NPSS NEWS

ISSUE 4: DEC. 2023

IEEE Real Time Conference

24th IEEE Real Time Conference Quy Nhon, Vietnam

ICISE Conference Center

22nd – 26th April 2024

If at first you don't succeed, try, try again! The IEEE Nuclear and Plasma Sciences Society (NPSS) and its technical committee on Computer Applications in Nuclear and Plasma Sciences (CANPS) invite you to Quy Nhon, Vietnam for the 24th edition of the Real Time Conference (RT2024). Back in the Spring of 2020 as the world was closing down, we were forced to shift the planned Quy Nhon Real Time conference to a virtual platform. In April 2024, we are excited to try again. It will be our first return to an in-person event since 2018.

Real Time is an interdisciplinary conference, held every two years, devoted to the latest developments of real-time computing, data acquisition, transport and processing techniques in the related fields including — nuclear and particle physics, nuclear fusion and nuclear power instrumentation, astrophysics and space instrumentation, medical physics and imaging, real-time security and safety and general radiation instrumentation. The upcoming RT2024 conference will be held at the ICISE Conference Center in the beautiful coastal city of Quy Nhon, Vietnam. It is directly accessible via a domestic flight from either Hanoi or Ho Chi Minh City international airports. The conference dates are Monday – Friday April 22nd – 26th, 2024.

Real Time is a smaller conference (typically around 200 participants) with a more specialized focus. We hold only plenary and poster sessions. In addition, plenary mini-orals will be offered for accepted poster submissions. This format allows for a more engaged and stimulating environment for discussion and exchange, particularly for students and younger scientists and engineers. Papers submitted at the conference will have the option for peer review and, if accepted, will be published in a special edition of the *IEEE Transactions on Nuclear Science* journal.

A pre-conference program is planned for both Saturday and Sunday April 20th – 21st. This program will be a two-day workshop focusing on a selection of open-source tools and resources currently available and actively maintained to support development of FPGA and ASIC designs and applications. Participants will have both classroom instruction as well as hands-on coding sessions with instructors. There is funding

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CONFERENCES

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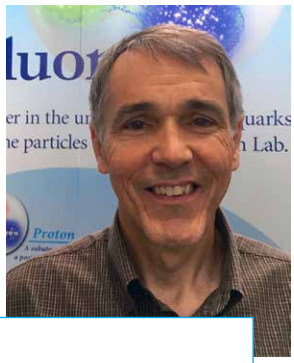
available through NPSS grants for attendance and potentially lodging. More information on the workshop can be found on the RT2024 conference website.

All students presenting their original research at the conference are encouraged to enter the Student Paper Award competition. Winning participants can receive a certificate and a cash prize of up to $500. They will also have the opportunity to highlight their work in a future NPSS newsletter article. Details on requirements to enter can be found on the conference website.

We welcome correspondence to inquire about how your research might fit within our program. There are also plans for an industry program. Abstract submission for both oral and poster presentations will be closing in December. Registration for the conference will open in January. All details including key dates and submission guidelines can be found on the conference website. Please consider joining us. On behalf of the CANPS committee we look forward to welcoming you to Quy Nhon, Vietnam in April 2024.



David Abbott
CANPS TC Chair

Conference e-mail: *rt2024@jlab.org*
Conference website*: https://indico.cern.ch/event/940112*

David J Abbott, CANPS Chair, can be reached by E-mail at abbottd@jlab.org

CONFERENCE REPORT

Symposium on Fusion Engineering (SOFE)

In July 2023, the IEEE SOFE conference came to the UK for the first time and Oxford became the epicenter of the global fusion community. Hundreds of scientists and engineers gathered in the 140-year-old Oxford University's Examination Schools to progress fusion energy powerplant development. This was only the second time the event has been hosted outside of the US and had the event's largest attendance since 1979 with nearly 700 delegates from 26 countries attending.

The 2023 SOFE conference provided an important platform where technical conversations between public and private fusion organizations could take place alongside the supply chain and academia. The program presented a diverse range of events and topics, including an International Panel discussion with representatives from Europe, the US, Japan, China, and South Korea, where the national fusion powerplant initiatives were discussed. In the Fusion Companies Panel discussion ambitious plans to bring fusion to the grid were discussed with organizations from across the world including Tokamak Energy, General Fusion, Commonwealth Fusion Systems, Hellion and TAE.

The IEEE Fusion Technology Committee was also proud to present the 2022 and 2023 Fusion Technology Awards to Dr. Dennis Youchison from Oak Ridge National Laboratory and Professor Jean Paul Allain, the now Associate Director of Science for Fusion Energy Sciences at the US Department of Energy. The Fusion Technology Best Student Poster Award was won by Matthew Riding from the University of Strathclyde.

In addition to the technical program the Young Professionals reception attracted a huge turnout and the Women in Fusion evening had a fantastic panel of inspirational people discussing how they carved out their careers in fusion.

Professor Mike Gorley was the Technical Chair for SOFE 2023 and said *"Along with the astonishing technical work, conferences always remind me of the big picture, the true issues we have to face. It was palpable at the conference, that as fusion pushes towards demonstration or prototype devices, we must be cognizant of the enormous efforts still needed and the socio-economic challenges that must merge, and even lead, our technical efforts."*

Heather Lewtas
SOFE Chair

"I also felt a sense of pride at our wider fusion community, there was clarity of mission across attendees, 'the pursuit of fusion power for the benefit of humanity."

"Everyone I spoke to at SOFE, all the questions asked, were directed at aiding our efforts on this historical challenge. We must maintain these deep personal connections across the international community and SOFE felt like ideal grounds to foster this."

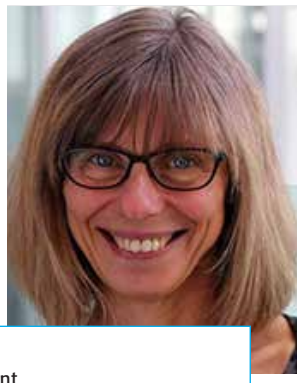
There has already been fantastic development in the field of fusion and SOFE 2023 demonstrated that it will be the strength of our global community that will make fusion energy part of the world's future power supply.

Heather Lewtas, Chair of SOFE 2023, can be reached by E-mail at heather.lewtas@ukaea.uk

SOFE award winners — left, Matthew Riding, center, Dr. Dennis Youchison and Prof. Jean Paul Allain

Women in Fusion panel (right)

President's Report



Vesna Sossi
IEEE NPSS President

The December edition of the Newsletter is typically written before the Fall AdCom meeting and the Technical Activity meeting series; it thus contains less than usual 'hot off the press' content. It does however offer a good opportunity to share some reflections on the activities and progress that was made during the summer months and some thoughts on priorities for the coming year.

This process is particularly important this year as, in February 2024, our Society is due for a review by the IEEE Technical Activities Board (TAB) Society and Council Review Committee (SCRC). These reviews occur every five years and their main purpose is to provide feedback and recommendations to the Society/Council to ensure they remain the top organizational unit in their field of interest, help the Societies/Councils in any area they need help, and share best practices among Societies and Councils. In preparation for the review, we need to compile an exhaustive report describing many aspects of the operations of our Society. While this requires a significant amount of work, it also provides an excellent opportunity for an introspective assessment of what we are doing well and where improvements are needed.

In the previous review (2019) our society was praised for its organization and the multi-faceted services it provides to its members, ranging from well-run conferences and publications to educational and humanitarian activities: this has been a testament to a strong member engagement and clear leadership. An outstanding recommendation by the SCRC was to define and implement a strategic plan. This task was completed and our strategic plan has been posted on our website. The current review form asks for the establishment of a process that ensures that the strategic plan stays current with the overall IEEE vision and mission as well as with specific needs and goals arising from our society. Establishment of such a process will be discussed at the November AdCom meeting.

A new feature of the current review form is its emphasis on Standards by inquiring about our standards activity strategies. IEEE Standards Association is an important IEEE branch, as development of industry-relevant standards mutually benefits both IEEE and industry on several levels, ranging from financial aspects to ensuring manufacturing reliability. At the society level, identification of potential standardization opportunities related to our expertise has the potential to not only contribute to a stronger integration of the society with broader IEEE activities, but it can also directly benefit us by improving and adding value to our industry and academic relationships. Historically, our society has been strongly involved in standards activities including leading the development of NIM, CAMAC and FASTBUS standards in the 1980s and 1990s and also leading development of the µTCA standards in 2004/2005, although the latter were not IEEE standards. In the future greater engagement will be explored as a potential area of growth in the next several years. We are soliciting input and thoughts on these topics from any of you.

Interestingly, such activity also reflects to some degree the broader IEEE Future Direction Committee (FDC) resource investment strategy on 'Megatrends, Roadmaps and Standards.' This encompasses identification of major global movements (megatrends) likely going to have a significant impact on multiple global aspects of society followed by identification of gaps in technical tools relevant to such megatrends, followed by design of roadmaps on how to address such gaps and ultimately by wide dissemination of such tools through industry according to agreed-upon standards.

