

# EXPLORE THE WORLD OF IEEE AND IEEE NUCLEAR AND PLASMA SCIENCES SOCIETY



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# Welcome to the IEEE Nuclear and Plasma Sciences Society

## Technical Innovation

As the world's largest technical organization, IEEE's overarching mission is to advance technology for the benefit of humanity by fostering technical innovation and collaboration among our technical communities. IEEE includes 46 technical societies and councils (NPSS is one of the societies) and also promotes global and local programs in education, diversity, equity & inclusion, entrepreneurship, industry engagement, leadership, among others.

## Professional Development and Leadership

We offer special programs to help students, young professionals and persons from underrepresented groups to build their professional networks and leadership opportunities. Participating in NPSS activities is a rewarding way to enrich your career and professional life, get to know other professionals, develop leadership skills and work with similarly-minded colleagues.



## Recognition and Opportunities

Members are recognized with awards for their outstanding accomplishments and may be elevated to senior member or fellow status. We also offer financial opportunities for development and implementation of "initiatives" aligned with NPSS's strategic goals.

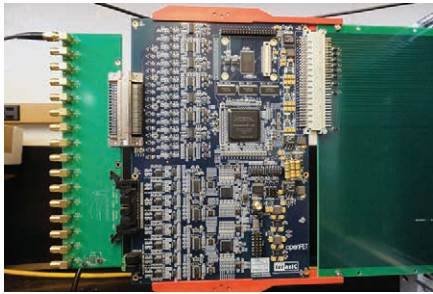
At NPSS, what starts as a professional collaboration or networking opportunity often results in life-long friendships. I hope you will get excited by the many opportunities offered by IEEE and NPSS and will visit [iee-npss.org/join](http://iee-npss.org/join) to join our extended family.

Sincerely,

A handwritten signature in black ink that reads "Vesna Sossi". The signature is written in a cursive, flowing style.

Vesna Sossi  
IEEE NPSS President 2023-4

# Computer Applications in Nuclear and Plasma Science (CANPS)

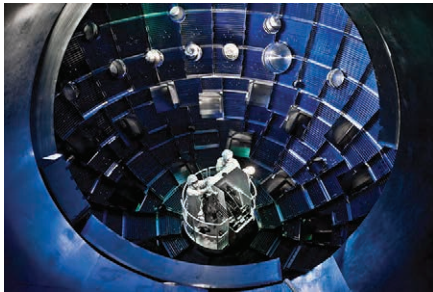


**Computer systems, HW and SW aspects of data acquisition/analysis/storage/control in all NPSS disciplines.**

The fields of interest of the Computer Applications in Nuclear and Plasma Science Technical Committee are real-time and off-line computer systems in all of the technical disciplines covered by the Nuclear and Plasma Sciences Society.

The Real Time Conference is an interdisciplinary conference focusing on the latest developments in real-time computing, data acquisition, transport and processing techniques in related fields including: nuclear and particle physics, nuclear fusion and plasma science, medical physics and imaging, astrophysics and space instrumentation as well as accelerators and control systems. It is typically held in even-numbered years. If conference paper authors choose, they may submit their paper to the special issue of *IEEE Transactions on Nuclear Science*.

# Fusion Technology Committee (FTC)

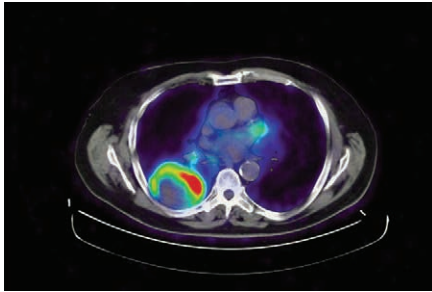


**Science and technology to harness the power of the stars.**

The Fusion Technology committee covers the technologies of both inertial and magnetic-confinement fusion experiments which are leading to a better understanding of the requirements for a fusion reactor and for an environmentally benign, virtually limitless source of energy for electric power and industrial uses.

This committee organizes the biennial Symposium on Fusion Engineering and also supports the IEEE USA Energy Policy committee in the preparation of energy-related white papers.

