



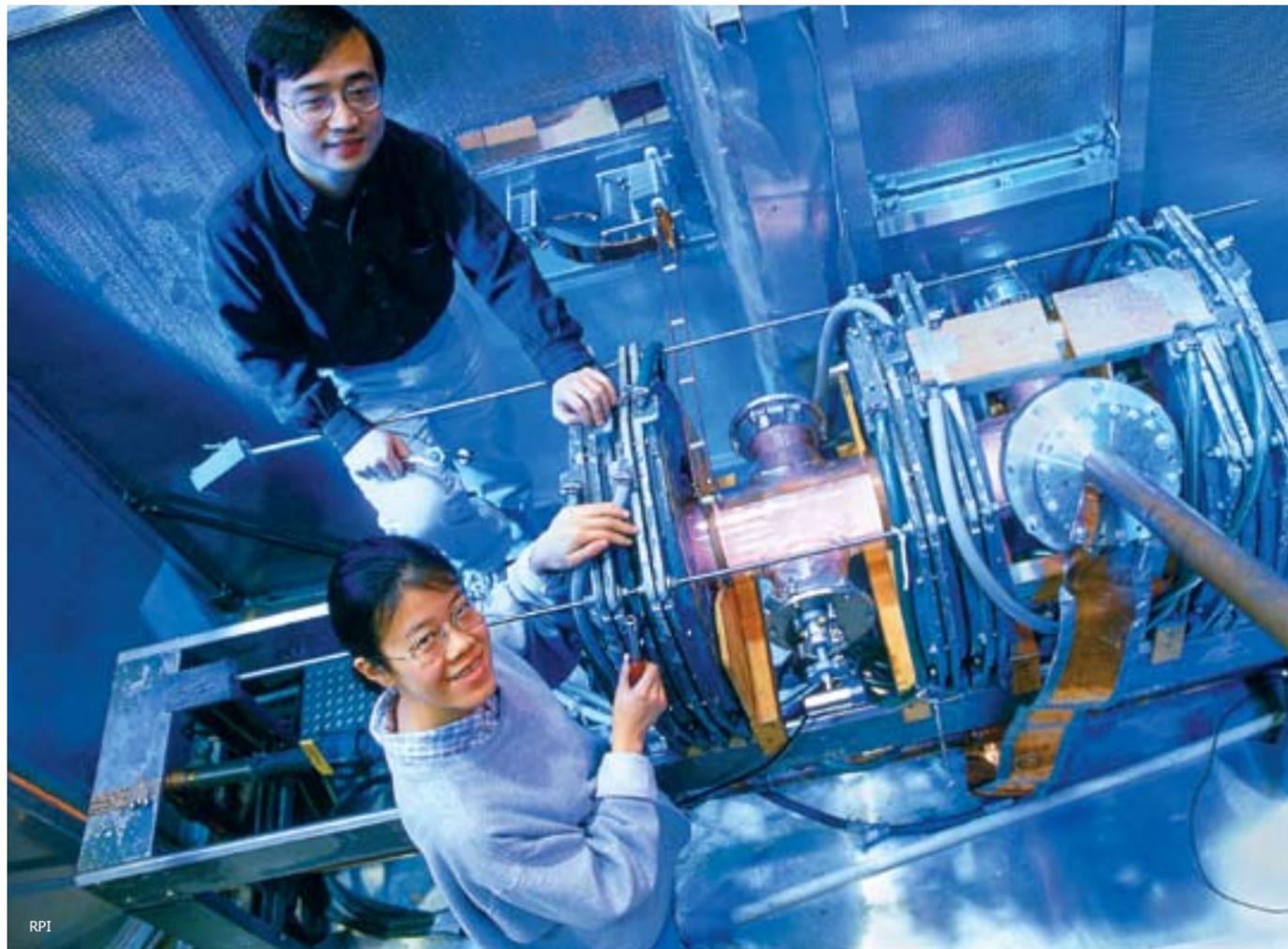
People

Working together utilizing science, expanding industry, furthering careers



Membership

IEEE and Nuclear and Plasma Science Society



RPI

Your best career investment. Keep your career on an upward track!