The recently presented 2024 IEEE TAB budget, likewise lists significant budgetary investments in the future through support of technical community growth, of Future Direction Committee projects, increased industry engagement and open access (OA) initiatives. Among these, addressing issues related to climate change remains a top IEEE priority. By the time this newsletter reaches its audience, the IEEE Online Forum on Climate Change Technologies (Oct 23rd – 26th), will have already taken place. I believe it will be a very informative, action-defining meeting, where recent developments in IEEE technologies and solutions that promote climate stability will be highlighted. NPSS is a meeting patron/sponsor, so please expect a more detailed report in the next newsletter.

Importantly, any of these activities is always searching for volunteers; there is much more information about them and opportunities for involvement with associated benefits on several IEEE websites.

Now to some very important 'housekeeping' issues directly pertinent to our society:

1. As reported in the last newsletter, at the last AdCom we agreed on some 'best practices' to be implemented across technical areas in an effort to improve communications and enhance the society value to members. We will hear a report on initial outcomes at the November AdCom meeting. Preliminary evidence suggests that briefly describing IEEE and NPSS activities in the introductory remarks in our meetings noticeably raises the interest in and appreciation of membership.
2. I would like to urge you to propose initiatives for funding and remind you of the new process. Submitted projects will be discussed at the March AdCom meeting to identify possible synergies between proposed projects and possible relevance to multiple technical areas. I encourage you to contact your technical area chairs for more information if you are planning to apply.
3. There is also a new process for submission and evaluation of the nominations for IEEE Fellow status. The process was described in detail in the September newsletter. An important change is the shifting of the nomination deadline from March 1st, 2024 to February 7th, 2024. The Fellow Search Committee, chaired by Alberto del Guerra and Jane Lehr is happy to provide help with the assembly of the nominations.

And finally, this is the last time that you will be accessing our Newsletter as a pdf file; it will have a completely new format starting next year. The new online format will be much more interactive, easier to navigate and easier to access from a larger variety of mobile devices. We are hoping to receive positive feedback, however constructive criticism is also welcome as we are continuously striving to better serve and inform our valued members.

Much more in the new year!

Vesna Sossi, IEEE NPSS President, can be reached by E-mail at vesna@phas.ubc.ca

SOCIETY GENERAL BUSINESS Continued on PAGE 4

Secretary's Report

AdCom met virtually on June 24, 2023. There were Finance Committee, Communications Committee and a special meeting of TC chairs held virtually on June 23rd. Our president, Vesna Sossi, discussed the TAB series meetings and introduced the Future Directions Presidents' Forum and also the concept of holding Industrial Days to understand better what industry wants and how IEEE can be more relevant to our industry members.

A key focus of TAB this year is climate change. Vesna has appointed Cinzia Da Via to lead a Climate Change ad hoc functional committee. See Cinzia's report in Liaison Reports (page 15).

Ralf Engels, our treasurer, noted that our journals did very well in 2022 and we have significant reserves. However, access to reserves is extremely limited so it behooves us to spend end-of-year surplus on our initiatives and in donations, as allowed, to the IEEE Foundation NPSS Fund. If you haven't made a 2023 donation yet, please do so and, if you are retired, donate as a transfer from your IRA for income-tax neutrality (for US citizens).

Our budget for 2024 will be submitted to IEEE as a first draft in July. Budgets are finalized at the November Board meetings. Ralf also reminded us that all our own conferences and technically cosponsored conferences are to provide a centrally located membership table as well as registration for two membership table reps. Robert Miyaoka must approve these appointments and Ralf must be notified well ahead of the conference of who these individuals are or expenses will not be reimbursed.

Paul Dressendorfer, our Publications Committee chair, is working with IEEE to gain a better understanding of pricing policies. There is no clarity, but some changes are due to changes in IEEE's accounting plan. Open Access remains an increasing challenge and IEEE is negotiating Read and Publish agreements so cost algorithms will change. Also there are items included in overhead charges that do not seem appropriate.

Our PRAC review noted the long terms of editors as well as the geographical distribution of senior editors.

Reports were also heard from the Finance Committee, the Communications Committee, the Fellow Evaluation Committee and the new Diversity and Inclusion Committee chaired by Jehr Lehr and Mitra Safavi-Naeini.

ADCOM ACTIONS

1. CANPS moves that AdCom approve the new wording for the CANPS award as presented to AdCom on June 24, 2023.

Title: IEEE Computer Applications in Nuclear and Plasma Sciences Award

Description: With the increased dependency of modern experimental scientific research upon computers it seems reasonable to recognize the individuals who have made an outstanding achievement in the application of computing technology in nuclear and plasma sciences. Inasmuch as the technology associated with computers is continually evolving, it further seems reasonable to expect innovative applications in the foreseeable future, thus justifying periodic recognition by the granting of an award.

Administration: The "Computer Applications in Nuclear and Plasma Sciences" (CANPS) Technical Committee created and administers the granting of such an award in the field of nuclear and plasma sciences.

Eligibility: Any person is eligible for the award including non-IEEE or NPSS members with specific exceptions. If a member of the CANPS Technical Committee nominates a candidate or is nominated for the award, this member shall abstain from the discussion and the vote. In addition, the CANPS Technical Committee Chair and members of the CANPS Award Subcommittee are not eligible to nominate or to be nominated during their tenure in these positions.

Eligibility and Selection process shall comply with procedures and regulation established in IEEE and Society/Council governing documents, particularly with IEEE Policy 4.4 on Awards Limitations. Previous award winners are not eligible for substantially the same achievements (per IEEE Policies 4.4: An individual shall receive only one award for a given achievement, unless the significance merits a higher award, which may be given in the following year or thereafter.)

Prize: 3,000 USD and a plaque. Travel allowances for the recipient to attend the Real-Time Conference will be provided if necessary and conference registration fees will be waived. Award funding will come from the IEEE Real Time conference budget.

Frequency: In advance of the scheduled IEEE Real-Time Conference, nominally every two years.

Award will be given only if a suitable awardee is identified.

Funds: Funded by the IEEE Nuclear and Plasma Sciences Society's Real-Time Conference budget. The overall budget necessary will be the award plus nominal travel expenses, if necessary, for a total of around 5000 USD.

Reimbursements will follow IEEE Policies and Procedures.

Nominee Solicitation: Formal solicitation for nominees shall be made via 1) email to CANPS committee members and previous Real-Time conference participants, 2) requests in the NPSS Newsletter, announcements at the society's conferences, and 3) other appropriate solicitations. Individuals may be nominated by the submission of a completed form, which can be downloaded from the society awards webpage at https://ieee-npss.org/awards/npss-awards. Submission should be made to the chair of the CANPS Awards Subcommittee. Any individual may submit a nomination with the exception of the CANPS Technical Committee Chair and members of the CANPS Award Subcommittee. Self-nominations are not permitted. In case of multiple nominations of the same individual, only the first submitted will be considered. Withdrawal of a nomination can be requested either by the corresponding nominator or by the nominee, provided that this request is forwarded to the chair of the awards subcommittee before the expiration of the nomination's submission deadline.

Nominations should comply with IEEE Policies and restrictions on awards. Incidents of misconduct including, but not limited to, violations of IEEE's publication policies, will be strongly considered by the awards committee and may be grounds for denial of an award or leadership position.

Award Committee: A member of the CANPS committee shall be appointed by the CANPS TC Chair to be the chair of the CANPS Awards Subcommittee. The chair of the Awards Subcommittee may not hold this position for more than two consecutive awards cycles. The subcommittee (Chair plus one or more CANPS members appointed by the Awards chair) will be formed to facilitate solicitation of nominations and development of the final ballot. All terms for awards committee members will be one election cycle. All CANPS committee members are eligible to serve in at most two consecutive awards cycles. The remaining

eligible CANPS general committee as a whole will make the final selection by majority vote. The CANPS chair shall report the result of this vote to the chairman of the NPSS Awards Committee.

Voting and meetings shall be conducted in accordance with Robert's Rules of Order. The Committee Chair shall have no vote except if the vote is by secret ballot or unless the Chair's vote can change the outcome of the vote. Conflict of Interest concerns shall be disclosed and addressed in accordance with IEEE Policies 9.9 A, B. and C. Any real and perceived conflict of interest (COI) shall be avoided. Anyone with a COI shall recuse themselves from nominating, endorsing, discussing, and evaluating. Individuals serving on any board or committee involved at any stage of the recipient selection or approval process for an award shall be ineligible to receive, or act as a nominator or reference for that award.

Schedule: Solicitation of nominees should start in September of the year preceding the Real-Time Conference. The nominations are due to be received by the third Friday in January in the year of the Real-Time Conference. The announcement of the winner will be made public on the third Monday in March of the year of the award.