## Nuclear Medical and Imaging Sciences Committee (NMISC)

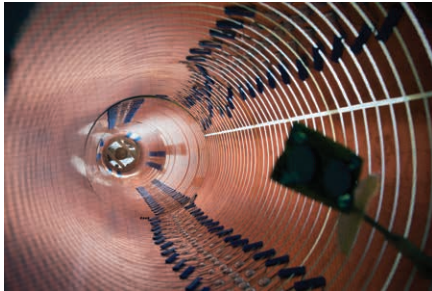


**We advance the science of nuclear medicine through technological innovation.**

NMISC has oversight of the Medical Imaging Conference (MIC) component of the annual IEEE NSS/MIC. This includes the development of short courses and other educational activities offered at the annual IEEE NSS/MIC. The sharing of technology developments between the nuclear and high-energy physics communities and the medical imaging community has led to very significant developments in medical imaging over the last thirty or so years.

The Council which includes members from both NMISC and RISC has the general charge of management and promotion of activities useful to the members of the nuclear medical imaging community as well as the radiation instrumentation community.

## Particle Accelerator Science and Technology Committee (PAST)



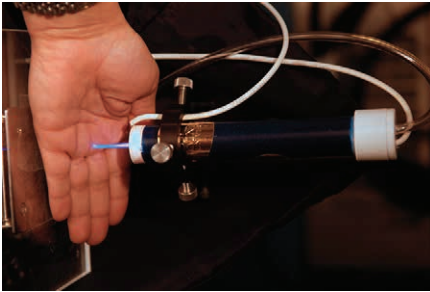
**Design, construct, and operate particle accelerators supporting research, industrial and societal needs.**

The PAST committee promotes accelerator science and technology for both fundamental research and accelerator applications.

PAST along with the American Physical Society Division of Physics of Beams (APS-DPB) co-sponsors the International Particle Accelerator Conference (IPAC) when held every third year in the Americas, and the North American Particle Accelerator Conference (NA-PAC) held between the IPAC conferences in the Americas.

PAST actively supports students and early career scientists, Teacher Days and Women In Science and Engineering (WISE) events at conferences, and awards the PAST Award and the PAST Doctoral Student Award.

## Plasma Science and Applications Committee (PSAC)



**Explores the science and technology associated with the collective interactions of electromagnetic fields and plasma.**

The Plasma Science and Applications Committee of the NPSS covers research and applications of the plasma state of matter. Since plasmas are conductive, responding to electric and magnetic fields, they may be used in numerous applications where such control is needed or when special sources of energy or radiation are required. The annual International Conference on Plasma Science (ICOPS) is organized by the committee.

## Pulsed Power Science and Technology Committee (PPST)

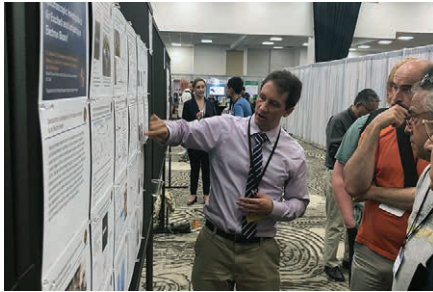


**We produce high peak power to achieve unique sources and study fundamental physics.**

The PPST strives for the advancement of pulsed power science, technology and its applications and is committed to support the pulsed-power community. The Committee promotes cooperation and exchange of technical information among all community members.

PPST organizes the IEEE International Pulsed Power Conference, and publishes the digest of technical papers for the conference and encourages submission of completed papers to the *IEEE Transactions on Plasma Science*.

## Radiation Effects Committee (REC)

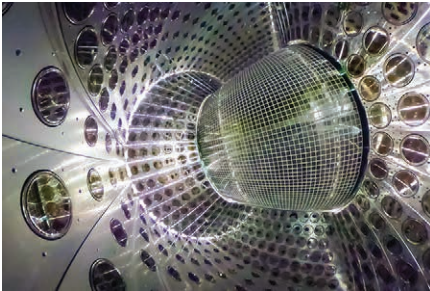


**We strive to advance and apply radiation effects research and disseminate the results.**

REC works to help advance the theory and application of radiation effects and its allied sciences, and to disseminate information pertaining to those fields. This includes effects on electronic and photonic materials, devices, circuits, sensors, and systems, as well as semiconductor processing technology and design techniques for producing radiation-tolerant (hardened) devices and integrated circuits.