For the cost of less than a gallon of gas a week, you can gain access to the technical literature in your specialized area, keep your eye on new developments, hear about upcoming conferences, and network with fellow engineers, scientists, and managers from companies and laboratories. History shows that your career is enhanced by getting to know fellow engineers and scientists.

When looking for employment, it is who you know that gets you the interviews. Membership in the IEEE and the NPSS is both giving and receiving. You give your support to the activities of the IEEE in building the community in general and the community of your field in particular while you receive very tangible benefits of membership.

- Developing professional contacts
- Reduced conference fees at IEEE conferences
- Free on-line access to NPSS journals currently back to 1988
- Discounted access to journals co-sponsored by NPSS
- Access to publications through IEEE Xplore™ on-line
- Access to NPSS Conference Proceedings on-line
- NPSS Member-only newsletter
- IEEE Spectrum magazine
- IEEE financial products
- Join other IEEE Societies
- The ability to extend your management skills and contacts by helping organize NPSS sponsored activities

Letter from the President



The NPSS is a small but active society within the IEEE, dedicated to advancement of the theory and practice of engineering as it relates to the nuclear and plasma sciences. The NPSS is devoted to the publication and dissemination of original contributions to the theory, experiments, educational methods and applications of these fields and to the development of standards. The NPSS is also a place to greet old friends and meet new ones. Joining the NPSS opens your way to networking with other talented

and prominent NPSS professionals and provides the structure you need to enhance your career. We invite you to put your membership into practice by volunteering to serve on a technical committee, educational board or standards committee. The experience you gain puts you on a career path for success.

The NPSS is composed of eight technical interest groups whose spectrum involves all aspects of nuclear and plasma sciences. The interests and applications include nuclear science and medical imaging, radiation effects and instrumentation, particle accelerators, pulsed power technology, plasma generation and applications, including fusion technologies. The NPSS engages in many activities including sponsoring four annual and seven biennial major conferences and symposia. We engage in the development and maintenance of relevant standards and sponsor or co-sponsor four well respected peer reviewed journals.

The NPSS is truly international in scope. Europe, Asia, Australia and South America all have major research activities in our areas of interest. The NPSS strongly encourages active participation in our activities from our members, regardless of the location of their home institution. To promote this participation, the NPSS has a well established and very active Transnational Committee and numerous leadership positions are held by members who are not residents of North America. To serve our expanding community,

NPSS-sponsored conferences and meetings are increasingly held outside the continental United States. Success with conferences held in Europe has led NPSS to hold two of our 2007 conferences in Hawaii, a gateway to Asia.

NPSS sponsored conferences provide attendees with:

- Opportunity to present your work in a respected venue
- Discussions with the best people in the field
- Presentations of the latest technology in the field
- Commercial exhibits by suppliers of latest technology
- Tutorial courses on current areas of interest

NPSS sponsored publications provide members with:

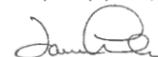
- Latest information
- Publication of your work in a peer reviewed format
- Rapid publication of your work in a Proceedings format

NPSS recognizes member accomplishment with:

- IEEE Senior Membership
- Elevation to the level of IEEE Fellow
- NPSS Conference awards
- NPSS Society awards

If you are not already an NPSS member, it is easily remedied. Current IEEE members should go to the IEEE-NPSS website (<http://www.ieee-npss.org/joinnpss.htm>) and follow the instructions for joining. Members of one of our more than 30 affiliated societies can join as an affiliate member for a relatively small cost by visiting the same website. As an affiliate you have all the privileges of membership, except the right to hold an elective office. A list of the affiliates is given on the back cover of the IEEE Transactions on Nuclear Science and the IEEE Transactions on Plasma Science. I hope you will consider joining us, and if you have questions about the society or membership, please feel free to contact me at jmlehr@sandia.gov.

