcome—please contact your technical Committee AdCom representative if you have any ideas.

Open Access publishing continue to be one of the major issues confronting the IEEE. In this model, the expenses associated with publishing are paid by the authors (or their sponsoring organizations), rather than by subscriptions. One of the main drivers behind this move is a group called Coalition S, a consortium of primarily European funding organizations. "Plan S," the approach proposed by

this consortium, poses some interesting challenges for a relatively small and technically diverse society such as NPSS. They plan to require that the research supported by consortium members be published in a Gold OA journal. In order to qualify as a "Gold Open Access" journal under this plan, it is necessary for the new journal to have editors and reviewers that are substantially different from existing traditional journals. It is difficult to maintain and staff new OA journals in our fields of interest, while assuring the continued quality of our publications. Consequently, NPSS has decided to adopt a "wait-and-see" approach for the moment, as have many other IEEE societies. The IEEE also is exploring mixed "publish and read" subscriptions for organizations that would provide access to existing IEEE content and ability for associated authors to publish new papers. Fortunately, Coalition S has delayed implementation of their requirements by a year, from January 1, 2020 until January 1, 2021. We will continue to monitor developments on this front.

NPSS currently sponsors (wholly or in part) four journals: the IEEE *Transactions on Nuclear Science* (edited by Zane Bell), the IEEE *Transactions on Plasma Science* (edited by Steve Gitomer), the IEEE *Transactions on Radiation and Plasma Medical Sciences* (edited by Dimitris Visvikis), and the IEEE *Transaction on Medical Imaging* (edited by Michael Insana). TNS and TPS are 100% sponsored

by NPSS, while the other two are shared with other societies. Paul Dressendorfer serves as the NPSS Publications Chair and oversees all of our publications in that capacity. This is a very capable team and we are confident that they will guide us through the transition to open access.

The IEEE also is working to comply with the new European Union General Data Protection Regulations. GDPR limits the ability of organizations to store information related to individuals, which has resulted in people not receiving information they expected or not being recognized for certain accomplishments (e.g., not appearing on the list of IEEE Fellows). If you have problems resulting from GDPR, please check out the IEEE website providing support: <https://supportcenter.ieee.org/> and choose GDPR.

As always, I welcome your feedback.

Ron Schrimpf, IEEE NPSS President,
can be reached by E-mail at ron.schrimpf@vanderbilt.edu

Secretary's Report



Albe Larsen
IEEE NPSS Secretary and Newsletter Editor

As noted in Ron Schrimpf's report above, AdCom met in Orlando, FL at the Orlando Hilton Universal Studios following the PPPS or Pulsed Power Plasma Science Conference that is held on a six-year schedule as a joint ICOPS and Pulsed Power

conference. We were joined during our meeting by Lisa Boyd of the IEEE MCE who is the conference account manager for NPSS and who has been involved with both Pulsed Power and ICOPS, as well as PPPS, for a number of years. Lisa is available and knowledgeable if your TC needs help in organizing its conference and would like to involve MCE's services l.boyd@ieee.org; <https://ieeemce.org/>.

Our Treasurer, Ralf Engels, reported that income is shown as down this May in part due to the reporting. Conference income is accurate as reported but is not very meaningful at this time of year. Income from Publications shows as increased but is not projected to be favorable over the next several years. Conferences and Publications are the Society's two principal streams of revenue, with a very small contribution from dues. The Society supports thirty-

three awards, some student travel, some conference child-care grants and many other things of benefit to members. It is critical that conference earnings are available to cover these as well as our initiatives. Last year we closed with a deficit of \$138.4k largely due to 2018 and prior years of conference expenses. Our net worth decreased by over \$660k due to market losses and meeting budget shortfalls. The 2020 budget has been drafted and will have been sent to IEEE Finance before July 2nd.

Ralf noted that the Conference Budget Web Tool is being upgraded to handle two currencies. A budget, when created, will be shown in both currencies with a set exchange rate. Actual transactions will show the exchange rate for that transaction. All conference treasurers must use this tool and the budget must be submitted in good time, at least many months prior to a conference to the Budget Review Committee (FinCom Chair, NPSS VP, relevant TC Chair and NPSS Treasurer).

Steve Meikle presented the first information from the Strategic Planning Effort, including the initiation of an NPSS SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) and whether these are internal or external. Work is continuing on vision and mission statements.

John Verboncoeur, our Division IV Director, reported on a number of TAB, IEEE Board of Directors and TAB committee meetings held in May and June. Steve Welby, the new IEEE Executive Director, is using many tactics to reduce operational costs while President Jose Moura is focusing on financial transparency, diversity, inclusivity and ethics, and well as new membership and business models. The MGA vice president has initiated discussions of splitting Region 8 and Region 10 while coalescing parts of R1-7 and R9. They are also looking toward membership growth and more local activities. Much

Publication Services and Products Board of the IEEE activity revolves around issues of Open Access and Plan S.

TECHNICAL COMMITTEES

Martin Grossmann, chair of CANPS, reported that plans are moving along well for the 2020 Real Time Conference to be held in Quy Nhon, Vietnam next April 13th – 17th. They are advertising the conference at a number of our NPSS and NPSS technically cosponsored conferences. Note that abstract submission opens on 15 September 2019. One invited speaker has already been confirmed!

See the major Technical and Functional Committees for more information on our Technical Committees.

FUNCTIONAL COMMITTEES

Important for those hosting conferences, whether NPSS sponsored or technically cosponsored – make sure your conference application is submitted in a timely fashion, especially if an MOU is needed. The MCE guideline is a preferred 18 – 24 months ahead, 12-months minimum for application submission. There is also extensive material on our web site regarding timelines, material that it is necessary to communicate on conference web sites, GDPR requirements and more.

Our Awards Committee had an extensive report in the June Newsletter. Remember to nominate deserving colleagues for our many Society Awards including the new Kristiansen and Barker Awards. See <https://iee-npss.org/awards/npss-awards/> for

Award details including submission deadlines. Good submissions need time, so start soon!

Our Membership Committee is supporting this year's NPSS conferences and technically cosponsored conferences and will most probably be supporting a conference connected to Student Branch Chapters in Gujarat, India. Overall, membership is about 3000 with over 82% males.

Chapters and joint chapters now number 33, with 10 Student Branch Chapters. Efforts are underway to create new chapters and student branch chapters, including possibilities related to our Instrumentation Schools. Our academic members are being encouraged to initiate formation of student branch chapters at their universities, especially in the US. Chapter formation in many regions is hindered by lack of higher-grade members and lack of an individual willing to take on leadership.

Our Distinguished Lecturers program is going well, and has added Martin Grossmann, CANPS chair, as a new distinguished lecturer. As of mid-June 19 lectures have been planned or presented. See the Functional Committees section below for the report of our web master and distinguished lecturer Dick Kouzes' recent series of lectures in India.

Stefan Ritt was close to completing the material for our 2019 elections. Do make sure to vote, and also remember that there will be new jobs and elections in 2020. Let your TC chair know of your interest in being an active volunteer.

Overall our NPSS publications are doing well. We have initiated journal Best Paper award, and Paul Dressendorfer, our Pubs chair, reported on the 2019 recipients of the TNS and TPS awards.

ADCOM ACTIONS

- » AdCom, on behalf of NPSS, voted to endorse the "10 ps challenge." The motion was brought forward jointly by RISC and NMISC and passed unanimously
- » AdCom approved the proposed amendments to the PSAC Constitution and Bylaws. Unanimous. See article and revisions under Technical Committees below.
- » It was moved by PPST that their Arthur Guenther award be increased. A motion to postpone the vote until November carried, 21 Y, 0 N, 1 A.
- » It was moved by the FTC that their award be modified so that in the years between SOFE conferences the award be judged on the basis of specific technical achievement, and that in the year of the conference the award be judged based on career and leadership. It was specified that the award is an NPSS-level award funded by the society, but travel for the recipient to attend the conference is funded by the conference. The amended wording was approved 22 Y, 0 N, 0 A and will be sent to TABARC.

• Motions from FinCom

• FinCom endorses approval of the following initiatives and initiative priorities for 2020:

- Instrumentation Schools
- Student Support initiative
- APL – SEESAW

- WIE sessions at Instrumentation Schools
- WIE leadership conference travel
- Indigenous Energy and Foods
- IEEE Smart Village, WHEELS Global Foundation (IIT), Government of Gujarat State collaboration
- Early Career Travel Grants

The motion carried 20 Y, 0 A, 2 N.

- AdCom approves the 2020 budget as submitted by the Treasurer. Carried, 22 Y, 0 N, 0 A.
- AdCom approves the 2020 Instrumentation Schools and their funding as designated: International School/Conference on Medical Physics, Quy Nhon, Vietnam; Senegal preliminary review for 2020 and 2021 Instrumentation Schools. Also includes lectures during visit; Instrumentation School in Malaysia. Carried with 20 Y, 2 N, 0 A.

AdCom will meet next in Manchester, UK following the 2019 NSS MIC meeting.