The Committee organizes the Nuclear and Space Radiation Effects Conference (NSREC) annually and technically co-sponsors the European RADECS conference. Technical papers are published in *IEEE Transactions on Nuclear Science*. A one-day tutorial is part of each NSREC. The committee also coordinates development of radiation effects measurement definitions and standards within IEEE and other standards organizations.

## Radiation Instrumentation Technical Committee (RITC)



**Radiation Instrumentation A to Z**

The Radiation Instrumentation Technical Committee (RITC) promotes the development and application of radiation detectors, radiation instrumentation, nuclear electronics and measurement techniques for ionizing radiation and serves the professional interests of members of the community.

In conjunction with the Nuclear Medical and Imaging Sciences Committee (NMISC), we oversee the annual Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC) and are responsible for providing the long-range planning for the NSS/MIC.

Authors are encouraged to submit their papers to the *IEEE Transactions on Nuclear Science*.

# Our Journals — High-quality, Refereed Archival Publications



## *IEEE Transactions on Nuclear Science (TNS)*

TNS covers the theory, technology, and application of nuclear science and engineering. It is viewed as the primary source of technical information in many of the areas it covers, which include instrumentation for the detection and measurement of ionizing radiation; materials for the detection of ionizing radiation; radiation imaging not related to medicine; particle accelerators and their controls; effects of radiation on materials, components, and systems; reactor instrumentation and controls; measurement of radiation in space and terrestrial environments; and computing applications related to nuclear science.

## *IEEE Transactions on Plasma Science (TPS)*

TPS serves as a major vehicle for dissemination of technical information for the plasma-science community. It covers all aspects of the theory and application of plasma science, including 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 medicine; 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.

## *IEEE Transactions on Radiation and Plasmas in Medical Science (TRPMS)*

TRPMS is a unique publication related to the application of radiation and plasma sciences within the medical field. It includes radiation detectors for medical and biological applications; imaging system design/optimization/performance; therapy-related system design/optimization/performance; radiation-application-based image reconstruction, data analysis and image processing; medical radiation therapy applications; clinical/preclinical evaluation of imaging and therapy systems, plasma applications in medicine and biology; and simulations for imaging and therapy applications.

## *IEEE Transactions on Medical Imaging (TMI)*

TMI is one of the top-ranked journals in its field. It publishes contributions on imaging of body structure, morphology and function, including cell and molecular imaging and all forms of microscopy. Medical imaging achieved by modalities including ultrasound, X-rays, magnetic resonance, radionuclides, microwaves, and optical methods are covered.

## Instrumentation Schools



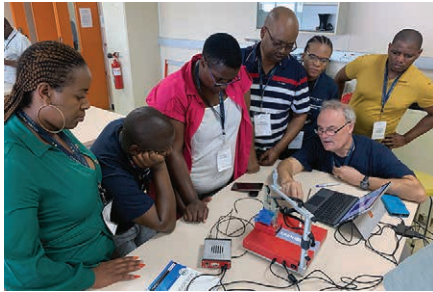
### Bringing technology to all corners of this planet.

The IEEE NPSS Instrumentation Schools, managed by the NPSS Educational Committee, bring modern lab courses to places mainly in Asia and Africa where students only have limited access to such material. Through intense 1-2 week courses students are trained using modern equipment and have close contact with leading experts in the field.

*"Thanks a lot Dear Professors. We were delighted. Thank you for all the tools you have given us. We want to use them to advance science and make you proud. Safe journey to you all."*

*"Thank you to all the Professors for this valuable work. It is a great honor for me to have spent the week of practical exercises with you dear Professor. I dare to believe that one day we will have the chance to meet again and that it will be at this moment for a higher level project. Thank you, teachers, and have a good trip to all of you."*

## The NPSS Fund at the IEEE Foundation



### Funding educational outreach; visit [ieee-npss.org](https://www.ieee-npss.org) to make your tax-deductible donation.

The NPSS Foundation Fund was established in 2021 to support NPSS projects for educational, outreach, diversity or humanitarian purposes, consistent with the IEEE's mission to foster technological innovation and excellence for the benefit of humanity by