Very truly yours,



Jane Lehr

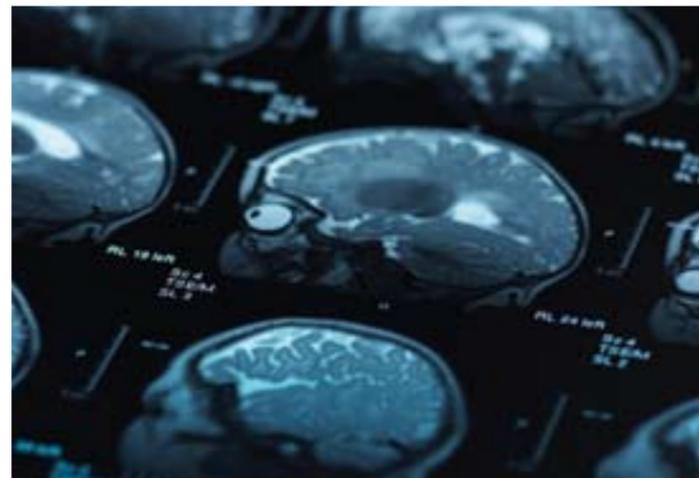
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“Early in my career, IEEE/NPSS connected me with the Particle Accelerator Conference, a meeting of colleagues working in the same and related fields, and to technical publications important to me. In addition, NPSS gives me journals in which to publish my work and leadership opportunities to help others in our field.” *Sandra Biedron*

Publications

NPSS sponsored publications provide members with the latest information, publication of your work in a peer reviewed format, and rapid publication of your work in a proceedings format.



IEEE Transactions on Nuclear Science

A very highly ranked refereed journal covering all aspects of the theory and application of nuclear science and engineering, including detection, measurement, instrumentation and control, data acquisition systems, particle accelerators, nuclear medicine, medical imaging sciences, and radiation effects on materials, components, and systems. Each year special issues associated with topical conferences are published and there are regular issues devoted to nuclear medicine and medical imaging. This journal publishes approximately 4,000 pages a year in six issues, and is also available on-line to subscribers. On-line access is free to NPSS members.

IEEE Transactions on Plasma Science

A very highly ranked refereed journal covering all aspects of the theory and applications of plasma science and engineering. Among the topics are fusion physics and fusion energy, microelectronic fabrication, surface treatment of polymers, pulsed-power science and applications, physics of microwave tubes and sources, and astrophysics. A number of special issues are published each year. In total, this journal publishes approximately 3,000 pages a year in six issues. This journal is also available on-line to subscribers. On-line access is free to NPSS members.

IEEE Transactions on Medical Imaging

An outstanding refereed journal (published in conjunction with three other IEEE societies) covering the theory, instrumentation, components, systems, and computing of medical imaging by a variety of modalities, such as ultrasound, X-rays, nuclear magnetic resonance, radionuclides, and microwaves.

This journal publishes about 1,200 pages a year in twelve issues. This journal is also available on-line to subscribers.

IEEE Sensors Journal

A highly ranked refereed journal (published in conjunction with 25 other IEEE societies) covering the science and applications of sensing phenomena, including theory, design, and application of devices for sensing and transducing physical, chemical, and biological phenomena. This journal is also available on-line to subscribers.

NPSS Newsletter

Sent three times a year to members only, this newsletter covers all aspects of society activities, including articles of more general interest and the editor emeritus's selected quips and quotes.

Conferences

The IEEE NPSS currently sponsors four major annual conferences, seven major biennial conferences and a growing number of specialized, topical conferences.



“NPSS conferences have been at the technical core of my career. The information I have gained and the contacts I have made are invaluable.” *Ron Schrimpf*

Nuclear and Space Radiation Effects Conference—NSREC

This annual meeting of engineers and scientists presents the latest techniques for enhancing the performance of microelectronic devices and circuits that are used in radiation environments. It includes a Radiation Effects Data Workshop and tutorial short course. Selected refereed papers from this conference are published in the December issue of the *IEEE Transactions on Nuclear Science*. The Radiation Effects Committee of the NPSS is responsible for organizing this conference and other activities to promote advancement of understanding in this field.

International Conference on Plasma Science—ICOPS

Originated in 1974, ICOPS, usually held in the US, has also been held several times in Canada, and outside North America. ICOPS covers all aspects of plasma science, from thermonuclear fusion, to plasma processing of computer chips and plasma light sources. Normally, short courses are a part of the program. Presenters submit papers on work presented at the conference to the *IEEE Transactions on Plasma Science*, and several special topical issues have appeared as a result of work presented at ICOPS.