Selection/Basis for Judging: The winner of the award shall be selected based upon any evidence the CANPS Award Subcommittee wishes to evaluate consistent with the description of the award. Following the subcommittee's recommendation and creation of the ballot, a majority vote by the eligible CANPS committee general membership will decide the winner. No more than four (4) ballots of the CANPS committee shall be taken with a quorum of eligible members in the committee voting. Members will be given a voting option of abstaining which will be counted with respect to reaching a quorum. If no quorum or agreement of the committee on a candidate can be obtained, the award will be skipped for that award period.

Presentation: The Award shall be presented by the Chair of the CANPS Technical Committee, on behalf of NPSS, during the IEEE NPSS Real-Time Conference.

Publicity: Publicity shall be given in appropriate NPSS publications and other professional and public outlets. Passed 21 Y. 0 N, 0 A

2. Radiation Effects Award for Exemplary Service to Meetings and Conferences moves to create a new service award:

» Recognition of a member of the Radiation Effects community who has demonstrated exemplary services to the meetings and conferences of the Radiation Effects Committee over a sustained period.
» Funded by the Nuclear and Space Radiation Effects Conference unless a suitable endowment is established.
» Description. To recognize a member of the Radiation Effects community who has demonstrated exemplary services to the meetings and conferences of the Radiation Effects Committee over a sustained period.
» Eligibility. The nominee is not required to be a member of the IEEE and the NPSS but where candidates have otherwise equal qualifications, preference shall be given to the candidate who is a member of the IEEE and the NPSS.
» Prize Items. The recipient will receive US$1,500 and a plaque.
» Funds. Funded by the Nuclear and Space Radiation Effects Conference unless a suitable endowment is established.
» Selection Committee. Nominations will be evaluated by the elected members of the RESG, namely, the Executive Vice-chair, Chair, Past-chair, and Secretary and three Members-at-Large.
» Presentation. At the annual IEEE Nuclear and Space Radiation Effects Conference (NSREC) during the NSREC awards ceremony.

Passed: 22 Y, 0 N, 0 A.

3. FinCom approves transferring up to $500k from 2023 surpluses to the NPSS Foundation Fund in November. The exact amount will be determined by the NPSS Treasurer and the NPSS President. Passed: 21 Y, 1 N, 0 A.

4. FinCom approves using the prioritization of initiatives submitted for approval on 6/23/23. Passed: 21 Y, 0 N. 0 A.

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

Albe Larsen
IEEE NPSS Secretary and Newsletter Editor

Nuclear Medical and Imaging Sciences

At the time of writing, we are preparing for the 2023 IEEE NSS/MIC/RTSD meeting. Similar to last year, the meeting will be a hybrid event, with the in-person venue being the Vancouver Convention Centre is downtown Vancouver, Canada from November 4th -11th, 2023. I want to acknowledge the organizing committee, including General Chair Vesna Sossi, Deputy Chair Tom Lewellen, Conference Coordinator Ralf Engels and MIC Co-Chairs Margaret Daube-Witherspoon and Rutao Yao for all of their dedication and efforts in putting together the exciting program. We look forward to next year's meeting that will take us to Tampa Bay, Florida with Lorenzo Fabris as General Chair, Ralf Engels as Deputy Chair, and Georges El Fakhri and Kira Grogg as MIC Co-Chairs.

Congratulations to this year's Technical Committee award winners. The Bruce Hasegawa Young Investigator Medical Imaging Science Award is awarded to Han Gyu Kang from the National Institutes for Quantum Science and Technology (QST) in Chiba, Japan for contributions to realization of novel imaging systems, especially ultra-high resolution small animal PET, hybrid laparoscope for minimally invasive surgery, modeling of advance medical imaging systems, and TOF-DOI detector research. The IEEE Nuclear and Plasma Sciences Society Medical Imaging Technical Achievement Award is awarded to Thomas Koehler from Philips Research in Hamburg, Germany for contributions to the translation of dark-field X-ray imaging from bench to bedside. Finally, the Edward J. Hoffman Medical Imaging Scientist Award was awarded to Ge Wang from Rensselaer Polytechnic Institute in Loudonville, New York, USA for pioneering contributions to medical computed tomography, multi-modality imaging, and AI-based tomographic imaging, as well as exemplary mentorship in medical imaging training and education. Thank you to all those who have nominated candidates for these awards and for the work of the selection committees led by our Awards Subcommittee Chair Roger Fulton.

In June we held our annual NMISC mid-year meeting via Zoom. Among the topics brought forward for discussion were:

» Nicolas Karakatsanis discussed the Emission Tomography Standardization Initiative (ETSI) and

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TECHNICAL COMMITTEES Cont. from PAGE 5

the possible role for NMISC as an endorser of this initiative.

» Youngho Seo led a discussion on whether the NSS/MIC/RTSD meeting should be reduced in length, with more overlap in timing between the three core components of the meetings.

» Robert Miyaoka updated the committee on the process of NPSS Initiatives and the opportunities for NPSS funding for seeding new strategic directions or pilot operational ideas. He also highlighted the success of the Open Kinetic Modeling Initiative (OpenKMI) that was proposed in November 2021 and funding beginning in August 2022.

I encourage all members of the MIC community to reach out to the committee with ideas for new Initiatives or with any topics that they feel NMISC should consider as new business.

This committee update marks my last submission to the NPSS Newsletter as Chair of NMISC. At the end of 2023 my term as Chair will end and Youngho Seo from the University of California, San Francisco will become the new NMISC Chair. This means that Roger Fulton will end his term as Immediate Past-Chair of NMISC. I want to thank Roger for his contributions to NMISC, especially in his role as Chair during the challenging 2020 and 2021 years where so many of our standard committee practices had to be reimagined due to the pandemic. I look forward to continuing to work with Youngho and our new Vice-Chair who will be elected at our November annual general meeting.

Andrew Goertzen
NMISC Chair

More information on NMISC activities is available at https://ieee-npss.org/technical-committees/nuclear-medical-and-imaging-sciences/

Andrew Goertzen, NMISC Chair, can be reached by e-mail at Andrew.Goertzen@umanitoba.ca

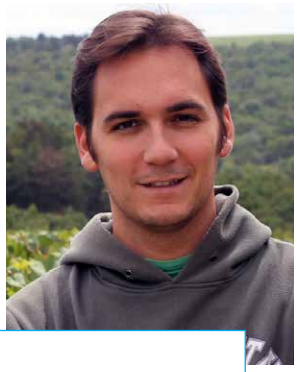
Radiation Effects

Annual report from the Radiation Effects Committee

The IEEE Radiation Effects Committee (REC) held its annual Open Meeting on July 27th at the 2023 Nuclear and Space Radiation Effects Conference (NSREC). Robert Reed, Radiation Effects SG chair, was unable to lead the meeting due to an illness. The meeting was chaired by Janet Barth, Past RESG Chair. Presentations were given by the general chairs of the 2022 through 2024 NSRECs and the chair of the 2023 and 2024 European Conference on Radiation and its Effects on Components and Systems (RADECS).

Janet opened the meeting by recognizing elected and appointed members of the Radiation Effects Steering Group (RESG). The elected members of the 2023 RESG are Kay Chesnut, Raytheon, Vice Chair; Janet Barth, NASA (ret.), Past Chair; Arto Javanainen, Jyväskylä University, Secretary; Rubén García Alía, CERN, Senior Member-at-Large; and Mike Tostanoski, Radiation Test Solutions, Inc., Member-at-Large; Megan Casey, NASA/GSFC, Junior Member-at-Large. Robert recognized Rubén García Alía as the outgoing member of the RESG. Mike will take over as Senior Member-at-Large and Megan will take over as Member-at-Large. An election was held to determine the new Junior Member-at-Large; Laurent Artola, ONERA, was elected.

Janet also recognized the elected members of the IEEE NPSS AdCom: Ken Galloway, Vanderbilt Univ. (term ends in 2023) and Philippe Paillet, CEA (term ends in 2025). She followed this recognition by announcing candidates for the upcoming IEEE NPSS AdCom member election to replace Ken: Marty Shaneyfelt, Sandia (ret.) and John Stone, SWRI.



Ruben Garcia
Outgoing RESG member

Robert Reed
Chair, Radiation Effects Steering Group

Janet announced the general chairs for future NSREC Conferences: Heather Quinn, Los Alamos National Laboratory, 2024, Dolores Black, Sandia National Laboratories, 2025, and Philippe Paillet, CEA, 2026, and Jonny Pellish, NASA, 2027.

Tom Turflinger, Aerospace Corporation, the General Chair of the 2022 Conference, summarized statistics of last year's conference. A total of 509 people registered for the technical sessions and 369 people registered for the short course.

Keith Avery, the General Chair of the 2023 Conference, summarized statistics of this year's conference. A total of 544 people registered for the technical sessions and 351 people registered for the short course.