Albe Larsen, IEEE NPSS Secretary and Newsletter Editor, can be reached by E-mail at a.m.larsen@iee.org.

Technical Committees

FUSION TECHNOLOGY



Charles Neumeyer
FTSC Chair

The 28th Symposium on Fusion Engineering (SOFE), chaired by Dr. Dennis Youchison (ORNL), was held June 2nd – 6th, 2019 at the Sawgrass Marriott in Ponte Vedra Beach, Florida. The conference was a major success thanks to a diverse group of attendees from 20 nations and a strong technical program organized by the Technical Chair, Brad Nelson (ORNL, ret.). The opening plenary began with a talk by Dr. James Van Dam, newly appointed Director of the DOE Office of Science for Fusion Energy Sciences. Two lively town hall meetings were convened, one to provide input to the APS-DPP Community Planning Process and the Fusion Energy Sciences Advisory Committee (FESAC) to develop a 10-year strategic plan for the US fusion program and another on the topic of "Accelerating the Development of Fusion Power", led by Dr. Dale Meade (PPPL, ret.). Two successful minicourses were held, one on Plasma-Material Interactions and another on Neutronics in Fusion. Dr. Valeria Ricardo, Head of the Engineering Department at PPPL, spoke at the Women In Engineering (WIE) luncheon and led an enlightening panel discussion. Dr. Richard Nygren of Sandia National Lab described his career experiences at a well-attended Young Professionals' reception. The 2018 (Dr. Larry R. Baylor, ORNL) and 2019 (Dr.-Ing. Lutz Wegener, IPP) Fusion Technology awards were presented at the banquet; both recipients were in attendance. Also presented

was the Best Student Paper Award to Thomas Looby of University of Tennessee, Knoxville.

The location for the 29th SOFE which will be collocated with the Pulsed Power Conference at the Sheraton Denver Downtown Hotel in Denver, Colorado, May 31st -June 4th, 2021 was also announced at the banquet. The General Chair of the conference will be Kevin Freudenberg (ORNL) and the Technical Chair will be Valeria Riccardo (PPPL).

Last but not least, important FTC committee transitions were announced at the SOFE FTC luncheon. The committee has elected Dr. Martin Nieto-Perez to serve as FTC Chair for a four-year term starting January 1st, 2020. He holds a Ph.D. in Nuclear Engineering (U of Illinois at Urbana-Champaign) and is a professor at the Instituto Politécnico Nacional - IPN - University of Mexico. He has been a member of the FTC since 2015 and presently serves as Awards Chair. Dr. Greg Wallace (Ph.D., Applied Plasma Physics, MIT), a research scientist at MIT and FTC member since 2019, was elected to the position of Vice-Chair.

Charles Neumeyer, Chair of the Fusion Technology Committee, can be reached by E-mail at neumeyer@pppl.gov.

NUCLEAR MEDICAL AND IMAGING SCIENCE AND TECHNOLOGY



Jae Sung Lee
NMISC Chair

As I write this, the program committee is finalizing the scientific program of the 2019 IEEE NPSS Nuclear Science Symposium and Medical Imaging Conference (NSS MIC) which will take place in the Manchester Convention Centre in Manchester, UK from the 26th October to the 2nd November. Paul Marsden is the General Chair with Dimitra Darambara and Suleman Surti as MIC Program Chair and Deputy Program Chair, respectively. The program is available at <http://www.nss-mic.org/2019/>.

Looking further ahead, the 2020 IEEE NSS/MIC will be in the Boston, MA, USA with General Chair Lorenzo Fabris and Georges El Fakhri and Ramsey Badawi as MIC Chair and Deputy Chair respectively. For 2021 the meeting will be in Yokohama, Japan with General Chair Ikuo Kanno. Finally, the decision has now been taken for 2022 meeting to be held in Milan, Italy.

At the last NPSS AdCom meeting held in June, the motion for NPSS to endorse the "10ps challenge" was passed. This challenge was proposed by Paul Lecoq, Christian Morel, and John Prior to foster the next quantum leap in PET imaging and make reconstruction-less, high-sensitivity PET scanners a reality, thus paving the way towards reducing by an order of magnitude the radiation dose.

This year we have nine excellent candidates standing for the five seats on NMISC. They are all regular conference contributors and keen to contribute more. Our aim is to try and involve the elected members much more during their term of office. Thanks to everyone who has either volunteered or proposed candidates and to Emilie Roncali, NMISC Secretary, for putting together the slate of candidates.

Jae Sung Lee, Chair of the NMISC, can be reached by E-mail at jaes@snu.ac.kr.

PLASMA SCIENCE AND APPLICATIONS



Joe Schumer
PSAC Chair

As required by the PSAC Constitution and Bylaws (CB&L), PSAC Executive Committee (ExCom) is required to review the CB&L every five years. To accomplish this task, the PSAC ExCom Chair Dr. Joe Schumer appointed a five-person subcommittee to recommend amendments. A small set of edits, corrections, and clarifications were suggested by this CB&L Subcommittee to PSAC ExCom on June 23, 2019 and approved unanimously. On June 29, 2019, NPSS AdCom similarly approved the changes. As required, all changes are shown below (redline strikeouts, blue additions) and if any member of PSAC has comments, they may be directed to the Secretary of PSAC ExCom, Dr. Steve Gold steve@iee.org. All objections to changes must be submitted within 90 days of the publication of this newsletter to the NPSS President, Dr. Ronald Schrimpf ron.schrimpf@vanderbilt.edu.

The changes are summarized here:

Constitution

* Article VI: Meetings was split into two separate articles "Conferences" and "Meetings"

* Article VIII, we revised the procedures for amending the C&B.

Bylaws

Technical Committees Continued from PAGE 5

* 2.x: Revised the election procedures to promote Transnational participation in PSAC ExCom

* 3: Explicitly listed our functional Subcommittees

* 8.2: Updated and clarified procedure for election of PSAC Chair

* 9: We added conference "Treasurer" and "Technical Program Chair" as two new positions that must be approved by PSAC ExCom.

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

Color coded tracking of changes:

Deleted: Red and strikethrough—Original text that is recommended to be deleted

Blue: Recommended addition to the constitution and bylaws

Constitution

Article I—Name and Object

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

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

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

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

Article II—Field of Interest

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

Section 2.

1. Magnetohydrodynamics
2. Thermionics and plasma diodes
3. Basic plasma phenomena
4. Gaseous electronics
5. Microwave-plasma interaction
6. Electron, ion, and plasma sources
7. Space plasmas
8. Intense electron and ion beams
9. Laser-plasma interactions
10. Plasma diagnostics

11. Plasma chemistry and processing

12. Solid-state plasmas

13. Plasma heating

14. Plasmas for controlled fusion research

15. High energy density plasmas

16. Industrial, commercial, and medical applications of plasma science

17. Plasma waves and instabilities

18. High-power microwave, millimeter-wave, and submillimeter wave generation

19. Pulsed power applications of plasmas

Article III—Membership

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

Article IV—Administration

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

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

Section 3.

(a) The affairs of the Committee shall be managed by the Chairperson as directed by the ExCom and in accordance with the powers and duties as defined hereunder and in the Bylaws. In the event of the Chairperson's absence or incapacity, these duties shall be performed by the Vice-Chairperson.

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

Section 4.

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

(b) If the position of Vice-Chairperson is vacated at any other time during the two-year term, a replacement Vice-Chairperson will be elected by

the voting members of the ExCom from among the eligible members-at-large to complete the remainder of the term. This Vice-Chairperson would then be a candidate to succeed to Chairperson, subject to the approval of ExCom, as prescribed above.

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

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

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

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

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

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

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

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

Article VI—Conferences Meetings

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

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

Article VII—Meetings

Section 1. 3-The ExCom shall meet as required to conduct business and in accordance with the Bylaws.

Section 2. 4-Ten voting members of the ExCom shall constitute a quorum. A member may attend either in person or electronically by any means that allows the member to participate actively in discussions and votes. No member shall have more than one vote for any reason. A member-at-large may appoint a proxy to represent him or her at an Executive Committee meeting. However, such a proxy may not cast a vote.

Section 3. 5-A majority of the legal votes cast by those members of the ExCom attending a meeting shall be necessary for the conduct of its business except as otherwise provided in this Constitution.

Section 4. 6-The business of the ExCom may be

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

Section 5. 7-If the PSAC Chairperson is unable to represent the Committee at a meeting of the NPSS Administrative Committee (AdCom), the Chairperson may designate the Vice-Chairperson ~~or the Most Recent Past Chairperson~~ as his or her alternate. This alternate shall have the privilege of the floor and may vote on all matters coming before AdCom. ~~The Secretary of the Committee shall submit the name of the Vice-Chairperson as the designated alternate to the Secretary of the AdCom prior to the start of each calendar year.~~

Article VIII VII—Amendments

Section 1. Amendments to this Constitution may be initiated by petition ratified by a two-thirds vote of the ExCom ~~at an ExCom meeting~~, such petition being submitted to the AdCom of the NPSS for approval, ~~provided that notice of the proposed amendment to the Constitution has been sent to each member of the ExCom at least three weeks prior to such meeting.~~ After such approval, the proposed amendment shall be published in the NPSS News, with notice that it goes into effect unless 20 members of the Plasma Science and Applications Committee object in writing to the President of the NPSS within ~~60~~ ~~90~~ days of the date of mailing of the notice.