The Plasma Science and Applications Committee of the NPSS is responsible for organizing this conference as well as minicourses on plasma science topics of current interest. The committee sponsors or co-sponsors other topical conferences in its field of interest and assists in the publication of the *Transactions on Plasma Science*.

Nuclear Science Symposium—NSS

This annual symposium, the longest established meeting sponsored by the society, is held in the fall and focuses on new developments in instrumentation and techniques for the detection and spectroscopy of ionizing radiation. Topics include radiation sources, sensors, measurement systems, and supporting electronics. The symposium is held jointly with the Medical Imaging Conference because of the overlap in many of the fundamental technologies discussed in both symposia. Several joint NSS and MIC sessions are organized. An exhibition of the latest products available from commercial suppliers is an important element of both the NSS and the MIC. Selected refereed papers from this conference are published in *IEEE Transactions on Nuclear Science*. The Radiation Instrumentation Committee of the NPSS is responsible for organizing the NSS and other activities in this field.

Medical Imaging Conference—MIC

This conference, held and organized jointly with NSS, is designed to provide a forum for fundamental theoretical and applied contributions to the physics, engineering, and mathematical aspects of nuclear medical and imaging sciences.

The conference provides the opportunity for an exchange of ideas and recent advances in medical imaging. Topics include original and innovative technical contributions to the general field of medical imaging, such as emission tomography instrumentation and techniques (PET and SPECT), new nuclear medicine and multimodality imaging geometries and systems, analytical and Monte Carlo modeling of medical imaging systems, applications of new detector materials and technologies to medical imaging, high-resolution and small animal imaging systems, multidimensional image reconstruction methods, dynamic data acquisition and processing methods, quantitative image processing methods, evaluations of image systems and reconstruction methods, intraoperative probes and small imaging systems, X-ray computed tomography and digital radiography, other imaging modalities such as nuclear magnetic resonance imaging and spectroscopy, ultrasound, synchrotron radiation, impedance, and biomagnetic/bioelectric imaging. Selected refereed papers from this conference are collected and published in focused issues of the *IEEE Transactions on Nuclear Science*. The Nuclear Medical and Imaging Sciences Committee of the NPSS is responsible for organizing this conference as well as acting as the NPSS liaison with three other IEEE societies in co-sponsoring the *IEEE Transactions on Medical Imaging*.

“NPSS meetings provide a venue for professional networking that is invaluable to professional growth and impacting my science.” *Richard T. Kouzes*

European Conference on Radiation and Its Effects on Components and Systems—RADECS (co-sponsor)

Since 1989, this has been the premier European conference covering radiation effects. Its subject areas overlap with those of the IEEE NPSS NSREC. Selected refereed papers from this conference are published in the *IEEE Transactions on Nuclear Science*. The NPSS has a liaison to the RADECS organizing committee.

Pulsed Power Conference—PPC

Begun in 1976, the PPC has become the principal forum for international dialogue in the areas of pulsed power science, new pulsed power systems, technology and emerging applications. The complete proceedings of the fifteen conferences are the most comprehensive record of the field for the last 30 years. Selected papers are published in a continuing series of biennial special issues on pulsed power in the *IEEE Transactions on Plasma Science*. The Pulsed Power Science and Technology Committee of the NPSS is responsible for organizing this conference.

Particle Accelerator Conference—PAC (sponsored jointly with APS since 1995)

The PAC was established in 1963 under the then IEEE Nuclear Science Society. Since 1995, at APS's request, PAC has operated as a joint IEEE-APS conference. It is the preeminent conference in charged particle accelerator science, technology and instrumentation, with attendance often in excess of 1500. Its location rotates among the east, center and west of the North American continent. The scientific program of the conference includes a large variety of subjects, such as commissioning of new facilities, challenges of future machines, industrial accelerators and their uses, applications of accelerators for special purposes (such as cancer therapy) and similar topics.