Teresa Farris
Vice Chair, Publicity

NSREC 2023 was held in person July 24th – 28th at the Sheraton Kansas City Hotel at Crown Center, Kansas City, Missouri.. The technical sessions featured 124 papers that were presented during the five-day conference: 39 oral presentations, 42 poster presentations, and 43 poster presentations in the Radiation Effects Data Workshop. Four tutorial presentations were given at the Short Course, held July 24th.

Heather Quinn, LANL, General Chair of the 2024 Conference, discussed her plans for the 2024 Conference that will take place in Ottawa, Ontario, at the Shaw Centre, on July 22nd - 26th, 2024. The conference will feature a technical program with 10 sessions of contributed papers that will describe the latest observations and research results in radiation effects. The program will include oral and poster papers, with a separate dedicated poster session where authors of poster papers can discuss their results with conference attendees. A Radiation Effects Data Workshop and an Industrial Exhibit will be held. Attendees will also be able to participate in a one-day Short Course on Monday, July 22nd where an outstanding group of technical experts will provide an in-depth discussion of Radiation Considerations for Board-Level Computing Systems.

NSREC 2024 SHORT COURSE, OTTAWA, CANADA

The Short Course Chair is Vincent Goiffon, ISAE SUPAERO. The theme is: Radiation Effects on Electronic and Photonic Technologies: from Basic Concepts to Advanced Mechanisms. Presentations and speakers for the four sessions are:

- **Basic Mechanisms and Displacement Damage Effects in Electronics**, Dr. Elizabeth Auden. Los Alamos National Laboratory
- **Total Ionizing Dose Effects in Si MOSFETs Up to Ultra-High Doses**, Dr. Stefano Bonaldo, DEI, University of Padova, Dr. Federico Faccio CERN and Dr. Giulio Borghello CERN
- **Single-Event Effects in Devices and ICs: Phenomena and Testing Methods**, Dr. Ani Khachatrian, US Naval Research Laboratory
- **Radiation Effects on Photonics: Image Sensors and Optical Fibers**, Prof. Sylvain Girard, University of Saint-Etienne and Dr. Cedric Virmontois, CNES

The most current information about the Nuclear and Space Radiation Effects Conference, including contact information and paper submission requirements, can be obtained on the new NSREC website: www.nsrec.com.

Robert Reed, Executive Chair of the Radiation Effects Committee, can be reached by e-mail at robert.reed@vanderbilt.edu

AWARDS

Technical Field

2023 IEEE MARIE SKLODOWSKA-CURIE AWARD

Presented to Janet Barth at the RADECS (Radiation Effects on Components and Systems) Conference 2023, Toulouse, France

During a special session of RADECS, in September in Toulouse, France, Professor Vesna Sossi, President of the NPSS, representing the IEEE Board of Directors, presented the 2023 IEEE Marie Sklodowska-Curie Award to Janet L. Barth. Sponsored by the IEEE Nuclear and Plasma Sciences Society, the award recognizes outstanding contributions to the field of nuclear and plasma sciences and engineering. Under consideration in selecting the recipient are the importance of individual scientific contribution, importance of scientific contributions made by teams led by the candidate, seminal nature of the contribution, innovation/originality, societal benefit, impact on the profession, and the quality of the nomination.

Ms. Barth has been active in the radiation effects community for more than 40 years. She was a lead radiation-hardness assurance engineer for NASA space flight programs and supported the NASA Electronic Parts and Packaging Program, which focuses on the reliability of electronic parts for space programs. Ms. Barth was on the proposal team for the NASA Living with a Star Program and served on NASA's LWS Science Architecture Committee. As chief of the Electrical Engineering Division at NASA's Goddard Space Flight Center, Ms. Barth was responsible for the delivery of spacecraft and instrument avionics to numerous NASA missions, including the Solar Dynamics Observatory, the SWIFT Burst Alert Telescope, the Lunar Reconnaissance Orbiter, the Global Precipitation Measurement mission, and the Magnetospheric Multiscale Mission. She also directed the development of microwave and optical communications systems and suborbital avionics systems at NASA's Wallops Flight Facility.

Early on, she recognized that the increased use of emerging technologies and highly integrated electronics in space systems was rapidly outpacing the knowledge of space radiation environments. Focusing on the shortcomings of the radiation models that were then current, she established a path forward for standardized next-generation models. She captained the effort to replace the decades-old Van Allen radiation belt models and define requirements for space-plasma models for use in the space-systems-development community.

Her pioneering efforts enabled today's robust space systems and successful space missions. She retired in 2014 from NASA's Goddard Space Flight Center but continues to support NASA programs as an Emeritus Scientist.

Janet has also made impressive contributions to NPSS and to the advancement of women in engineering in many different roles — for example, she was NPSS president — the second woman to serve in this position. She has been an active speaker at many WIE events and a strong supporter of women scientists throughout her career. She is one of those rare people who not only significantly influence progress in science, but also impacts the quest for human rights.

Reminder
Fellow nominations now due February 7th.
See website for more information.

Jean-Luc Leray
Nominator and author

FUNCTIONAL COMMITTEES Continued on PAGE 8

FUNCTIONAL COMMITTEES Cont. from PAGE 7

Citation: For leadership of and contributions to the advancement of the design, building, deployment, and operation of capable, robust space systems.

An IEEE Life Fellow, Ms. Barth is an advisor to Miller Engineering & Research Corporation or MERC, located in Greenbelt, Maryland, in the US.

Janet Barth can be reached by E-mail at: janetgen@comcast.net

Jean-Luc Leray, who nominated Janet for this award, can be reached by E-mail at jlorange33@orange.fr

(Top) Janet Barth receiving the Maria Sklodowska Curie Award from Vesna Sossi, NPSS President

(Bottom left L-R) Sylvain Girard, Technical Committee Chair; Julian Mekki, RADECS 2023 Conference Co-chair; Janet Barth, Award Recipient; Francoise Bezzera, RADECS 2023 Conference Co-chair

(Bottom right L-R) Robert Ecoffet, President of the RADECS Association; Philippe Paillet, RADECS Liaison to NSREC and RE AdCom member; Jean-Luc Leray, Nominator; Janet Barth, Award Recipient; Jean Gasiot, Founder of RADECS; Ken Galloway, Co-founder of RADECS, Vanderbilt University Dean of Engineering, Emeritus

Photo credit: Lawrence French, Getty Photographer

NPSS AWARDS

The NPSS sponsors a variety of awards, which are described at: https://ieee-npss.org/awards/npss-awards/. The deadline for receiving nominations for most of these Awards is January 31st of each year. The nomination process is relatively straightforward and the forms are available on the web site. Previous winners are also listed on the web site. Please consider nominating your colleagues for these awards. If you have any questions, please contact Ron Schrimpf, NPSS Awards Committee Chair, at ron.schrimpf@vanderbilt.edu.

The NPSS awards include:

- NPSS Merit Award
- NPSS Richard F. Shea Distinguished Member Award
- NPSS Early Achievement Award
- NPSS Graduate Scholarship Award
- NPSS Charles K. Birdsall Award for Contributions to Computational Nuclear and Plasma Sciences
- NPSS Robert J Barker Graduate Student Award for Excellence in Pulsed Power Applications
- NPSS Women in Engineering Leadership Development Travel Grant
- IEEE Magne "Kris" Kristiansen Award for Contributions to Experimental Nuclear and Plasma Science
- IEEE NPSS Edward J. Hoffman Early Career Development Grant
- IEEE Ronald J. Jaszczak Graduate Award
- IEEE Glenn F. Knoll Post Doctoral Educational Grant
- IEEE Glenn F. Knoll Graduate Educational Grant

Each NPSS technical committee also sponsors awards, which are described at https://ieee-npss.org/awards/technical-committee-awards/.

These awards include:

- Computer Applications in Nuclear & Plasma Sciences Award (CANPS)
- Fusion Technology Award (FTC)

Ron Schrimpf
NPSS Awards Committee Chair

- Edward J. Hoffman Medical Imaging Scientist Award (MIC)
- Medical Imaging Technical Achievement Award (MIC)
- Bruce H. Hasegawa Young Investigator Medical Imaging Award (MIC)
- Erwin Marx Award (PPST)
- Arthur H. Guenther Pulsed Power Student Award (PPST)
- Peter Haas Pulsed Power Award (PPST)
- Particle Accelerator Science and Technology Award (PAST)
- Particle Accelerator Science and Technology Doctoral Student Award (PAST)
- Plasma Science and Applications Award (PSAC)
- Plasma Science Igor Alexeff Outstanding Student in Plasma Science Award (PSAC)
- Radiation Effects Award (REC)
- Radiation Effects Early Career Award (REC)
- Radiation Instrumentation Early Career Award (RITC)
- Emilio Gatti Radiation Instrumentation Technical Achievement Award (RITC)
- Glenn F. Knoll Radiation Instrumentation Outstanding Achievement Award (RITC)

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

NOMINATIONS FOR 2024 RADIATION EFFECTS AWARDS

Nominations are due January 26th, 2024, for awards that will be presented at the IEEE NSREC 2024 Conference, July 22nd – 26th, in Ottawa, Canada.