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

Section 2. As an alternative to the procedure outlined in Section 1 above, ~~amendments to the Constitution may also be initiated by a petition submitted by ten members of the Committee to the Chair or Secretary of the Committee, who shall immediately notify the ExCom of the proposed amendments, and these shall be considered at the next ExCom meeting held at least three weeks following the notice to the ExCom members. If approved by the ExCom, the remaining provisions of Section 1 shall apply. may submit a petition to the AdCom of the NPSS.~~ If not approved by the ExCom NPSS AdCom and after notification of the ExCom, the proposed amendment shall be submitted to the membership of the entire Plasma Science and Applications Committee for ratification by ~~mail~~ ballot as described in Section 1.

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

Article IX—Periodic Review VIII—Revision

Section 1. The Chairperson of the Committee shall appoint a five-person subcommittee every fifth year, starting with January 1, 2019, to evaluate the effectiveness of this Constitution and Bylaws, to study the rules of governance required by the

activities of the Committee at that time, and to amend the Constitution and Bylaws as appropriate for the existing and anticipated needs of the Committee.

Bylaws

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

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

1.2. The ExCom shall meet at least two times per year, upon dates determined by the Chairperson at least three weeks in advance of the meeting. One of these two meetings shall be held in conjunction with the IEEE International Conference on Plasma Science (ICOPS). Additional meetings may be called at the discretion of the Chairperson or upon request of at least ten nine voting members of the ExCom with at least three weeks' notice. ExCom meetings are open to visitors, who may be granted the privilege of the floor at the discretion of the meeting's presiding officer or by action of the ExCom. Visitors can also be removed from ExCom meetings at the discretion of the meeting's presiding officer. Should ExCom meet in Executive Session, any visitors present may be asked to leave.

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

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

2. Nomination and Election of ExCom Members-at-Large: As specified in Article IV, the ExCom shall include 18 members-at-large, each serving a three-year term. Six posts, plus any vacancies occurring in the previous year, are to be filled each year by election of the general membership of the Committee. The terms of office are as listed in Bylaw 5.

2.1 The Nominations Subcommittee of ExCom has principal responsibility to assemble a balanced slate of qualified ExCom candidates reflecting the diversity of PSAC. Nominations may be made by any member of the Committee by written submission to the Nominations Subcommittee, up until a date fixed each year by the Chairperson of the Committee. Self-nominations are permitted. Eligible members of PSAC can also be added to the ballot by a written petition signed by 25 members of the Committee. Such petitions must be submitted to the Chairperson of the Committee no later than June 1 of the year of the election. The Chairperson of the Committee shall ensure that the number of candidates is at least one and one-half (1.5) times the number

of positions to be filled. Each election ballot shall include at least two transnational candidates, where transnational refers to candidates whose primary residence is outside of the US and Canada. Those transnational candidates shall be identified to the IEEE Headquarters, but not separately designated on the election ballot.

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

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

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

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

2.6 Forty-five days after distribution of the ballots, the IEEE Headquarters shall count and tabulate the votes received and report the results to the Secretary of PSAC, who, in turn, shall notify the Chairperson. In general, those nominees receiving the highest number of votes will be elected. However, the ballots shall be counted in a manner determined at the beginning of the election cycle that ensures that at least one of the transnational candidates is among the six candidates elected to regular 3-year terms. If the election is also being used to fill the remainder of an uncompleted 3-year term, the individual receiving the next highest vote total after determination of the six regular three-year terms will be elected to that position. In the event of a tie vote by the general membership of PSAC, the individual selected will be determined by a majority vote of the voting members of the ExCom. The tie-breaking vote of the ExCom members shall be conducted by fax or electronic mail by the Secretary of the Committee.

2.7. Following completion of the count, IEEE Headquarters shall report the election results to the Secretary of PSAC, who, in turn, shall notify the Chairperson. The Secretary shall endeavor to obtain the results as far as possible in advance of the Annual Meeting of the ExCom.

2.8 2-7 The Chairperson of the ExCom shall submit to the Secretary of the NPSS AdCom the names of the candidates elected to fill the designated vacancies.

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

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

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

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

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

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

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

(e) Awards Subcommittee:

i.) To identify, encourage, and solicit PSAC member candidates for various IEEE awards, including the Plasma Science and Applications Award and the Igor Alexeff Outstanding Student in Plasma Science Award (see Bylaw 11 +4).

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

(f) Employment and Careers Subcommittee: To operate an ICOPS job placement center and coordinate conference activities for students and Young Professionals.

(g) Student Travel Grants Subcommittee: To work with the ICOPS conference chair to administer conference student travel grants.

(h) Conference Budget Subcommittee: To review proposed conference budgets prior to approval by the ExCom.

(i) Publicity Subcommittee: To generate articles for the NPSS News.

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

3.1 4-1 The terms of office of chairpersons of the Functional Subcommittees shall be one year.

3.2 4-2 The chairpersons of the Functional Subcommittees must be members of the Committee.

3.3 4-3 Chairpersons of Functional Subcommittees shall obtain nominate additional members for their subcommittees. To facilitate smooth transition of functional subcommittee leadership, each subcommittee should have at least two elected members-at-large, the second member with a term of office expiring after that of the subcommittee chair. All members-at-large are expected to serve on Functional Subcommittees.

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

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

of ballots issued to all members of the Committee shall be entrusted to IEEE Headquarters. The Secretary of the Committee shall report the results to the ExCom at their next regular meeting.

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

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

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

7. 9-The Editor of the *Transactions on Plasma Science* and the Editorial Board shall strive to ensure that publication of papers in the *Transactions* depends only upon the technical merit of the paper, and not upon the financial condition of the author.

8. +0-The Chairperson and Vice-Chairperson of the Committee shall be elected by written ballot at the Annual Meeting in even-numbered years, in accordance with Art. IV, Sect. 4 of the Constitution. The ballot shall indicate two choices for Chairperson: 1) the current Vice-Chairperson, and 2) an indication that an open election is desired. Additionally, the ballot shall contain a slate of candidates for Vice-Chairperson.

8.1 +0-1 Nominations and seconds for Vice-Chairperson shall be solicited by the Chairperson at least two months prior to the Annual Meeting in even-numbered years, and the Chairperson shall accept nominations and seconds up to one month prior to the Annual Meeting. The Secretary shall send written ballots to all voting members of the ExCom at least three weeks prior to the Annual Meeting. The marked ballots shall be sent or delivered in person to the Secretary prior to the beginning of the Annual Meeting. The Chairperson shall designate tellers to verify and count the ballots during the Annual Meeting.

8.2 +0-2 Should the Vice-Chairperson fail to receive a majority of the ballots cast to succeed to Chairperson, then ExCom shall itself determine a new slate of candidates for Chairperson and vote at the Annual meeting. If the newly elected Vice-Chairperson is subsequently elected to become the next Chairperson, then the individual elected to be the Vice-Chairperson shall become the Chairperson-elect, and ExCom shall also itself determine a new slate of candidates for Vice-Chairperson and vote on that position at the Annual meeting.

8.3 +0-3 In any event, should no candidate receive a majority of the votes cast for Vice-Chairperson, runoff elections shall be conducted by secret ballot at the Annual Meeting between the candidates receiving the two highest numbers of votes until one candidate receives a majority of the votes cast.

8.4 +0-4 The terms of office of the Chairperson and Vice-Chairperson shall begin January 1 of the year following their election.

9. +1-The IEEE International Conference on Plasma Science: The chairperson of an ICOPS must be a member of the Plasma Science and Applications Committee. The ICOPS Chairperson, who must be a member of the Committee, and the ICOPS site are selected by the ExCom from proposals brought forward by the Site Selection Subcommittee. The ICOPS Chairperson shall follow IEEE, NPSS, and ExCom guidelines for the conference. The Conference Chairperson is responsible for the budget of the conference and determines the

Technical Committees Continued from PAGE 7

registration fees to be charged, subject to approval by the ExCom and the NPSS. He or she shall appoint the members of the Organizing Committee and the Program Committee, **with the Treasurer and Technical Program Chair subject to approval by the ExCom.** At least one former chairperson of an ICOPS shall be included on the **Organizing Program** Committee. The ICOPS Chairperson shall also present a list of Technical Area Coordinators (TACs) to the ExCom for approval no later than the Annual Meeting 18 months prior to the conference and a list of Session Organizers (SOs) to the ExCom for approval no later than the ExCom meeting 12 months prior to the conference. These two lists shall not include individuals who have served consecutively in the same capacity for the 3 prior ICOPS. Additionally, the ICOPS Chairperson shall appoint a conference awards committee, which shall be responsible for selecting the winners of the two ICOPS Outstanding Student Paper Awards as well as the two honorable mention certificate awards. Any minicourse offered must be submitted for approval to the ExCom and should follow the ICOPS Minicourse Guidelines. The ICOPS Chairperson shall have full authority over the management and technical content of the conference, subject to the oversight of ExCom.