A significant portion of the conference deals with the science and technology of particle accelerators. Examples are accelerator theory such as beam stability, superconducting magnets, RF, particle sources and more. In addition, there are sessions devoted to particular type of accelerators, such as synchrotron light sources, linear colliders and advanced accelerators such as laser driven accelerators. These are but a few samples of this rich and complex discipline. Finally, the closing plenary session usually offers an inspirational look to the future of the major uses of accelerators, such as the future of High Energy Physics or Nuclear Physics, the impact of synchrotron radiation on sciences such as structural biology, and the physics potential of new classes of accelerators. The PAC Organizing Committee, working with the Particle Accelerator Science and Technology Committee of the NPSS and the APS Division of Particles and Beams, is responsible for the organization of this conference.

Real Time Conference—RTC

This conference is devoted to real time computing applications in nuclear and plasma science and related disciplines and applications, including real time requirements and technologies; distributed and multiple CPU systems; real time and interactive data analysis; control systems; software engineering, prototyping, simulation and industrial standards and trends. The conference also covers specific applications in nuclear and high-energy physics, plasma research, astrophysics, medicine, biology, molecular biology, neutron and X-ray scattering. Selected refereed papers from this conference are published in the *IEEE Transactions on Nuclear Science*. The Computer Applications in Nuclear and Plasma Science Committee of the NPSS is responsible for organizing this conference.

Symposium on Fusion Engineering—SFE

This conference covers engineering and scientific advances in both inertial and magnetic confinement fusion, with attendees from major fusion energy research centers worldwide. Plenary sessions typically report on the status of the program and results from the major experimental facilities while the technical sessions cover a wide range of technologies associated with fusion research including reactor

design, plasma facing components, plasma material interactions, plasma diagnostics, safety and environment, plasma control systems, magnets and electromagnetic systems, and more. The conference is usually accompanied by a commercial exhibit and short courses on fusion topical areas. The SFE conference proceedings are considered to be the premier source of technical data in this field. The meeting includes a commercial exhibit. The Fusion Technology Committee of the NPSS is responsible for organizing this conference.

International Conference on Accelerator and Large Experimental Physics Control Systems—ICALEPCS (technical co-sponsoring)

ICALEPCS covers the fields of control and operation of particle accelerators, detectors, telescopes, fusion devices, nuclear reactors, and other large experimental physics facilities. Both hardware and software aspects of control systems are addressed. The conference accommodates invited and contributed talks, poster sessions, seminars, round-table discussions, industrial presentations, tutorials, and post-conference workshops, and an industrial exhibition reflecting relevant technologies. The NPSS has a liaison to the ICALEPCS organizing committee.

International Conference on High-Power Particle Beams – BEAMS (sponsor when held in US and technical co-sponsoring when held outside the US)