- Expanding its support for NPSS Schools on instrumentation and medical imaging in developing regions
- Improving living conditions and access to education for people in remote parts of the world through humanitarian projects
- Promoting the participation of women and minorities in NPSS-related engineering and scientific professions
- Supporting grants and awards for students and early career researchers in NPSS-related fields



# IEEE and NPSS Local Activities and the Distinguished Lecturer Program



## Bringing technology and professional development to you.

The IEEE Members and Geographics Activities Board, organizes local activities through Regions and Sections around the world. These Sections are run by local volunteers with logistical and financial support from IEEE and are part of IEEE. Within universities, Student Branches can be organized with faculty help. Sections and Student Branches can also start and maintain NPSS Society Chapters and these can apply to NPSS for financial help and arrange visits by NPSS Distinguished Lecturers through the Distinguished Lecturer program organized and funded by NPSS. The program has funding to support the travel costs of the lecturer when needed.

Currently IEEE, with over 400,000 members world-wide, has 342 Sections in 10 Regions, 2562 Chapters, 3485 Student Branches with 2,877 Student Branch Chapters.

# Diversity and Inclusion



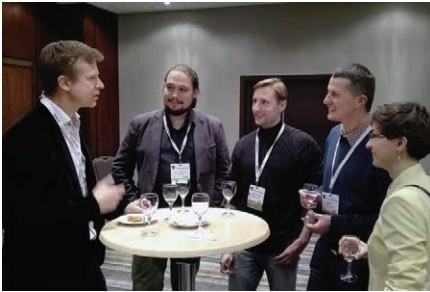
## Working for equality in our world.

Women in Engineering (WIE) is one of the largest international professional organizations dedicated to promoting women engineers and scientists and inspiring girls around the world to follow their academic interests to careers in science or engineering.

Among other activities, the NPSS sponsors events at our NPSS conferences to enhance networking in our technical communities, to provide opportunities for career mentoring, and to promote work/life balance.

When needed, NPSS has child-care grants available to help early-career members to attend our conferences.

## Young Professionals



### Helping the newer members of our community in their professional advancement.

NPSS actively promotes the activities of the IEEE Young Professionals (YP) program which is tailored to the needs of young people during the first 15 years of their professional career. Dedicated YP events are organized regularly at our NPSS-sponsored conferences. Evening functions or lunch events for young professionals have proven to foster improved direct contact between young professionals and colleagues at the peak of their careers. Here, being a (young) IEEE member at the beginning of your scientific or industrial career clearly makes a difference!

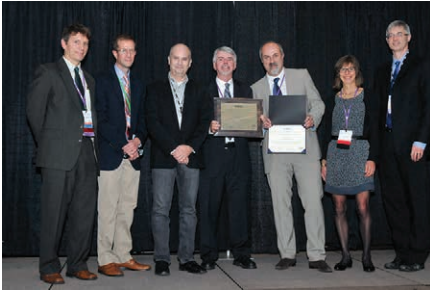
## Humanitarian Outreach



### Help to create self-sustainable regions — with IEEE volunteers, and funding from IEEE entities and the IEEE Foundation, and private donors.

IEEE Smart Village (ISV) is a multisociety/council, humanitarian program supported by generous donations through the IEEE Foundation, and from IEEE Societies and Councils. ISV's mission is to provide start-up funding to selected entrepreneurs with sustainable and scalable programs containing the three ISV pillars: electrification, education and entrepreneurship. The first pillar, electrification, is being broadened to support a greater range of interest to supporting IEEE societies and councils. A unique feature of the ISV is that it requires a detailed business plan for each program, including a plan to scale, and seeks to help meet many of the UN development goals to end poverty. IEEE SIGHT is a global network of groups consisting of IEEE members and volunteers who identify and address local problems by applying their technical skills and partnering with their local communities.

# Grants, Awards and Recognition



## Recognizing excellence among our members.

The NPSS has a very significant awards program for all stages of members' careers, from student paper to achievement and best paper awards to life-time-achievement awards.

Grants include family day-care grants for parents attending a conference and study grants, travel grants and grants to attend courses at conferences.