10. +2- Open Business Meeting of the Committee: An annual open Business Meeting of the Committee shall be held in conjunction with ICOPS.

11.1 +3+ The Plasma Science and Applications Award: To recognize outstanding individual contributions to the field of Plasma Science, the Committee presents a Plasma Science and Applications Award at the ICOPS. Primary consideration will be given to the impact of the research or new applications. Other factors can include research contributions over a career, influence on plasma science through teaching, professional service to PSAC and to the plasma science community, and any other information the **Awards Selection Special Award** Subcommittee wishes to consider. The Award consists of a monetary award and a plaque, **with the award money included in the ICOPS budget.** Changes in the Award amount must be approved by AdCom and the appropriate IEEE committee. The recipient shall be invited to deliver an address at the ICOPS in the year of the Award and to submit the text of the talk for an invited paper in the *Transactions on Plasma Science*. Publicity announcing the recipient shall appear in appropriate NPSS publications.

11.2 +3.2 The Igor Alexeff Outstanding Student in Plasma Science Award: To recognize outstanding

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

11.3 +3.3 Nomination forms for the following year's awards shall be made available on the NPSS website. A nomination for the Plasma Science and Applications Award must be endorsed by three current IEEE members. Any person except a current voting member of the ExCom or a previous recipient of the same award is eligible for these awards. Nominations are submitted to the Chairperson of the Awards Subcommittee, who shall distribute nomination materials to the voting members of the ExCom at least one month prior to the Annual Meeting. The winner of each of the awards shall be chosen by the **Awards Selection Special Awards** Subcommittee, which is comprised of the ExCom voting members and chaired by the Committee Chairperson. A closed meeting of the Subcommittee shall be held following the adjournment of the Annual Meeting. For each award, up to three secret ballots may be taken, with the selection of the Plasma Science and Applications Award winner requiring the vote of at least $\frac{3}{4}$ of the Subcommittee present, but no fewer than six votes, while the selection of the Igor Alexeff Outstanding Student in Plasma Science Award shall be made by a simple majority vote. If no winner is selected by the end of three ballots, for either award, a vote will be taken to determine if the voting process should continue, or if the award should be skipped for that year. If the majority votes to proceed, a fourth ballot will be taken using an instant runoff voting procedure requiring a simple majority, in which each voter shall rank the candidates numerically on the ballot, beginning with the number one for the first choice, and runoff counts of the nominees shall be conducted in rounds. If, in any round, no candidate receives a majority of the votes cast, the candidate (or candidates, if there is a tie) with the fewest number of votes shall be eliminated and the remaining candidates shall advance to the next round. In each round, a voter shall be considered to have cast one vote for the candidate the voter ranked highest on the ballot who has not been eliminated in a previous round. During the instant

runoff process, the Chairperson shall only vote if needed to break a tie. If no agreement of the Subcommittee can be reached, or if no candidates are nominated for an award, the award shall be skipped for that year. In the event that the award selections cannot take place as specified above, the award process may take place in a conference call presided over by the Committee Chairperson, provided that at least one week's notice is given of the time of the call and that a majority of the Subcommittee take part. In this case, the winner shall be determined using the instant runoff procedure, as described above, with the Chair voting only if needed to break a tie.

12. +4- The Secretary shall maintain a permanent record of the minutes of past meetings on a password-protected section of the NPSS web site and shall make the password available to ExCom members. The Secretary also shall ensure that current copies of the Constitution and Bylaws are available on the NPSS web site.

June 23, 2019

July 18, 2015

RADIATION INSTRUMENTATION TECHNICAL COMMITTEE



Chiara Guazzoni
RISC Chair

The Radiation Instrumentation Steering Committee has incorporated well the new Members-At-Large and is in the middle of its yearly activities.

As you read this newsletter, you should start to prepare your luggage to attend the 2019 IEEE Nuclear Science Symposium and Medical Imaging Conference in Manchester (UK). Paul Marsden is the General Chair and Cinzia Da Via' and Yoshinobu Unno are the NSS Program Chairs. More details are to be found in the opening article of this newsletter. The recipients of our RISC awards have been announced on the conference website. To all of them our congratulations and we will be delighted to present them all their awards in a dedicated awards session.

In addition, as you read this newsletter, you should have already cast your vote for the 2020 Members-At-Large Elections (deadline September 14th, 2019, 4:00 pm Eastern Time). For the five RISC Member-At-Large vacancies for the term 2020-2022, we had nine candidates, both newcomers and those having already served in the past, three women, five from US, three from Europe, one from Mexico. It is already a good pool showing the opening of RISC to geographical diversity. For the future we would like to do even better, so start thinking now of candidates to nominate for the next term and show up during the upcoming 2019 IEEE Nuclear Science Symposium and Medical Imaging Conference in Manchester (UK).

As RISC we nominated a new Distinguished Lecturer, Martin Grossmann, PSI (Switzerland). The NPSS Distinguished Lecturers Program sponsors the presentation of lectures at NPSS Chapter meetings as well as at IEEE Section and Student Chapter meetings. In addition, NPSS Distinguished Lecturers are available for presentations to other IEEE entities as well as to non-IEEE organizations, such as universities and colleagues. Martin's lecture title is **Recent Developments in Proton therapy-Technology for the Benefit of Patients.** You can read more on this and other DLs Lectures on the dedicated webpage.

The Committee for the 2020 IEEE Nuclear Science Symposium and Medical Imaging Conference in Boston (USA) has been formed and is already working to prepare an amazing edition of our conference. The organization for the 2021 IEEE Nuclear Science Symposium and Medical Imaging Conference in Yokohama (Japan) is at an advanced stage and it has already been decided that the conference will move to Milan (Italy) in 2022.

All other fully financially sponsored conferences (like IEEE 2020 SORMA West, John Valentine General Chair) or technically cosponsored conferences are proceeding well towards successful editions.

Chiara Guazzoni, RISC Chair, is with Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano and with INFN-Sezione di Milano, P.za Leonardo da Vinci, 32-20133 Milano-Italy, Phone: ++39 02 2399 6147-Fax: ++39 02 2399 3699, E-mail: Chiara.Guazzoni@mi.infn.it

Functional Committees

AWARDS

Particle Accelerator Science and Technology Awards

2019 IEEE NPSS PAST Awards

John R. Cary, Professor of Physics at the University of Colorado and CEO of Tech-X Corporation, has made important and diverse contributions throughout accelerator science and related fields. Professor Cary received his doctorate from the University of California, Berkeley, in 1979. He worked at the Los Alamos National Laboratory 1978-80, then the University of Texas 1980-1984. He joined the faculty at the University of Colorado in 1984, where he has been employed until the present. In 1994 he co-founded (with Svetlana Shasharina Cary) Tech-X Corporation, which develops computational software for modeling accelerators and other physical systems. Professor Cary's contributions include basic discoveries in nonlinear dynamics and advances in computational physics, as well as their application to specific accelerator and beam systems. Much of his work (separatrix crossing, one of Arnold's 10 mathematical discoveries of the 1980's, and electromagnetic algorithms) has been fundamental and cited in many other fields. His work on advanced accelerator physics includes the



John R. Cary
2019 IEEE/NPSS-PAST Award
Recipient

computational illustration of self-trapping and the acceleration of electrons from laser-plasma interaction (one of the Nature's scientific highlights of 2004), determination of the reasons for the observed emittance difference along and transverse to the direction of the laser polarization, and the method for combining laser pulses with different transverse variations to obtain a more mildly focusing wake field. Work specific to conventional accelerators includes the discovery of nonlinear, integrable accelerator lattices, a method for calculating the equilibria of beams in such lattices, and the discovery of a photonic-crystal based accelerator cavity with reduced wake fields. Professor Cary has been active in the IEEE, including helping organize the Particle Accelerator Conference, and in the Divisions of Physics of Beams (DPB) and Plasma Physics (DPP) of the American Physical Society, including being Chair of the APS-DPP.

Citation: *For exceptional contributions to accelerator and beam physics.*

Paolo Craievich is currently working as an RF engineer and accelerator physicist at the Paul Scherrer Institute (PSI) in Switzerland where he serves as a head of the RF System 2 group. Leading a group, he oversees the electron linacs and coordinates extension of the high-gradient linac RF technology developed at PSI with several international laboratories. His research interests include microwave applications to accelerators, such as RF cavities and traveling wave accelerating and deflecting structures, high-brightness photoinjector and thermionic guns, wakefield effects, instabilities and coupling impedances.