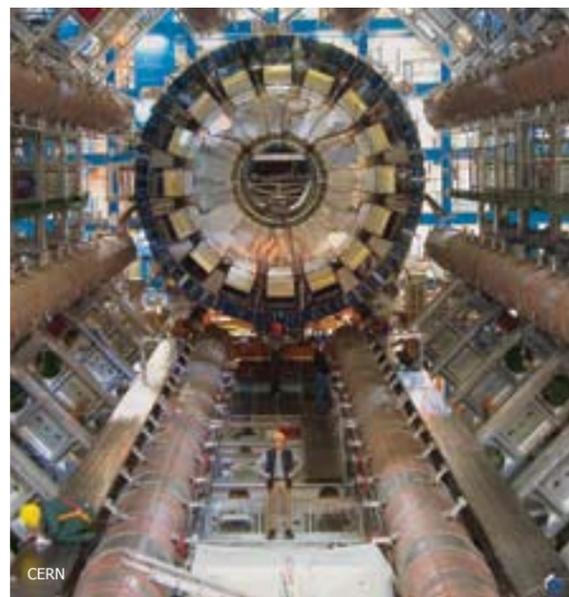
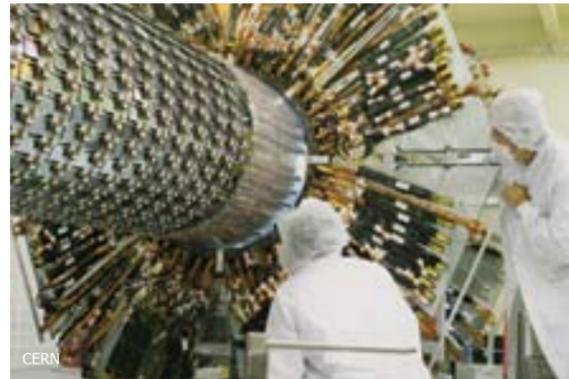
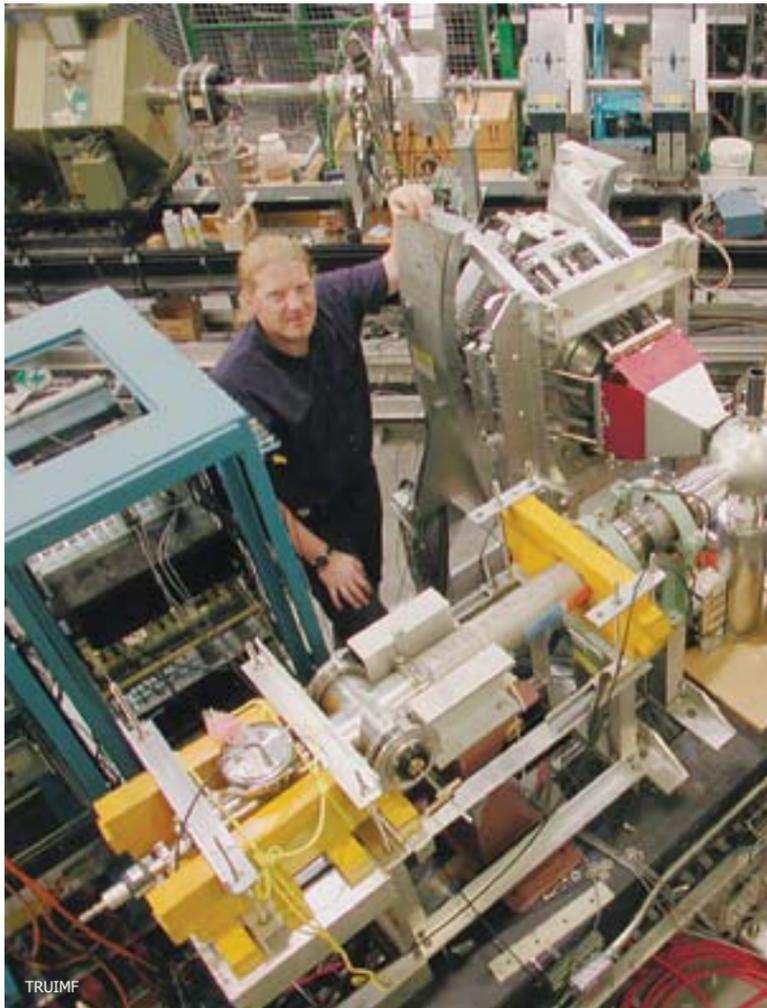
The BEAMS conference, begun in 1975, is a biennial conference that is now held in opposite years from the PPC. These conferences, which are held around the world with about 1/3 of its meetings in the US, are recognized internationally as the leading forum for communication in the science, technology and applications of high power particle beams. The program includes papers from all the major high power particle beam laboratories throughout the world, and all the papers are published in the conference proceedings. The NPSS has a liaison to the BEAMS organizing committee.

Biennial Conferences

NPSS sponsored conferences provide attendees with presentations of the latest technology in the field.



Local Activities and Awards



“For a decade, NPSS has emphasized its outreach to scientists and engineers from parts of the world that were isolated during the Cold War, improving international understanding through technology exchange.” *Bob Reinovsky*

NPSS Distinguished Lecturers Program

The NPSS maintains a roster of Distinguished Lecturers that allows chapters and other groups to hear some of the most prominent scientists in our fields speak. NPSS provides some support to make invitations to these Distinguished Lecturers a possibility.