RADIATION EFFECTS AWARD NOMINATIONS

Nominations are currently being accepted for the 2024 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 Ottawa, Canada. Forms are available electronically at http://ieee-npss.org/technical-committees/radiation-effects/ and must be submitted by January 26, 2024. Additional information can be obtained from Mike Tostanoski, Senior Member-at-Large, Radiation Test Solutions, for the Radiation Effects Steering Group. Mike can be reached at mtostanoski@radiationtestsolutions.com.

RADIATION EFFECTS EARLY ACHIEVEMENT AWARD NOMINATIONS

Nominations are currently being accepted for the 2024 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 Ottawa, Canada. Forms are available electronically at http://ieee-npss.org/technical-committees/radiation-effects/ and must be submitted by January 26th, 2024. Additional information can be obtained from Mike Tostanoski, Senior Member-at-Large, Radiation Test Solutions, for the Radiation Effects Steering Group. Mike can be reached at mtostanoski@radiationtestsolutions.com.

PAUL PHELPS CONTINUING EDUCATION GRANT NOMINATIONS

Nominations are currently being accepted for the 2024 Paul Phelps Continuing Education Grant. The purpose of the grant is to promote continuing education (attendance at the 2024 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 2024 NSREC in Ottawa, Canada. Funds are to be used towards covering travel costs to attend the NSREC Short Course. The grant also provides complimentary short course registration.

Teresa Farris
Radiation Effects Vic Chair, Publicity

Nomination forms are available electronically at http://ieee-npss.org/technical-committees/radiation-effects/ and must be submitted by January 26th, 2024. Additional information can be obtained from Megan Casey, Member-at-Large, NASA GSFC, for the Radiation Effects Steering Group. Megan can be reached at megan.c.casey@nasa.gov.

Teresa Farris, RE Vice Chair, Publicity can be reached by E-mail at teresa.farris@archon-llc.com

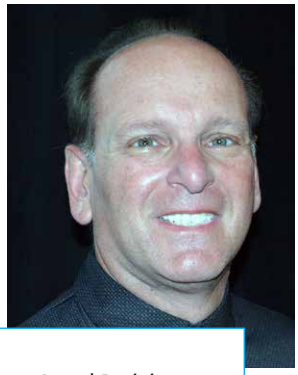
2023 IEEE NPSS RADIATION EFFECTS AWARD

Ken LaBel, NASA GSFC, received the 2023 IEEE NPSS Radiation Effects Award.

Citation: For sustained contributions to the radiation survivability of electronics in space and leadership across the radiation effects community

Ken graduated with a BES in EECS with a minor in Mathematical Sciences from the Johns Hopkins University (JHU). Grad school (U MD and JHU) in Computer Engineering was deferred due to the exciting work that NASA provided (and 80-hour work weeks!). His career at NASA Goddard Space Flight Center (GSFC) included work and leadership in:

- Fault tolerant computing,
- Hardware/software for ground systems electronics,
- Advanced electronics and photonics technology (including fiber optic networks and data links),
- Spaceflight hardware including command and data handling,
- Systems engineering,
- Radiation hardness assurance/research for >200 NASA flight projects and instruments, and,
- Microelectronics radiation effects and reliability assurance leadership and management.



Ken LaBel
2023 Radiation Effects Award Recipient

He was the program manager (or co-manager) of the NASA Electronic Parts and Packaging (NEPP) Program for 15 years as well as group leader for the Radiation Effects and Analysis Group (REAG) at NASA GSFC. He has won multiple awards at NASA including the prestigious National Resource Award, the Moe I. Schneebaum Award (top engineering award at NASA/GSFC), multiple Exceptional Service Medals, and a multitude of Group Achievement Awards. He was also a NASA representative to multi-agency working groups such as the Radiation Hardened Oversight Council (RHOC) and the Joint Mission Assurance Council (JMAC) and is recognized for his ability to work across US Government borders as well as with industry and academia. His broader view has looked at collaborating whenever possible with NASA's international partners such as ESA, JAXA, CNES, and RADNEXT including joint efforts and flight experiments.

Mr. LaBel has published over 200 papers as author/co-author (multiple best papers in IEEE TNS), has taught multiple short courses at IEEE Nuclear and Space Radiation Effects Conference (NSREC), Hardened Electronics and Radiation Technology (HEART) Conference, Radiation Effects on Components and Systems (RADECS) Conference, and others, and is a recognized expert in radiation effects systems engineering. He has also been a frequent presenter at the International School on the Effects of Radiations on Embedded Systems for Space Applications (SERESSA) and also hosted an occurrence of this meeting in the U.S.

He's been active in the IEEE NSREC with multiple roles including: the 2009 IEEE NSREC Short Course Chair, the 2012 IEEE NSREC General Chair, and past RESG Member-at-Large. He has been a strong supporter of the RADECS Association and conference since his early participation including being the first U.S.-based Topical Day Chair. Mr. LaBel is also on the Executive Committee for the Single Event Effects Symposium/Military and Aerospace Programmable Logic Devices Workshop (SEE/MAPLD).

FUNCTIONAL COMMITTEES Continued on PAGE 10

FUNCTIONAL COMMITTEES Cont. from PAGE 9

Mr. LaBel retired from NASA in January 2019 after 35+ years and is currently supporting Science Systems and Applications Inc (SSAI) in support of NASA, Trusted Strategic Solutions, LLC (TSS), and as an employee at The Johns Hopkins University (JHU) Applied Physics Laboratory (APL). His current work passions are workforce development and radiation test facilities.

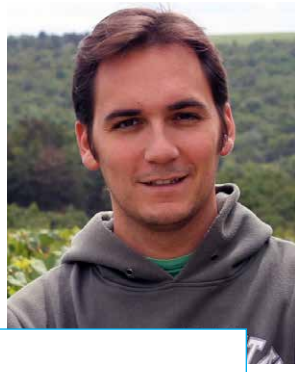
IEEE EARLY ACHIEVEMENT AWARD

Rubén Garcia Alia, CERN, received the IEEE NPSS Early Achievement Award

Citation: For contribution to the understanding of single-event effects in microelectronics used in accelerator and space applications.

Rubén García Alía is part of the "Radiation to Electronics" (R2E) project at CERN, which he has led since 2018. After studying nuclear and high-energy physics at the Complutense University in Madrid (Spain), he started his career in radiation effects as a Young Graduate Trainee at the European Space Agency, in the Netherlands. From there, he completed his Ph.D. with CERN and the University of Montpellier, focusing on the effect of highly energetic particles on Single Event Effects in the Large Hadron Collider (LHC) accelerator. During this period, he was recognized with the "Best Student Paper" award at RADECS 2012 and the IEEE NPSS Paul Phelps Continuing Education Grant in 2015. Since then, he has kept a strong involvement in radiation effects research, focusing on high-energy accelerator applications, and has co-authored more than 100 publications in peer-reviewed journals. He has co-authored a RADECS Short Course, has been session chair at NSREC and RADECS, and was the technical chair for RADECS 2021. In 2020 he was elected Member-at-Large of the IEEE NPSS Radiation Effects Steering Group (RESG). He also received the NSREC 2022 Meritorious Paper Award for his work on high-energy ion fragmentation for SEE testing.

At CERN, Rubén's main task is managing the R2E project, which is responsible for all radiation effects in the LHC accelerator and its injector chair, with the mandate of ensuring successful operation with regards to stochastic failures and lifetime degradation induced by radiation. The project, which is composed of more than 50 members, embeds a rich variety of activities and expertise, ranging from the monitoring and calculation of radiation levels, the operation and upgrade of CERN radiation facilities, and testing for radiation effects at both component and system level.



Ruben Garcia
IEEE Early Achievement Award Recipient

Between 2017 and 2022, Rubén coordinated the RADSAGA (RADiation and reliability challenges for electronics used in Space, Aviation, Ground and Accelerators), an innovative training Marie Curie Ph.D. network. Currently, he is leading the RADNEXT and HEARTS EU projects, the first related to a network of European irradiation facilities, and the second focusing on the development of European capabilities for high-energy heavy ion testing.

For additional information contact Teresa Farris, RE vice chair for Publicity by E-mail at teresa.farris@archon-llc.com.

Elections / Nominations

2023 NPSS Election Results

The 2023 NPSS election was held recently to fill five vacancies on the NPSS Administrative Committee and serve a four-year term commencing January 1st, 2024. I am pleased to announce the outcome of the election.