Paolo Craievich
2019 IEEE/NPSS-PAST Award Recipient

He is also involved in the commissioning and bringing to operation the SwissFEL RF linac. Over his career Paolo was also a staff member at Elettra-Sincrotrone where he served as S-band structures lead engineer in the FERMI@Elettra FEL project and as a member of the

FERMI commissioning team. He has also collaborated in research activities with the Department of Electrical Engineering at University of Trieste and has served as tutor and supervisor of Ph.D. and master degree students.

He studied electronic engineering at the University of Trieste, and received his PhD degree in Applied Physics from University of Technology in Eindhoven. During his entire career Paolo has provided important contributions to accelerator science and technology of electron linacs, in particular RF transverse deflection structures, beam manipulation with self-induced fields and high-brightness photoinjector and their application to advanced accelerators and light sources. Furthermore, he has made pioneering contributions to the applications of the passive streaking and linearization with self-induced fields.

Citation: For exceptional contributions to accelerator science and technology.

2019 PAST Doctoral Student Award

David B. Cesar received his B.S. (2013), M.S. (2015), and then Ph.D. (2019) in physics from UCLA. He completed his graduate work under the direction of Professor Pietro Musumeci as a member of the Accelerator on a Chip (ACHIP) international collaboration and the STROBE science and technology center. He is now a research associate at SLAC National Accelerator Laboratory.

His research focuses on developing accelerator technology for ultrafast science.



David B. Cesar
2019 PAST Doctoral Student
Award Recipient

During his doctoral studies, Dr. Cesar led experiments which studied the response of an electron beam to a Dielectric Laser Accelerator (DLA). DLAs are photonic structures which facilitate energy transfer from a laser to an electron beam, much like a metal cavity does for the microwaves in a conventional accelerator. Dr. Cesar's work pushed the boundaries of DLA performance beyond 1GV/m accelerating gradient and extended interaction lengths by more than 50 times, leading to the discovery of a novel technique to control dephasing, and thus DLA beam dynamics, on the optical scale.

Dr. Cesar also performed experiments in which he used strong permanent magnet lenses to turn an electron accelerator into a prototype of an ultrafast electron microscope with an exposure time of less than 10 picoseconds. Coupled with start-to-end simulations, these results suggest that real-space imaging can be achieved with the incoherent electrons from an RF photoinjector, and thus pave the way to study single-shot material dynamics on a time-scale that is one hundred times faster than has been achieved before.

After graduating, Dr. Cesar joined SLAC National Accelerator laboratory where he works on attosecond science using the LCLS electron beam. He is currently designing an experimental station to use the intense coulomb field from a sub-fs current spike as a unipolar probe of strong-field physics.

Citation: For contributions to dielectric laser accelerators and time-resolved electron microscopy.

[Ilan Ben-Zvi](mailto:benzvi@bnl.gov), PAST Awards Chair, can be reached by E-mail at benzvi@bnl.gov.

PLASMA SCIENCE AND APPLICATIONS AWARDS

2019 Plasma Science and Applications Award

Prof. John Verboncoeur has been selected as the 2019 Plasma Science and Applications (PSAC) Award recipient for his pioneering leadership of particle-in-cell computational plasma science research and his outstanding work in the academic discipline of computational engineering science and the plasma science professional community. With 30 years of experience in developing and applying kinetic particle simulation tools, Prof. Verboncoeur is a pioneer who developed the first self-consistent model for plasmas bounded by electrodes connected to real circuits and the first object-oriented plasma model. His research groups also developed the first time-dependent explanation of the transition of multipactor breakdown to gaseous discharge as well as a novel kinetic global model.

As an academic, Prof. Verboncoeur has taught and advised numerous undergraduates and graduate students. He is a popular lecturer on plasma simulation at international workshops, government and industrial laboratories, and other academic institutions. The Plasma Theory and Simulation Group (PTSG) at Michigan State University (formerly at UC Berkeley) is a leader in the development and distribution of plasma modeling tools – including its flagship code, OOPIC – with over 1000 users in academia, industry, and government laboratories and 450 publications in the last decade.

In addition to his research and academic activities, Prof. Verboncoeur has served on numerous national committees, program review committees, APS and IEEE conference and administrative committees, and is a past-President of the IEEE Nuclear and Plasma Sciences Society. He currently serves as Associate Dean for Research in the College of Engineering at Michigan State University and is the IEEE Division IV Director and a member of the IEEE Technical Activities Board Management Council.

2019 Igor Alexeff Outstanding Student in Plasma Science Award

Revathi Jambunathan (University of Illinois at Urbana-Champaign) has been selected as the 2019 Igor Alexeff Outstanding Student in Plasma Science Award recipient for her development of a multi-GPU particle-in-cell plus direct simulation Monte Carlo (PIC-DSMC) code called CHAOS (Cuda-based Hybrid Approach for Octree Simulations) and its subsequent application in large-scale simulations of thruster plume interactions with spacecraft



Revathi Jambunathan
Igor Alexeff Outstanding Plasma
Science Student Award Recipient

and predictions of the ion energy distribution used to estimate surface sputtering rates. The fully kinetic, three-dimensional code enables the simulation of the charge-exchange collisions and self-consistent electric field of the plasma plume with collocated and separated electron-ion sources. These simulations enabled the detailed analysis of the evolution of the electron and ion velocity distributions along with the self-consistent electric field and charge-exchange ion trajectories, which is crucial in estimating the sputter rate of the solar panel surface materials, which in turn affects the performance and lifetime of the satellites. Dr. Jambunathan received a Ph.D. in Aerospace Engineering from the University of Illinois at Urbana-Champaign in 2018 and is currently a postdoctoral researcher at the Center for Computational Sciences and Engineering (CCSE) in the Computational Research Division of the Lawrence Berkeley National Laboratory where she is working on the development of an electromagnetic particle-in-cell code to model plasma wakefield accelerators on leadership class exascale computing platforms.



2019 PPPS Student Paper Award Winners (from left to right): Alexander Rososhek (Technion); Julian Picard (MIT); Itay Gissis (Technion); Yang Cao (Technion); Jung-Soo Bae (University of Science and Technology); Fatima Zahra Boudara (University of Pau and Pays de l'Addour); and Denis Molchanov (Institute of High Current Electronics, Siberian Branch RAS)

PULSED POWER AND PLASMA SCIENCES CONFERENCE STUDENT PAPER AWARDS

Four best student papers and three honorable mentions were selected from a field of over sixty submissions. The best student paper award winners were Yang Cao, Technion, Israel (The interaction of a high-power sub-nanosecond microwave pulse with preliminarily formed plasma in a waveguide); Itay Gissis, Technion, Israel (Laboratory Astrophysics - Cold Absorption); Julian Picard, Massachusetts Institute of Technology, USA (Laser-driven semiconductor switch for generating nanosecond pulses from a megawatt gyrotron); and Alexander Rososhek, Technion, Israel (Shock waves generated by underwater electrical explosion of a single wire). Honorable mention certificates were presented to Jung-Soo Bae, University of Science and Technology, Republic of Korea (Design of solid-state Marx modulator with fast rising time and short pulse width); Fatima Zahra Boudara, University of Pau and Pays de l'Addour, France (Development of a 1 MW pulsed air core electromagnetic toroidal coupler for wireless power transmission with reduced stray emission); and Denis Molchanov, Institute of High Current Electronics, Siberian Branch, Russian Academy of Sciences (Efficiency of rock destruction by a pulse generator based on a linear pulse transformer).

PLASMA SCIENCE AND APPLICATIONS (PSAC) AWARD NOMINATIONS

Nominations are currently being accepted for the 2020 Plasma Science and Applications Award sponsored by the Plasma Science and Applications Committee (PSAC) of the IEEE Nuclear and Plasma Sciences Society (NPSS). The purpose of the award is to recognize individuals who have made outstanding contributions to the field of plasma science through the impact of their research, development of new applications, contributions over a technical or pedagogical career, or through professional service to the IEEE and plasma science community. The \$3000 cash award and plaque will be presented at the 2020 International Conference on Plasma Science (ICOPS) in Singapore. Nomination forms are available electronically at <https://ieee-npss.org/technical-committees/plasma-science-and-applications/> and must be submitted by October 01, 2019. Additional information can be obtained from David Abe, PSAC ExCom Awards Subcommittee Chair by email at david.abe@ieee.org.



David Abe
PSAC Awards Chair

IGOR ALEXEFF OUTSTANDING STUDENT IN PLASMA SCIENCE AWARD

Nominations are currently being accepted for the 2020 Igor Alexeff Outstanding Student in Plasma Science Award sponsored by the Plasma Science and Applications Committee (PSAC) of the IEEE Nuclear and Plasma Sciences Society (NPSS). The purpose of the award is to recognize outstanding student contributions to the field of plasma science and technology. The award is open to any full time undergraduate or graduate university student in plasma science; the nominees will be judged based on quality of research contributions, quality of educational accomplishments, and quality and significance of publications and patents. The \$1000 cash award and Certificate will be presented at the 2020 International Conference on Plasma Science (ICOPS) in Singapore. Nomination forms are available electronically at <https://ieee-npss.org/technical-committees/plasma-science-and-applications/> and must be submitted by October 01, 2019.