NPSS Chapters

Chapters hold meetings for the benefit of local members. These meetings bring speakers to the local members providing an opportunity for technical discourse and networking. Chapters depend on volunteers to organize meetings with the support of NPSS and IEEE. All IEEE members are automatically members of their local Section under which Society Chapters are organized. Please visit our web site for a current list and contact information.

NPSS Awards and Recognition Program

Enhance your visibility and your career. The NPSS honors accomplishments in and contributions to the field through two categories of awards. Some awards are given by the society and others are given by the technical committees. In addition to society and technical committee awards, NPSS-sponsored conferences that have short courses solicit nominations for Paul Phelps Continuing Education Grants. These grants are intended to be used for NPSS-sponsored short courses. The NPSS award program is administered by the Awards Committee of the NPSS and the fellow evaluations are carried out by the Fellow Candidate Evaluation Committee of the NPSS. Detailed information about the NPSS awards and grants can be found in the IEEE/TAB Award Manual, which can be downloaded in PDF format through <http://www.ieee.org/tab>.

NPSS Society Awards

Computer Applications in Nuclear and Plasma Science Award* recognizes outstanding achievement in the application of computers to nuclear and plasma sciences.

Early Achievement Award recognizes outstanding contributions to our field made within the first ten years of an NPSS member's career.

Erwin Marx Award* recognizes outstanding technical achievements in pulsed power engineering, science, and technology over an extended period of time.

Fusion Technology Award* recognizes outstanding contributions to research and development in the fields of fusion technology.

Graduate Scholarship Award (up to four per year) recognizes contributions to the fields of nuclear and plasma sciences by a graduate student.

Ed Hoffman Medical Imaging Scientist Award* recognizes outstanding technical contributions to the field of nuclear medical imaging science.

Merit Award NPSS's most prestigious award, recognizes outstanding technical contributions to our field.

NPSS Student Paper Awards* each technical committee can give this award to recognize outstanding student poster or oral papers given at the technical committee's conference.

Outstanding Pulsed Power Student Award* recognizes outstanding contributions as a student in pulsed power engineering, science, or technology.

Particle Accelerator Science and Technology Award* recognizes outstanding contributions to the development of particle accelerator technology.

Paul Phelps Continuing Education Grant* promotes continuing education and membership in the society.

Peter Haas Award* recognizes individuals whose efforts over an extended period of time have greatly benefited the pulsed power field.

Plasma Science and Applications Award* recognizes outstanding contributions to the field of plasma science in research or new applications.

Radiation Effects Award* recognizes individuals who have had a sustained history of outstanding and innovative technical and/or leadership contributions to the radiation effects community.

Radiation Instrumentation Early Career Award* recognizes individuals, early in their career, who have made significant and/or innovative technical contributions to the fields of radiation instrumentation and measurement techniques for ionizing radiation.

Radiation Instrumentation Outstanding Achievement Award* recognizes outstanding contributions to the fields of radiation instrumentation and measurement techniques for ionizing radiation.

Richard F. Shea Distinguished Member Award recognizes an NPSS member's outstanding contributions through leadership and service to our field and our society.

Young Investigator Medical Imaging Science Award* recognizes significant and/or innovative contributions made when a graduate student or in the first six years of the nominee's career.

Select IEEE Press Books and Other Publications

High-Power Microwave Sources and Technologies, edited by Robert Barker and Ed Schamiloglu
The SSC Low Energy Booster, edited by H. Ulrich Wienands.

*Awards made by technical committees

Administration and Representatives

NPSS Administrative Committee

The Administrative Committee of the NPSS meets three times a year with all the NPSS committee chairmen, directly elected members, liaison representatives and officers in attendance. In addition to the technical committees, there are other committees for general society administration. One committee of special note is:

Transnational is a committee established to support the increased emphasis by IEEE in becoming a global organization. The membership represents all regions of the globe, outside of North America. Its members also represent the different technical activities in the NPSS, and they promote NPSS activities in their regions. The committee also evaluates standards of electrical and electronic engineering education and, as requested, evaluates curricula. The chairman is an elected member of AdCom. Further information on NPSS administration can be found on our web site.