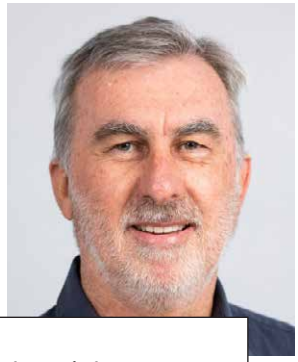
Masaharu Nomachi will represent Computer Applications in Nuclear and Plasma Science (CANPS)
Mark S. Tillack will represent Fusion Technology (FTC)
Joseph W. Schumer will represent Plasma Science and Applications (PSAC)
Mark A. Sinclair will represent Pulsed Power Science and Technology (PPST)
Marty R. Shaneyfelt will represent Radiation Effects (REC)

Congratulations to all the successful candidates. To those nominated but who were unsuccessful on this occasion, I would like to take this opportunity to thank you for standing in this year's election. Your willingness to serve your communities is appreciated and I encourage you to consider nominating again next year or at another opportunity in the future.

Ballots were also conducted for vacancies on the Executive Committees of several of our Technical Committees. Those outcomes will be communicated via the respective TCs. Once again, thank you to all those who nominated to serve your TCs.

There will be more vacancies to fill on AdCom and our various ExComs in 2024. I will make an announcement about those vacancies in the March 2024 newsletter. If you are interested in serving in one of these positions or want to nominate somebody, please contact me at the email address shown below.

Finally, I would like to thank the members of this year's nominations committee for your service and for soliciting such high-quality candidates for this year's elections.



Steve Meikle
Nominations Committee Chair

Steven Meikle, NPSS Nominations Chair, can be reached by E-mail at steven.meikle@sydney.edu.au

PUBLICATIONS

Announcing the 2023 *Transactions on Plasma Science* Best Paper Award

The winner of the 2023 TPS Best Paper Award has been selected (please refer to our TPS home page for details about the award at https://ieee-npss.org/publications/transactions-on-plasma-science/). This year is the fifth year that the award is being given, and I am pleased to announce that this year's winner is the paper, "Effect of Nonuniform Emission on Miram Curves" Published in: ***IEEE Transactions on Plasma Science, Volume: 48, Issue: 1, January. 2020, Page(s): 146 – 155***. The nine co-authors of this paper are David Chernin; John J. Petillo; and Serguei Ovtchinnikov from Leidos Inc., Reston, VA USA; Y. Y. Lau; and Abhijit Jassem from the University of Michigan, Ann Arbor, MI USA; Dongzheng Chen; Ryan Jacobs; Dane Morgan; and John Booske from the University of Wisconsin, Madison, WI USA. The abstract of the paper and the photos and biosketches of the co-authors are given below. The award plaques, certificates and award checks have been sent to the co-authors by IEEE. This paper is an open access paper, freely available to all our readers. Congratulations to the team of co-authors David Chernin, John J. Petillo, Serguei Ovtchinnikov, Y. Y. Lau, Abhijit Jassem, Dongzheng Chen; Ryan Jacobs; Dane Morgan; and John Booske on this accomplishment.

Abstract: Analysis of temperature-limited flow, space-charge-limited flow, and the transition between them using a simple planar diode with a thermionic cathode, in which the cathode surface has spatially nonuniform emission properties, is presented. Our theoretical results, which are derived from a model based on solutions to the Vlasov and Poisson equations, compare well with the results of particle-in-cell simulations. We find that the location and the shape of the knee in the anode current versus temperature characteristic (Miram or "rollover" curve) are significantly affected by non-uniformities in the space-charge density in the A-K gap, but are relatively unaffected by the electron motion parallel to the electrode surfaces. In particular, emission from an actively emitting region is strongly affected by the forces (or lack thereof) exerted by the space-charge of the electrons emitted by their neighbors. Perhaps, most remarkably, we find that the limiting current reaching the anode is approximately given by the classical 1-D Child-Langmuir law, even if a significant fraction of the cathode surface is non-emitting.

David Chernin received a Ph.D. in applied mathematics from Harvard University, Cambridge, MA, USA in 1976. He is currently a Senior Staff Scientist with Leidos Inc., Reston, VA, USA. Since 1984, he has been with Leidos Inc., and its predecessor company SAIC, where he has conducted research on beam-wave interactions and other topics in the physics of particle accelerators and vacuum electron devices.

Y. Y. Lau (M'98–SM'06–F'07-LF'23) received a B.S., M.S., and Ph.D. in electrical engineering from the Massachusetts Institute of Technology, Cambridge, MA, USA, in 1968, 1970, and 1973, respectively.

He is currently Emeritus Professor with the Department of Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI, USA, where he has supervised or co-supervised 33 graduated Ph.D. students. He has worked on electron beams, coherent radiation sources, plasmas, and discharges.

Dr. Lau was elected Fellow of the American Physical Society (APS) in 1986. He received the 1999 IEEE Plasma Science and Applications Award and the 2017 IEEE John R. Pierce Award for Excellence in Vacuum Electronics. He served three terms as an Associate Editor for *Physics of Plasmas* from 1994 to 2002.

John J. Petillo (M'99–SM'12) received a B.S. in electrical engineering from Northeastern University, Boston, MA, USA, in 1980, and a Ph.D. in applied plasma physics from the Massachusetts Institute of Technology, Cambridge, MA, USA, in 1986. His dissertation was on equilibrium and stability analysis of the modified betatron accelerator.

He has been with Leidos Inc., Reston, VA, USA, formerly (Science Applications International Corporation/SAIC), since 1986, first in McLean, VA, USA, and currently in Billerica, MA, USA. Since joining Leidos/SAIC, he has been involved in the research and development of analysis software and analysis and advanced modeling and simulation of RF components, including vacuum electronics, emission physics, accelerator components, microwave devices, ion-beam lithography, and ion thrusters. He has been a Lecturer with the U.S. Particle Accelerator School on several occasions in the area of beam and EM-PIC field modeling. He is currently the Director of the Center for Electromagnetic Science, Leidos Innovation Center (LInC), Leidos Inc., and also the Research and Development Manager and an author of the MICHELLE, MASK, AVGUN, and ARGUS Codes.

Serguei Ovtchinnikov received a B.S. in physics and mathematics and an M.S. and Ph.D. in computer science (numerical analysis) from the University of Colorado at Boulder, Boulder, CO, USA, in 1995, 2001, and 2006, respectively. He is currently a Senior Staff Scientist at Leidos Inc., Billerica, MA, USA. His research interests focus on applications of High Performance Computing (HPC) to computational electromagnetics.

Dongzheng Chen received a B.S. in physics from Peking University, Beijing, China in 2016. He received an M.S. and Ph.D. in materials science and engineering and a M.S. in electrical engineering from the University of Wisconsin–Madison, Madison, WI, USA, in 2017, 2022, and 2022, respectively. His dissertation was on modeling nonuniform thermionic emission from heterogeneous cathodes..

Abhijit Jassem received a B.S. in nuclear engineering from Purdue University, West Lafayette, IN, USA, in 2016. He is currently pursuing a Ph.D. with the University of Michigan's Nuclear Engineering and Radiological Sciences

FUNCTIONAL COMMITTEES Continued on PAGE 12

2023 Transactions on Plasma Science Best Paper Award Co-Authors


David Chernin


Y. Y. Lau


John J. Petillo


Serguei Ovtchinnikov


Dongzheng Chen


Abhijit Jassem

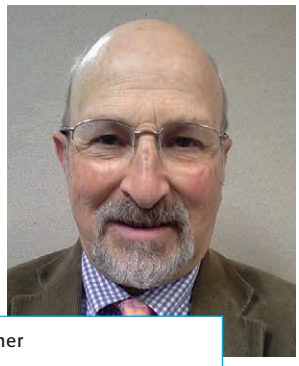
FUNCTIONAL COMMITTEES Cont. from PAGE 11

Program, University of Michigan, Ann Arbor, MI, USA. He is working with the Plasma, Pulsed Power, and Microwave Laboratory, University of Michigan, Ann Arbor, MI, USA, under the supervision of Prof. Y. Y. Lau.

Ryan Jacobs received a B.S. in Materials Science and Engineering from the University of Minnesota, Twin Cities in 2010, followed by an M.S. and Ph.D. in Materials Science from the University of Wisconsin-Madison in 2012 and 2015, respectively. He is currently a Research Scientist in the Department of Materials Science and Engineering at the University of Wisconsin- Madison. His work focuses on using atomistic modeling, data science and machine learning (materials informatics) methods to understand the structure and properties of materials at the atomic scale in order to discover and design novel material compounds for a range of technological applications. His main research application areas of interest comprise materials for energy technology, such as solid oxide and protonic fuel cells, batteries, and solar photovoltaics. Another main thrust of his research is the investigation of surface electronic and thermodynamic properties of metals and oxides used as electron emission cathodes.

Dane Morgan is the Harvey D. Spangler Professor of Engineering in the department of Materials Science and Engineering at the University of Wisconsin, Madison. His work combines thermostatistics, thermokinetics, and informatics analysis with atomic-scale calculations to understand and predict materials properties. Morgan is presently training or has graduated/trained over 70 graduate students and postdoctoral researchers and he leads the Informatics Skunkworks, which has helped engage over 400 undergraduates at the interface of data science and science and engineering. He has received multiple teaching and research awards and has published over 350 papers in materials science.