[David Abe](mailto:david.abe@nrl.navy.mil), Awards Subcommittee Chair for PSAC ExCom and for the 2019 PPPS Conference, can be reached by E-mail at david.abe@nrl.navy.mil.

Functional Committees Continued from PAGE 9

RADIATION EFFECTS CALL FOR 2020 NOMINATIONS AND 2019 AWARDS

Nominations for 2020 Awards

Nominations are due January 29th, 2020 for awards that will be presented at the IEEE NSREC 2020 Conference July 20th – 24th in Santa Fe, New Mexico.

Radiation Effects Award Nominations

Nominations are currently being accepted for the 2020 IEEE Nuclear and Plasma Sciences Society (NPSS) Radiation Effects Award. The purpose of the award is to recognize individuals who have had a sustained history of outstanding and innovative technical and/or leadership contributions to the radiation effects community. The \$3000 cash award and plaque will be presented at NSREC Santa Fe. Forms are available electronically at <http://iee-npss.org/technical-committees/radiation-effects/> and must be submitted by January 29th, 2020. Additional information can be obtained from Julien Mekki, Senior Member-at-Large, CNES, for the Radiation Effects Steering Group. Julien can be reached at Julien.mekki@cnes.fr.



Teresa Farris
Publicity Vice Chair

Radiation Effects Early Achievement Award Nominations

Nominations are currently being accepted for the 2020 Radiation Effects Early Achievement Award. The purpose of this award is to recognize an individual early in his or her career whose technical contributions and leadership have had a significant impact on the field of radiation effects. The \$1500 cash award and plaque will be presented at NSREC Santa Fe. Forms are available electronically at <http://iee-npss.org/technical-committees/radiation-effects/> and must be submitted by January 29th, 2020. Additional information can be obtained from Julien Mekki, Senior Member-at-Large, CNES, for the Radiation Effects Steering Group. Julien can be reached at Julien.mekki@cnes.fr.

Paul Phelps Continuing Education Grant Nominations

Nominations are currently being accepted for the 2020 Paul Phelps Continuing Education Grant. The purpose of the grant is to promote continuing education (attendance at the 2020 NSREC Short Course) and encourage membership in NPSS. Outstanding members of NPSS who are either Student Members, Post-Doctoral Fellows or Research Associates, or unemployed members needing assistance in changing career direction can be nominated for the award. The actual amount of the grant will be determined prior to the 2020 NSREC in Santa Fe. Funds are to be used towards covering travel costs to attend the NSREC Short Course. The grant also provides complimentary short course registration.

Nomination forms are available electronically at <http://iee-npss.org/technical-committees/radiation-effects/> and must be submitted by January 29, 2020. Additional information can be obtained from Kyle Miller, Member-at-Large, Ball Aerospace, for the Radiation Effects Steering Group. Kyle can be reached at kbmiller@ball.com.

2019 PHELPS AWARD WINNERS

The 2019 Paul Phelps Continuing Education Grant was awarded to three student members from the radiation effects community. At the opening of the NSREC Short Course session (July 8, 2019) Janet Barth, Chair of the Radiation Effects Steering Group, announced the grant awards. The grants included tuition for the 2019 NSREC Short Course and a check for \$750.

The purpose of the Phelps Grant is to promote continuing education and encourage membership in the Nuclear and Plasma Sciences Society (NPSS). The criteria for judging are exceptional promise as a student, postdoc or research associate in any of the fields of NPSS, or exceptional work in those fields by currently unemployed NPSS members with an expectation that attendance at the Short Course will improve the possibility of obtaining a job in an NPSS field.

The four recipients of the 2019 Paul Phelps Continuing Education Grant were Stefano Bonaldo, Diego Di Francesca, Alexandre Le Roch, and Patrick Goley.

Stefano Bonaldo was born in Pordenone, Italy in 1990. In 2013, he received the B.S degree in Information Engineering from University of Padua (Padova), Italy. During his B.S. thesis he worked for one year at the CNR - Institute of Photonics and Nanotechnologies in Padua. He received the M.S. degree in Electronic Engineering from the University of Padua in 2016. During his Master's thesis work, he spent one year at the European Organization for Nuclear Research – CERN, Geneva, Switzerland, where he was involved in the start-up of the CHARM facility, a new mixed-field facility for radiation testing of electronics. His research was aimed at studying the mixed-field composition and to develop an efficient radiation



Stefano Bonaldo
2019 NSREC Phelps Award Recipient

monitoring system. Stefano is currently pursuing the Ph.D. degree in Information Engineering at the University of Padua. His research is devoted to reliability and radiation effects on electronic devices, in particular, total ionizing dose effects in advanced CMOS technologies. Since September 2018, he has taken a Ph.D. internship at Vanderbilt University, Nashville, Tennessee, where he is investigating radiation effects on III-V devices and low-frequency noise. He has co-authored eight articles that are published or accepted for publication in peer-reviewed journals.

Alexandre Le Roch received the M.Sc. degree in Material Sciences from the Institut National des Sciences Appliquées de Rennes (INSA Rennes), Rennes, France, in 2015. He is currently pursuing a Ph.D. degree (defense in December 2019) in microelectronics at Institut Supérieur de l'Aéronautique et de l'Espace (ISAE-SUPAERO), Toulouse, France, supported by the Centre National d'Etudes Spatiales (CNES) and the Commissariat à l'Energie Atomique et aux Energies Alternatives (CEA). His work focuses on the study of space and nuclear radiation effects on CMOS image sensors for space instruments improvement and plasma diagnostics for nuclear fusion. More specifically, he is conducting investigations on the radiation-induced defects in silicon responsible for the dark current increase and its discrete fluctuations (i.e., Dark Current Random Telegraph Signal). Alexandre has authored or co-authored eight publications. He presented his work at the RADECS 2017 and NSREC 2018 conferences and co-authored the outstanding student paper award from the NSREC 2017 conference. He will also present his recent findings at NSREC, RADECS, and the International Image Sensor Workshop (IISW) in 2019. Alexandre was a member of the first committee in charge of opening an IEEE Student Branch, also including an IEEE NPSS chapter, at ISAE-SUPAERO in 2017. He is currently the Chair of this IEEE Student Branch.



Alexandre Le Roch
2019 NSREC Phelps Award Recipient

Patrick Goley completed his undergraduate and master's degrees in electrical engineering at Virginia Tech in 2013 and 2015 respectively. At Virginia Tech he worked in the university's molecular beam epitaxy research group where he led the team's transmission electron microscopy work for the analysis of crystal growth quality of III-V, silicon, and germanium heterostructures. In the fall of 2015, he joined the research team of Dr. John Cressler at Georgia Tech as a Ph.D. student. With the support of Dr. Cressler, Patrick started a new research thrust for the team into integrated photonics, leading the team's first tape out into a commercial silicon photonic technology in November 2016. Since then, Patrick has continued to support the team's broader integrated photonics efforts while also leading his own research on radiation effects in the technology. He has presented his radiation effects work at the IEEE Nuclear and Space Radiation Effects Conference in 2017 and 2018, both of which have now been extended to full journal papers in IEEE *Transactions on Nuclear Science*. The work he presented in 2017 was nominated for best conference paper award. His most recent work has been accepted for presentation at the 2019 NSREC in July.



Patrick Goley
2019 NSREC Phelps Award Recipient

Diego Di Francesca joined the European Organization for Nuclear Research as a senior fellow in 2017. He received his M.Sc. degree in Physics from the University of Palermo and his cotutelle Ph.D. degree in Optics and Photonics and in Physics from the University of St. Etienne and Palermo, respectively. He is leading the development and deployment of a distributed optical fiber radiation and temperature sensor for CERN's accelerator complex. His research interests include: point defects in silica-based materials; radiation effects on optical fibers; optical fiber sensing in radiation environment; basic mechanisms of radiation effects.



Diego Di Francesca
2019 NSREC Phelps Award Recipient

Teresa Farris, Radiation Effects Vice Chair of Publicity, can be reached by E-mail at Teresa.Farris@archon-llc.com

DISTINGUISHED LECTURERS

Travels to India



Presentation of the NPSS Chapter Founder's plaque to Akhil Ahammed, chair of the College of Engineering Karunagappally NPSS and PELS Joint Societies Student Branch Chapter

Richard Kouzes (Pacific Northwest National Laboratory) travelled to India as an NPSS Distinguished Lecturer to present talks at four engineering colleges, invited by the newly established NPSS Student Branch Chapter at the College of Engineering Karunagappally.