NPSS Liaison Representatives

These representatives provide liaison with committees outside NPSS. IEEE-USA is the United States careers and public policy entity within IEEE. NPSS appoints liaison representatives to IEEE-USA's Energy, R&D, and New Technology Committees. These representatives alert IEEE-USA to NPSS issues and involve NPSS in the development of policy statements, which provide the basis for IEEE-USA testimony to congress and discussions with decision makers. Other liaison representatives not already mentioned are:

Coalition for Plasma Science is a non-IEEE group working to increase awareness and understanding of plasma science and its many applications and benefits for society. The Coalition's audience includes educators, K-12 teachers, students, the media, and government policy makers.

Our society can take pride in being one of the early and strongly supportive members of this important organization. For information about the Coalition, see: <http://www.plasmacoalition.org>.

Energy Policy Committee provides sound advice to US policy makers on national energy policy and development of energy sources and related technologies. Topics include diversity of energy supply and evaluation of options, and issues related to the generation, transmission, and utilization of electrical energy including electric utility restructuring and system reliability. This committee has been particularly active in providing position papers and white papers to the US government on energy issues.

Research and Development Policy provides sound technical and professional counsel to US policy makers on R&D legislation, regulation, and policy in the United States. Typical issues include appropriate funding levels and priorities for federal investment in R&D, permanent extension and expansion of the tax credit for research and experimentation, and optimal utilization of federal laboratories. Recent position papers have focused on legislation to double the current level of federally supported civilian research and development, technology transfer, technology commercialization and partnerships, and promoting engineering education reforms.

Sensors Council Many of the 37 societies within the IEEE share an interest in analog conditioning and digital signal processing for interfaces to the "real world," also known as sensors. In response to this mutual interest, in 2000 the IEEE created the Sensors Council, of which 26 IEEE societies including NPSS are members. The goal of this council is to serve the sensor community with new publications, conferences, and technical committees. Its fields of interest and activities revolve around the theory, design, and application of devices for sensing and transducing physical, chemical, and biological phenomena, with emphasis on the electronics and physics aspects of sensors and integrated

sensor actuators. The council has started the *IEEE Sensors Journal*, and holds an annual conference with sites selected world-wide.

Society for Social Implications of Technology (SSIT) explores developments of technology that pose various challenges, such as environmental impact, use of appropriate technologies in underdeveloped countries, sustainable development, engineering employment, and engineering ethics. The liaison's function is to bring issues in the engineering community at large to the attention of the society and to explore ways to sensitize NPSS membership through talks, articles, or conference special events. Most recent liaison activity has centered around issues in engineering ethics that are being debated within IEEE, such as the issue of lending various modes of support to members who find themselves in jeopardy as a result of following the IEEE Code of Ethics that every member agrees to observe.

Standards maintains a position on the IEEE Standards Board and promotes the development of standards within the society. NPSS standards groups are very active in radiation sensors and instrumentation, nuclear instrument modules, modular instrumentation systems for large-scale detectors and accelerator controls, and nuclear power radiation instrumentation and control room standards. Many of the instrument standards promulgated by IEEE NPSS and counterpart standards agencies, both domestic and international, have found their way into wider uses in industrial testing and process control.

Women in Engineering facilitates the development of programs and activities that promote the entry into and retention of women in engineering programs, promotes IEEE membership and retention of IEEE women members, and enhances the career advancement of women in the profession.

Contact Information

For further information, to join IEEE and NPSS or subscribe:

IEEE, visit www.ieee.org

NPSS, visit www.ieee-npss.org

IEEE Transactions on Nuclear Science, visit www.ieee.org/organizations/pubs/transactions/tns.htm

IEEE Transactions on Plasma Science, visit <http://www.ieeetps.org>

IEEE Transaction on Medical Imaging, visit <http://www.ieee-tmi.org>

IEEE Sensors Journal, visit www.ieee.org/sensors/sj

Nuclear and Space Radiation Effects Conference, visit www.nsrec.com

Nuclear Science Symposium and Medical Imaging Conference, visit www.nss-mic.org

Coalition for Plasma Science, visit www.plasmacoalition.org

Volunteering

To volunteer to help organize the many NPSS activities, contact the chairman of the conference you are most interested in or the NPSS President at jmlehr@sandia.gov