John H. Booske (S'82–M'85–SM'93–F'07) received his Ph.D. in nuclear engineering from the University of Michigan, Ann Arbor, MI, USA, in 1985. From 1985 to 1989, he was a Research Scientist with the University of Maryland, College Park, MD. In 1990, he joined the Department of Electrical and Computer Engineering faculty at the University of Wisconsin-Madison (UW), which he Chaired from 2009-2018. He transitioned to emeritus in 2023 and holds titles of both UW-Madison Vilas Distinguished Achievement and Keith and Jane Nosbusch Professors Emeritus.



Steven J. Gitomer
Editor-in-Chief

His recent research activities include vacuum electronics, high-power microwave sources and antennas, advanced vacuum cathodes, multipactor discharge science, electromagnetic metamaterials and biological applications of electric and electromagnetic fields. He is a Fellow of the IEEE (2007), the American Physical Society (2011), the Institute of Physics (2022), and the American Association for the Advancement of Science (2023). He received many teaching awards, including the UW Chancellor's Distinguished Teaching Award, the UW Teaching and Learning Innovation Award, the IEEE Educational Activities Board Major Educational Innovation Award (2014) and the ECE Department Heads Association (ECEDHA) Innovative Program Award (2019). He is a recipient of the IEEE Plasma Science and Applications Prize (2018) and the IEEE John R. Pierce Award for Excellence in Vacuum Electronics (2020).

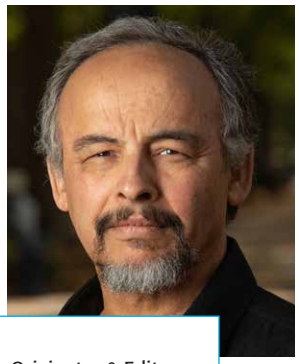
2023 Transactions on Plasma Science Best Paper Award Co-Authors

Ryan Jacobs

Dane Morgan

John H. Booske

Steve Gitomer, Editor-in-Chief of the IEEE Transactions on Plasma Science can be reached by E-mail at s.gitomer@ieee.org



Mounir Laroussi
Plasma Connection Originator & Editor

PLASMA CONNECTION

Plasma Connection is a publication sponsored by the IEEE Nuclear and Plasma Sciences Society (NPSS). It consists of educational briefs on plasma and its applications. These writeups are aimed at educating nonexperts on the basics of plasma, the importance of its technological applications, and the role it plays in our modern society. The articles are written by experts in a language that is accessible to nonexperts including high school students, science enthusiasts, policy makers, etc. Articles in *Plasma Connection* cover a variety of topics ranging from technological applications (e. g. semiconductors fabrication, additive manufacturing, nanomaterials and nanotechnology, space propulsion, etc.) to fusion energy production, to the heliosphere. All articles are free to access. The editor of *Plasma Connection* is Prof. Mounir Laroussi, Old Dominion University. To access *Plasma Connection*, click on the following link: https://ieee-npss.org/plasma-connections/

Mounir Laroussi, a fellow of IEEE and editor of ***Plasma Connection***, has been elevated to the rank of Fellow by the American Physical Society (APS). Only one half of one percent of the APS membership gets this honor. The APS Fellowship Program recognizes members who made advances in knowledge through original research and publication or made significant and innovative contributions in the application of physics to science and technology. Laroussi was nominated to receive this prestigious recognition by the APS Division of Plasma Physics (DPP) for his outstanding contributions to plasma physics with the following citation:

Citation: For pioneering work and seminal contributions to the physics and diagnostics of low temperature plasma jets, elucidating their ignition and propagation mechanisms, and for introducing their groundbreaking biomedical applications.

For more info contact Prof. M. Laroussi at: mlarouss@odu.edu

Search for Editor-in-Chief

IEEE Transactions on Plasma Science

Paul Dressendorfer
Publications Committee Chair

Dr. Steve Gitomer, the current Editor-in-Chief of the IEEE Transactions on Plasma Science (TPS), will be retiring from that position in 2024. As a result, the IEEE Nuclear and Plasma Sciences Society (NPSS) is undertaking a search for a new Editor-in Chief (EiC) of this journal, which is sponsored by this Society.

The scope of the IEEE Transactions on Plasma Science covers all aspects of the theory and application of plasma science. It includes the following areas: magnetohydrodynamics; thermionics and plasma diodes; basic plasma phenomena; gaseous electronics; microwave/plasma interaction; electron, ion, and plasma sources; space plasmas; intense electron and ion beams; laser-plasma interactions; plasma diagnostics; plasma chemistry and processing; solid-state plasmas; plasma heating; plasma for controlled fusion research; high-energy-density plasmas; industrial/commercial applications of plasma physics; plasma waves and instabilities; and high-power microwave and submillimeter wave generation. Additional subject areas include dusty plasmas, terahertz, electromagnetic launch science and technology, and fusion science and technology.

The Editor-in-Chief position is for a three-year term and is optionally renewable for additional terms. The term of appointment will begin in 2024 after a transition period between the current EiC and the selected applicant.

THE FUNCTION OF THE EDITOR-IN-CHIEF

Oversee the daily operations of TPS, including:

- Recruit and manage Senior Editors
- Assist in identifying and recruiting Guest Editors
- Serve as a resource to Senior Editors/Guest Editors on publication policies, etc.
- Assist as needed in appeals and dispute resolution
- Interact with the NPSS AdCom and prepare budget estimates and reports
- Interface with IEEE Publications
- Monitor the quality and timeliness of the publication
- Ensure that the TPS follows IEEE Policy and Procedures
- Execute policies as established by the NPSS Publications Committee
- Lead developments to enhance and strengthen the journal
- Requirements for applicants include:
  - Solid technical accomplishments and publication record in least one of the disciplines within the scope of TPS
  - Exemplary service as a Senior or Guest editor, editor, or in a management capacity for an archival journal
  - Ability and motivation to spend sufficient time to fulfill the duties of the EiC of TPS
  - Formal support from the institution for which the nominee works (waived if self-employed)
  - Demonstrated leadership, organizational and management skills
  - Suitable temperament - ability to work at all levels including with IEEE Publications staff, TPS Editorial Board, editors, reviewers, and authors
  - Commitment to integrity and ethical standards
  - Be a member of IEEE and NPSS
  - Travel requirements, panel of Editors Meeting and AdCom as required
  - Possess an eagerness to continue to move the journal forward to higher levels of accomplishment

REQUIREMENTS FOR APPLICATIONS

- Brief biography of applicant
- Complete CV and list of publications of applicant
- Brief description of how the applicant meets the requirements listed above and vision for the journal

Please submit applications in pdf format to Dr. Paul Dressendorfer (p.dressendorfer@ieee.org), Chair of the NPSS Publications Committee, no later than December 31st , 2023.

REPORT FROM IEEE SMART VILLAGE

STATUS OF ISV CURRENT ACTIVE NEW INITIATIVES

CHALLENGES

- Financial issues threaten progress, working on it.
- NPSS continues stellar support into 2024.
- PES support delayed in 2023 but strong in 2024.
- Just a few of the 15 Societies on our governing board responding with finances; participation donor-designated but often bypassing ISV procedures, goals.
- Challenges to reaffirm values that make ISV unique.
- Turnover of Governing Board reps is opportunity to educate in group(s), participate, champion approved initiatives in field.

ADVENT OF IEEE HUMANITARIAN TECHNOLOGIES BOARD (HTB)

- Approved by IEEE Board in Q1 2023
- Oversees existing HAC and SIGHT activities with increased budget of $3.6M
- ISV impact is being discussed but remains a separate entity.
- New Director of HAC contacts made and collaboration discussions beginning.
- Working toward a mutually beneficial relationship.

ISV REGIONAL WORKING GROUPS (WG) ACTIVITIES

To date five WGs have been appointed and assigned to take the lead in finding and filtering new proposals, visiting sites, offering support, progress monitoring, and helping raise funds for new initiatives.

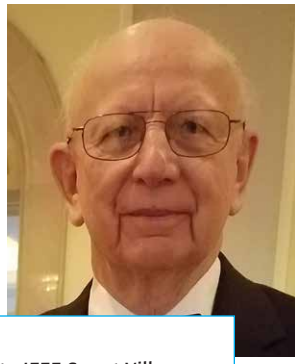
- South Asia Working Group (SAWG)
  - Under outstanding new management, very well organized, growing.
  - Leadership taking lead in revising Project Services Agreement (PSA), new applications.