## Advantages of Membership

### Why Join IEEE and NPSS?

Are you a professional who wants to develop knowledge and awareness outside of your immediate job assignment? Do you wish to gain organizational and leadership skills in the profession as a whole? Do you value our conferences and publications and wish to contribute? You can do no better than joining and getting involved with your professional society. To learn more, visit [iee.org/membership/benefits](http://iee.org/membership/benefits) and follow us on [Facebook](https://www.facebook.com/npss).

### How to Get Involved?

NPSS is entirely volunteer managed and operated. Most became involved as an associate editor or helping run a conference. If interested, please visit [iee-npss.org/join](http://iee-npss.org/join) and/or contact an editor or conference chair directly.

### Membership Advantages

- Keep technically current through trusted publications in Xplore and conferences.
- Full access to *NPSS Newsletter* and award-winning *IEEE Spectrum Magazine*.
- Access to career resources and recognition.
- Professional networking.
- IEEE awards with international recognition.
- Discounts.
- Leadership mentoring and experience through volunteering.
- Life membership.
- Local technical and social activities through Sections.
- Funding for humanitarian projects is available.
- Support and be involved in Humanitarian Programs.
- Access to grants and student support.

## IEEE Technical Societies

IEEE Aerospace and Electronic Systems Society (AESS)  
IEEE Antennas and Propagation Society (APS)  
IEEE Broadcast Technology Society (BTS)  
IEEE Circuits and Systems Society (CAS)  
IEEE Communications Society (ComSoc)  
IEEE Computational Intelligence Society (CIS)  
IEEE Computer Society (CS)  
IEEE Consumer Technology Society (CTSoc)  
IEEE Control Systems Society (CSS)  
IEEE Dielectrics and Electrical Insulation Society (DEIS)  
IEEE Education Society (EdSoc)  
IEEE Electromagnetic Compatibility Society (EMC-S)  
IEEE Electron Devices Society (EDS)  
IEEE Electronics Packaging Society (EPS)  
IEEE Engineering in Medicine and Biology Society (EMBS)  
IEEE Geoscience and Remote Sensing Society (GRSS)  
IEEE Industrial Electronics Society (IES)  
IEEE Industry Applications Society (IAS)  
IEEE Information Theory Society (ITS)  
IEEE Instrumentation and Measurement Society (IMS)  
IEEE Intelligent Transportation Systems Society (ITSS)  
IEEE Magnetics Society  
IEEE Microwave Theory and Techniques Society (MTT-S)  
IEEE Nuclear and Plasma Sciences Society (NPSS)  
IEEE Oceanic Engineering Society (OES)

IEEE Photonics Society  
IEEE Power Electronics Society (PELS)  
IEEE Power & Energy Society (PES)  
IEEE Product Safety Engineering Society (PSES)  
IEEE Professional Communication Society (PCS)  
IEEE Reliability Society (RS)  
IEEE Robotics and Automation Society (RAS)  
IEEE Signal Processing Society (SPS)  
IEEE Society on Social Implications of Technology (SSIT)  
IEEE Solid-State Circuits Society (SSCS)  
IEEE Systems, Man, and Cybernetics Society (SMC)  
IEEE Technology and Engineering Management Society (TEMS)  
IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC)  
IEEE Vehicular Technology Society (VTS)

## IEEE Technical Councils

IEEE Biometrics Council  
IEEE Council on Electronic Design Automation  
IEEE Nanotechnology Council  
IEEE Council on RFID  
IEEE Sensors Council  
IEEE Council on Superconductivity  
IEEE Systems Council

## IEEE Technical Communities

IEEE Big Data  
IEEE Blockchain  
IEEE Brain  
IEEE Cloud Computing  
IEEE Cybersecurity  
IEEE Digital Reality  
IEEE Entrepreneurship Exchange Community  
IEEE Environmental Engineering  
IEEE Future Networks  
IEEE Global Earth Observing System of Systems  
IEEE Internet of Things  
IEEE Internet Initiative  
IEEE Life Sciences  
IEEE Rebooting Computing  
IEEE Smart Cities  
IEEE Smart Grid  
IEEE Software Defined Networks  
IEEE Sustainable ICT  
IEEE TechEthics  
IEEE Transportation Electrification

[ieee-npss.org/join](http://ieee-npss.org/join)