The trip by Dr. Kouzes involved traveling to the State of Kerala (one of 29 Indian States) to present talks at four engineering colleges located within Kerala that are all part of the Technical University of Kerala. The State of



With students from the College of Engineering Karunagappally



With students from the Adi Shankara Institute of Engineering and Technology



With faculty from Saintgits College



With students from the College of Engineering Munnar

Kerala, located on the southwest coast of India is tropical in climate, has 35 million inhabitants and covers an area somewhat larger than the U.S. State of Maryland. The four engineering colleges visited were: the College of Engineering Karunagappally, Saintgits College of Engineering (in Kottayam), the College of Engineering Munnar, and the Adi Shankara Institute of Engineering and Technology (in Kochi). Dr. Kouzes presented a talk at each of these colleges on "Radiation Detection at International Borders."

The trip was a whirlwind of visits throughout the State of Kerala during one week in April 2019. The students and faculty of the various colleges were outstanding hosts, showing the local sites and transporting Dr. Kouzes between the colleges. To a large degree, the students, mostly computer and electrical engineering majors, were not familiar with radiation detection, so these lectures afforded an opportunity to make them aware of this field that is one of the focus areas of NPSS.

At the College of Engineering Karunagappally, Dr. Kouzes presented a NPSS Chapter Founder's plaque to Akhil Ahammed, chair of the College of Engineering Karunagappally NPSS and PELS Joint Societies Student Branch Chapter. This is the first such chapter in Kerala and one of five throughout India.

Through discussions with the faculty and students of the four engineering colleges, it was learned that most students go to college locally and then work in the local economy, although some will move to technology centers in other parts of India. The percentage of women students and faculty in these engineering colleges is over 50%. Given the enthusiasm for the IEEE among students and faculty that attended these lectures, the NPSS should have an expanding network of Student Chapters throughout India.

The NPSS Distinguished Lecturers Program (DLP) sponsors the presentation of talks at NPSS Chapter meetings as well as at IEEE Section and Student Branch Chapter meetings. In addition, NPSS Distinguished Lecturers are available for presentations to other IEEE entities as well as to non-IEEE organizations, such as universities and colleges. NPSS Distinguished Lecturers are volunteers who are nominated by the NPSS Technical Committees based on distinguished stature and achievement within their technical communities. The NPSS has more than 30 Distinguished Lecturers offering a large variety of presentations. To arrange a lecture, contact the lecturer directly using the links provided on the NPSS website.

For additional information, contact the NPSS Distinguished Lecturers Chair, Dan Fleetwood, by E-mail at dan.fleetwood@vanderbilt.edu.



Some local fauna

FELLOWS

Fellows Advice and Consultation Team

At the suggestion of the immediate past NPSS President Stefan Ritt and the strong endorsement of NPSS President Ron Schrimpf, our society is piloting an effort to aid with IEEE member grade elevation. This ad hoc committee, presently called the Fellow Advice and Consultation Team (Fellow ACT), is charged with encouraging member elevation to Senior and Fellow grade. The ad hoc committee was conceived as a member resource that is clearly distinct from the society's Fellow Evaluation Committee, which is bound by confidentiality. The Fellow ACT can aid in finding a nominator, provide guidance and comment on nomination packages prior to submission. IEEE Senior member status is a prerequisite for elevation a Fellow nomination and we can also assist with the Senior member application.



Jane Lehr
Chair, Fellows Advice and
Consultation team

The number of new Fellows annually is limited to 0.1% of the total IEEE voting membership of the prior year. For the Fellow Class of 2019, the total IEEE voting membership was 333,195 and 32.3% of the nominations were elevated to Fellow. Thus, well-crafted and articulate nomination packages – in addition to highly accomplished nominees - are required for the Fellow grade to be conferred. The overarching advice is to specifically describe the nominee's accomplishment and clearly identify its significance for a nonspecialist. Fellow nominations are traditionally due on March 1st of each year. Thus, nomination packages – including reference requests - should be initiated by late autumn.

In coming issues of the NPSS Newsletter, the Fellow process will be explained. Information regarding the IEEE Fellow process can be found at www.ieee.org/membership/fellows/. Specific inquiries can be addressed to me. The NPSS Fellow Advice and Consultation Team is evolving and would welcome feedback as well as suggestions.

Jane Lehr, Chair of Fellows ACT, can be reached by E-mail at jmlehr@unm.edu.

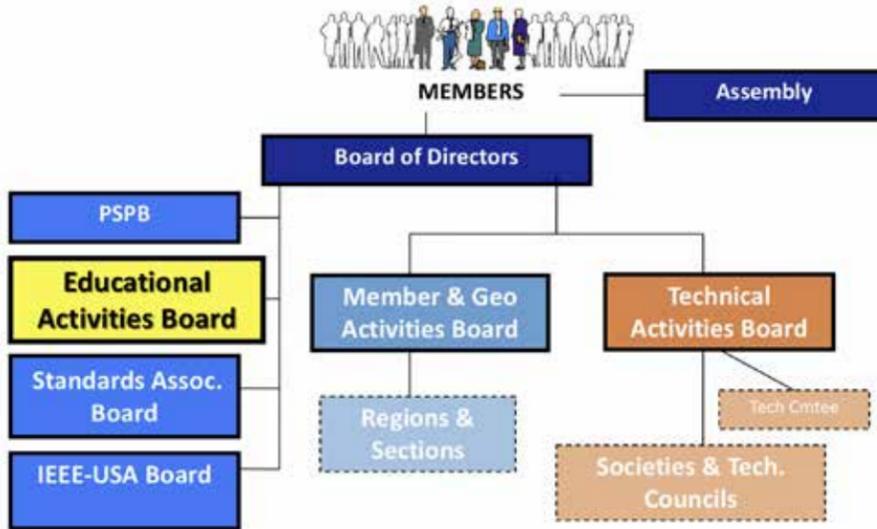
Liaison Reports

The last IEEE Educational Activity Board (EAB) meeting took place June 22nd in Atlanta, GA, Witold Kinsner, EAB Vice President 2018-19, presided.

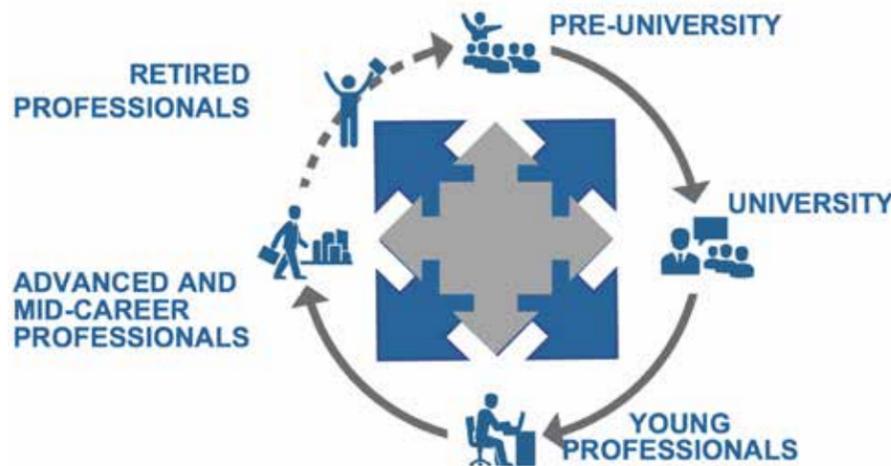
An overview of the EAB governance structure is shown below. The EAB serves i) students and educators, ii) practitioners, iii) and the public. EAB strives to be the recognized and respected portal for educational resources, global in reach, but local in relevance, supporting life-long learning and catalyzing change through education.



Edl Schamiloglu
NPSS Liaison to EAB



The EAB develops educational programs designed to connect throughout an individual's life. They are moving from an open-loop education closed-loop, passing experience to students. This is illustrated in the figure below.



Some key questions driving EAB's possible next steps are:

1. Are our educational activities (EA) helpful today? (YES)
2. Where is the greatest impact of our EA? (Outreach, Young Professionals, Seasoned Professionals?)
3. What has changed?
4. Why is education (E) existential now, more than ever?
5. How should our E models be transformed today?
6. How should the E models be implemented?



2019 EAB Meeting Dates:
IEEE Educational Activities Board Meeting
Saturday, 23 November 2019
Boston, MA USA

Understanding that the pace of technological change has been rapidly increasing, the EAB is working to move away from the traditional "one curriculum fits all" model to an agile curriculum to train the next generation work force.

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

The IEEE Smart Village Program Has Been Concentrating Efforts in the Following Areas:

1. India Developments:

Chair Ray Larsen and ISV South Asia Manager Farid Khan visited two major ISV India projects in Uttar Pradesh and then attended a conference of new partners in Gujarat near Mumbai. Our India Representative, Farid Khan, has formed a new IEEE ISV South Asia Working Group to collaborate with several new partners to develop and fund new projects using the ISV three-pillar business model. The new partners are WHEELS Global Foundation, connected with India Institute of Technology; and the State Government of Gujarat. A new joint survey team headed by Farid has just visited the site of seven remote villages to form a jointly funded pilot project which NPSS has pledged to help fund in 2020. Once completed the design and business model will be replicated in 100 or more villages. This should mark the start of a major growth spurt with the majority of funds for scaling raised in India. The conference of 300 attendees on the IIT campus in Gandhinagar featured a Smart Village track organized and chaired by Farid and a group of about 20 IEEE students who helped with logistics and ran the IEEE information booth.