LIAISON REPORTS Continued on PAGE 14

LIAISON REPORTS Cont. from PAGE 13

- Africa Working Group (AWG)
  - Members from 37 of 54 African countries, first ISV Student branch at U of Johannesburg.
- Latin America Working Group (LAWG)
  - The newest group to launch is focusing on supporting a major Amazonia initiative just getting organized. Has partners interested in Amazonia women's group with goal of developing a million women entrepreneurs. Partners include main group of women from Peru, support from University of Calgary, and Schneider Electric in Germany.
- North America Working Group (NAWG)
  - Focused on indigenous tribes in US snd Canada. Attended tribal government conferences in Anchorage and Sacramento, by invitation. Multiple groups collaborating on first Alaska solar-wind community solution, community-owned. Logistics are extremely difficult due to small, isolated communities but making good progress in helping define first initiative which will cost $1M and must be sustainable to be replicable to many villages. The Business Model is the main challenge, but good progress is reported. The model is a partnership among government, Tribes and Smart Village to help with funding and mentoring.
- China Working Group (CWG)
  - The China Working group started a year ago and in its first year held a very successful hybrid conference in China with university researchers, government officials and Smart Village leadership as speakers The result was remarkable in that it opened new doors and intense interest in the ISV approach to problems in rural China. For the first time we heard that energy poverty was impacting almost half the population.
  - This year, just completed, was held the Second China IEEE Smart Village Green Low Carbon Conference, Nov. 15th -16th, which was equally successful, also celebrating the ISV launching of the first two ISV-supported entrepreneurial startups in China.
  - This hybrid conference was organized around 50 invited specialists from China, the US and other countries involved in both university and government research on climate change impacts and solutions. The principal organizer was again Xiaofeng Zhang, Founder and Chair of the CWG. ISV President Rajan Kapur attended in person and gave a lead paper, while Ray Larsen gave a second session lead paper on ISV accomplishments and challenges. Valuable contacts for collaboration were made with several entities as well as Nobel Laureate Daniel Kammen of UC Berkeley who is heavily engaged with a USAID program to build thousands of microgrids in Africa and is eager to collaborate with ISV. He has agreed to address the upcoming ISV-Power Africa Conference in Morocco.

2023 ISV China Working Group Conference Attendees



Ray Larsen
IEEE NPSS Liaison to IEEE Smart Village

INITIATIVES CURRENTLY UNDERWAY

There are 19 approved initiatives currently underway, listed below:

- Africa Development Promise, women-led Cold Storage Coop, Rwanda — $44K
- Kumba Zed, women-led Gemstone Cutting, Zambia — $22K
- Nigeria Ltd, Solar Rice Mill — $140K
- Darway Coast Nigeria, Solar Microgrid Fleet — $200K
- Nile University Women-led Bagasse Packaging Plant, Egypt — $25K
- Global Telehealth Network, Uganda & Kenya, joint w/ Rotary — $70K
- Bright Hope Turkana Natoot Farm Upscale, Kenya w/ IEEE Foundation — $ 24.4K
- Honey Farming Hub, Tanzania — $28.1K
- Congo Agriculture Tech-Powered Bakery, IEEEF — $100K
- Congo Agriculture Solar-Powered Milling, IEEEF — $50K
- Dacheng Low Carbon Energy Technology Home Heating, China, IEEEF — $40K
- University of Chile Drought Mitigation, IEEE R9 — $25K
- Monte Adentro Assn Electrification to fight deforestation Argentina —$200K
- Computers LLC Molokai Solar Hawaii —$25K
- Global Himalayan Expedition Electrification Nagaland India — $32K
- Global Himalayan Expedition Batase Solar School Nepal —$35K
- SunMoksha Kudagaon Solar Smart Irrigation, India — $44K
- Sangrahakya Samiti: Empower youth, women, Aravalli India/(WHEELS) —$23.7K
- Tezpur University: Sustainable rural development, India— $59.7K

Total Underway — $1,313K

The above funds, some from multiple sources, are in hand. However, in addition to the active list, there are approximately 15 new applicants in the pipeline that will require approximately $1.5 million to cover. Appeals are being made to all Societies for year-end funding. ISV has no guaranteed funding and relies primarily on IEEE Foundation and Society funding while it continues to seek outside donors. Its goal has been to raise $2.5M per year to fund the equivalent of ten (10) new startups per year at $200K each, each pledged to bring benefits to at least a million people; this was the charter adopted in 2015 when we became renamed IEEE Smart Village and a Signature Program of IEEE Foundation.

Special Thanks to NPSS: You have been a pillar in helping ISV continue striving to fulfil its charter.

Respectively submitted,, Ray Larsen, ISV Senior Advisory Chair 2020-23, NPSS AdCom Liaison to SSIT & Humanitarian Activities, CSI/ISV Co-Founder & Chair 2009-2020, NPSS Past President 1989-90

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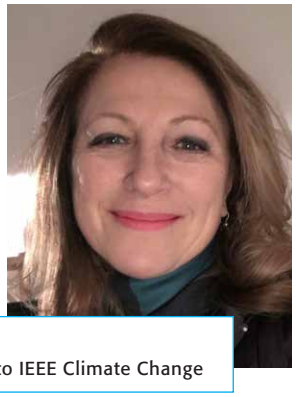
IEEE Initiative on Climate Change



Cinzia Da Via
IEEE NPSS Liaison to IEEE Climate Change

The world is engaged in the challenge of a rapid decarbonization of the economy to control global warming. The increasing and almost daily natural disasters directly related to the temperature increase both atmospherically and in the oceans, is pushing the entire world population to take urgent actions to mitigate, in any possible way, further and irreversible climate changes.

The IEEE Nuclear and Plasma Sciences Society is joining this effort, initiated by the IEEE Technical Activities Board, to explore its inherent assets and potentials in the energy and detection sectors to actively contribute both technically and educationally to the challenge. Representatives of the Technical Committees met to explore how to apply technical innovation and knowledge to better contribute to this goal.

The tropical category 5 Cyclone Freddy in February-March 2023 in the southern Indian Ocean

Decarbonization requires a portfolio of options in which renewable energies will have to provide the largest share of the generated energy, but with the evidence that they could not be used alone due to their intermittent nature. Other reliable low-carbon technologies such as nuclear fission and nuclear fusion, especially in their smaller modular forms, combined with the use of smart grids and engineered local energy storage will be needed to face the increase demand of energy. More than 50% of the generated energy is lost before reaching the end users, urging a more efficient use of available global fuel resources. In addition, mitigation of climate-related disasters, such as wildfires, floodings, droughts and the loss of water and food resources, calls for specific solutions. Early detection, simulation, and the use of engineered architecture and materials to build smart houses, should be used to provide solid means to face the extreme weather conditions towards the economy transition to efficient decarbonization. Finally, any debate on energy policies requires a basic understanding of the global facts of energy-related issues both at decisional and public level. It is our collective responsibility as STEM scientists to ensure that such a basic understanding permeates the societal and political debate.

The IEEE identified its strategic position and is encouraging global participation. We propose an initiative which aims at exploring the current activities within all NPSS Technical Committees, identifying present and future common goals and funding sources to concretely contribute to technical and educational solutions to Climate Change.

We would like to encourage everyone already working on subjects related to climate change, or simply interested in exploring ways to contribute to join this effort. This invitation is open to everyone but is specially addressed to the younger members of the NPSS community who might have ideas they would like to explore.

A web page has been created on: https://ieee-npss.org/climate-change-initiative/ to provide information to the community on activities, publications, and funding opportunities. We identified a few milestones for the next two years where we would like to collect interests from the community starting with the organization of an open workshop, open to all communities, and a school in 2024.

We have identified a few specific topics as a starting point for exchange:

- Radiation Sources and Instrumentation
- Nuclear/Plasma for Energy, Beyond Energy and for Energy Storage
- Nuclear for Medicine
- Nuclear Security and Safety
- Big Data and Simulation

We took advantage of the NPSS-cosponsored ANIMMA Conference in Lucca (Italy) in June 2023 to organize a special event on Nuclear Energy and Climate Change,

The organizers of the Nuclear Energy and Climate Change at the IEEE NPSS Technically Cosponsored ANIMMA Conference in Lucca, Italy, June 2023

where nuclear energy experts joined the conference participants to discuss the status and challenges Europe faces in the transition towards decarbonized energy. Emphasis was given to the role policy makers; technology innovations and education could play important roles in contributing to current and future developments.

The lively questions and answer section which followed the presentations continued well after the end of the dedicated time during a dinner sponsored by the conference and the European Physical Society.

Christophe Rossel, representing EPS, Switzerland, spoke of the energy future in Europe with the relevant technology and policies challenge.

Stephane Serrade, from CEA, France, presented the nuclear and renewable energies regarding carbon emission and climate change.

Michel Giot, from Louvain University, Belgium, discussed new perspectives in the field of nuclear instrumentation R&D reported at ANIMMA 2023.

Anyone interested in getting involved please contact dvc@ieee.org

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Contact Information for all AdCom members can be found on our web site: https://ieee-npss.org/

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CONTRIBUTED ARTICLES

Publicity releases for forthcoming meetings, items of interest from local chapters, committee reports, announcements, awards, or other materials requiring society publicity or relevant to NPSS should be submitted to the Newsletter Editor no later than January 6, 2024 for inclusion in the March 2024 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.