Ray Larsen
ISV Chairman, NPSS Liaison to Humanitarian Activities

Three small starter projects have also been approved for India and the first of these, in a very mountainous area in the south, has been approved for funding through the efforts of Preethi Jain, sponsored by IEEE Foundation, to work from the offices of GIEEE in Bangalore. These are Corporate Social Responsibility (CSR) funds mandated from corporations by the India Government.

2. Steering Committee meeting at PES General Meeting in Atlanta, August 3rd – 4th.

This is a very important meeting which will begin searches to fill rotating committee offices and establish a smooth line of succession. Terms are three years with the possibility of a second term. In addition, all the committees need expansion with vice chairs and secretaries so we will offer Steering Committee positions to representatives from major stakeholders helping to fund ISV.

3. August 19th – 24th Power 2019 Africa Conference and ISV Parallel Workshop in Abuja, Nigeria

This has become an annual gathering of most ISV Entrepreneurs in a workshop format for five days. Major topics will be business development, preparing to scale, a demonstration of the latest SunBlazer IV design that can scale from 4 kW to 100 kW or more, discussion of more thorough measurement of impact and evaluation by Social Return on Investment, SROI, which will be applied to all of our projects in the coming months.

4. Fundraising

This has become a major limitation to the breadth of our operations so we are exploring two dimensions to respond. One is that we need to build up a committee to relate to and involve many other Societies besides NPSS and PES as major donors, and to secure more financial support; and the other is to seek more external large and small donors; large ones through a large basket of new applicants for major foundation funding; and small ones by individual monthly gifts by appealing to individuals both inside and outside of IEEE, so-called crowd funding. We really need to raise a solid \$2M per year including annual leadership gifts from Societies, Foundations and individuals.

5. A Word of Thanks

NPSS has been a stalwart supporter since its first big award in November 2010 and ISV would not be in business without your help. However we need to expand the relationship by getting more NPSS members involved at the committee level and at the affordable monthly personal donation level. So we need your help to accomplish this. Please contact us if you want a new hands-on adventure unlike any you will experience with any other IEEE opportunity.

Sincerely and with thanks from all of ISV,
Ray Larsen
SLAC National Accelerator Laboratory
Co-Founder & Chair ISV
Liaison to SSIT, HAC, SIGHT
Past President NPSS, Life Fellow

Ray Larsen, ISV Chair, can be reached by E-mail at larsen@slac.stanford.edu.

OR HAVE WEALTHY PARENTS

If you don't want to work you have to work to earn enough money so that you don't have to work.

Ogden Nash

BUT IT'S A WAY TO KEEP BUSY

The measure of success is not whether you have a tough problem to deal with, but whether it is the same problem you had last year.

John Foster Dulles

SO "JUST IN TIME" FAILS?

If you do it when you need it, it's too late. You missed the boat.

Werner von Braun



Tara McCartney, Founder, Shakti Empowerment Systems



Typical kitchen, open flame, dung fueled



Smart Village volunteers, Gujarat



Battery lighting in home of Shakti staff member



Smart Village volunteers, Gujarat



Installing battery kit for home lighting



India Solar Soul Collective, Uttar Pradesh

MAKES THEM RICHER – AND US POORER

The only function of economic forecasting is to make astrology look respectable.

John Kenneth Galbraith

BE PREPARED

Faith is a fine invention
For gentlemen who see,
But microscopes are prudent
In an emergency.

Emily Dickenson

HENCE COMPANY LIMITED

Company: An ingenious device for obtaining individual profit without individual responsibility.

Ambrose Bierce

WISHFUL REALITY

Hope is like a road in the country; there was a road, but when many people walk on it, the road comes into existence.

Lin Yutang

HEY BOSS! NO PEEKING

Quality means doing it right when no one is watching.

Henry Ford

DON'T TELL ME!

Personally, I am always ready to learn, although I do not always like being taught.

Winston Churchill

OR NOT ENOUGH?

The chief danger in life is that you may take too many precautions.

Alfred Adler

Justice of the World

By Mounir Laroussi

**What do you see?
What do you think?
when you see the word justice.
I see "just ice":
The ice-cold hard tribulations
of the weak and the powerless,
the cold shoulder
society shows the poor and the destitute.
I think of the ice cold hearts of dubious leaders,
who send young men
to kill and die in faraway lands,
and of the chilling "resolutions"
the powerful inflicts
on those who can't afford to be defended.
I see the frozen dark landscape
that becomes the dwelling of those displaced
by humanity's perpetual and senseless conflicts.**

Mounir Laroussi is Professor of Engineering and Computer Science at Old Dominion University and is the Director of ODU's Plasma Engineering and Medicine Institute. He is an IEEE Fellow and the 2012 recipient of the IEEE NPSS Merit Award. He can be reached by E-mail at mlarouss@odu.edu.

A Million Small Decisions

From IEEE-USA InSight,
21 May 2019

I recall one conversation with a coworker that left an impression on me. Alex (not his real name) was complaining loudly and brazenly for anyone to hear.

"If the company is flying me all the way to Australia, the least they can do is make it a first-class ticket."

Alex was scheduled to teach a class to a group of Australian engineers, but apparently the logistics for this outing weren't what he had expected.

"They should allow accommodations that are amenable to the way I live my personal life," he asserted.

Surprised by this, I asked, "Do you regularly fly first class?"

With a mischievous grin, he responded, "No, but they don't know that."

I recall another occasion – this occurring far, far away from a corporate headquarters – in a rural Tanzanian

village classroom. Ninety students were squeezed into the space. Despite the hundred plus degree temperature there was no relief from the oppressive heat in that crowded room.

Instead of desks, the students sat at shared tables. Some students were even forced to share a

chair as there just weren't enough to accommodate all the bodies. As I turned away from my students and began walking back towards the chalkboard, I was momentarily distracted by a movement overhead. I glanced up in time to see a large rat running along the ceiling beam directly over my head. I prayed it kept its balance. And I considered with awe my students who were grateful to be here. All of these students who wanted so badly to learn that they were willing share a chair with their neighbor in a stuffy, rat-harboring classroom in hopes of an education.

Sometimes when my vanity begins to get the best of me and I'm starting to self-aggrandize, I ask myself a simple question: "Do I want to be like Alex or like my students?" Am I going to allow myself to just feed my ego? To work the system and make demands? To require others to satisfy my indulgences and

whims? Or will I choose the path of my students? To appreciate the opportunities as they are presented. To extract fulfillment and meaning, even during difficult circumstances, and be grateful for the opportunity to better myself.

Admittedly, some days I succeed and some days I fail. Sometimes I act like my students and other days I default into being Alex. Perhaps almost as important as making the right decision on how to behave is realizing the fact that this is a choice. Each of us is the product of a million small decisions made every single day. I'm thankful that I've had the opportunity to experience life in very different circumstances, as the distinctions in attitudes and values become glaringly obvious when taken to the extremes. My experience of teaching high school math as

a Peace Corps Volunteer left its mark such that it impacted the way I delivered classes to engineers as a corporate trainer. And as I sit here writing these words and pondering their impact on my life, I can't help but think this type of grateful reflection is something my students would do. And so, I know this small decision is the right way to move forward.

Jackie Adams, an IEEE Senior member, is a nationally-recognized leader in employee learning and development. Jackie is the CEO and Founder of Ristole, a consulting business that transforms corporations through engaging employee training.

VOTE! Both IEEE and NPSS are holding elections that are important for the IEEE and for our Society. Be a good citizen and cast your ballots. You should receive yours by E-mail unless you specifically requested a paper ballot.

From the USA? Vote in the IEEE-USA elections. See candidate statements in InSight at <https://insight.ieeeusa.org/articles/?t=elections>

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NEWSLETTER EDITOR:

Albe Dawson Larsen
E-mail: a.m.larsen@ieee.org

EDITOR EMERITUS:

W. Kenneth Dawson
E-mail: k.dawson@ieee.org

CONTRIBUTORS LISTED ALPHABETICALLY:

David Abe, Jackie Adams, Stefano Bonaldo, Jon Cary, David Cesar, Paolo Craievich, Gian-Franco Dalla Betta, Dimitra Darambara, Ken Dawson, Diego Di Francesca, Teresa Farris, Michael Fiederle, Andrew Goertzen, Patrick Goley, Chiara Guazzoni, Revathi Jumbunathan, Merry Keyser, Albe Larsen, Ray Larsen, Jae Sung Lee, Alexandre Le Roche, Paul Marsden, Charles Neumeyer, Bryan Oliver, Katia Parodi, Edl Schamiloglu, Ron Schrimpf, Joe Schumer, Paul Sellin, Yoshinobu Uno, John Verboncoeur, Dimitris Visvikis, Nancy Watson

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 October 5, 2019 for the December 2019 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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