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IEEE NUCLEAR & PLASMA SCIENCES SOCIETY

Nuclear & Plasma Sciences SOCIETY NEWS

Number 3 • September 2005

CONFERENCES

PUERTO RICO 2005 NUCLEAR SCIENCE SYMPOSIUM AND MEDICAL IMAGING CONFERENCE

October 23 to 29, 2005
Wyndham El Conquistador Hotel and Resort
San Juan, Puerto Rico

INTRODUCTION

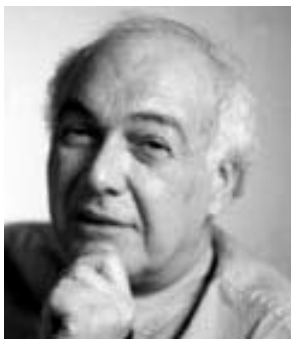
The IEEE Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC) will be held this year at the Wyndham El Conquistador resort in Las Croabas, Puerto Rico (just outside of San Juan). The meeting will begin on October 23 with short courses and end with the MIC conference dinner on the evening of October 29. The El Conquistador is a beautiful resort facility that allows all of the conference activities and attendee lodging to be accommodated in one location. Complete information about the conference can be found on the Conference web site at http://www.nss-mic.org/2005.

The call for papers produced more than 1100 high quality submissions. This response reflects tremendous efforts by the conference committee coupled with the success and additional publicity of the outstanding conference held last year in Rome, Italy – the second NSS/MIC conference held outside the continental United States. A major challenge for the committee was the selection of the papers for presentation. When the conference site was selected several years ago, the projection was that about 850 papers would be submitted. Unfortunately, the space limitations of our site can not accommodate all of the many fine papers we received for 2005. Thus, many deserving papers could not be accepted. Even with this most difficult complication, the Program Committee has put together an exceptional conference covering a broad area of interests to the community. In addition to independent NSS and MIC sessions, we will continue the tradition to provide increasingly important and popular joint sessions covering topics of common interests.

The Continuing Education Program this year consists of six short courses in nuclear science and medical imaging – some of which are held over a two-day period. These courses provide an essential

continued on page 3

Tom Lewellen
General Chair



Richard Lanza
NSS Program Chair

Simon Cherry
MIC Program Chair

Anthony Lavietes
Treasurer

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Publicity releases for forthcoming meetings, items of interest from local chapters, committee reports, announcements, awards, or other materials requiring society publicity or relevant to NPSS should be submitted to the Newsletter Editor by January 3, 2006.

CONTRIBUTED ARTICLES
News articles are actively solicited from contributing editors, particularly related to important R&D activities, significant industrial applications, early reports on technical breakthroughs, accomplishments at the big laboratories and similar subjects.

The various Transactions, of course, deal with formal treatment in depth of technical subjects. News articles should have an element of general interest or contribute to a general understanding of technical problems or fields of technical interest or could be assessments of important ongoing technical endeavors.

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

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opportunity for the expert and newcomer alike to be taught by practicing experts. In addition, special emphasis sessions and workshops are being organized to cover topics such as hadron therapy and the OpenGATE Monte Carlo simulation package.

The El Conquistador has extensive facilities and allows the collocation of both the exhibition and the poster sessions. The exhibition hall will be used to good advantage to allow exhibitors to show their products and to meet the community in a professional and productive atmosphere. Continuing in the success of previous years, exhibitors will also be taking part in a series of technical seminars and product presentations.

The use of computer facilities at the NSS/MIC meeting has increased steadily over the years. Taking full advantage of the number of attendees who bring laptop computers with WiFi capability, the conference this year will have several WiFi hot spots – including the entire commercial exhibit area and several seating areas near the poster displays.

Given the unique venue for this conference, the committee has decided to split the sessions each day – with sessions running from 8 am to noon and then starting again at 3:30 pm and running to 6:30 or 8 pm depending on the evening activities. This format was selected to allow attendees and their guests to enjoy the relaxed, informal atmosphere of the hotel facilities for discussions as well as relaxation between sessions.

An extra effort was put forth to provide an unusual and exciting Companion Program comprised of activities that take advantage of the unique location of the meeting. Participants will get the opportunity to experience a variety of exciting events including trips to Old San Juan, a tour of Ponce City and its art galleries, a full day exploring the Arecibo radio telescope and the Camuy Cave system, as well as cooking classes, rain forest tours, and even kayaking. In addition to these organized tours, the El Conquistador offers the full range of water sports (scuba diving, snorkeling, wind surfing, etc) as well as golf, riding, and relaxing on the beach or at one of the several pools. There are also programs for families and children at the hotel that our companion program chairs can help arrange.

The organizing committee has spared no effort to ensure that the event will be a stimulating and valuable experience for all participants. My colleagues and I are looking forward to meeting old friends and making many new ones at what promises to be an outstanding event. For those in any doubt, the working language of the conference is English.

Tom Lewellen, NSS-MIC General Chairman
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SCIENTIFIC PROGRAM

It is not possible in limited space to give full details of the program, so the reader is directed to the conference web site (http://www.nss-mic.org/2005) for complete details of all the topics and sessions. We have received over 100 outstanding paper contributions that will be presented in both an oral and poster format. The following are descriptions of the individual programs.

The Nuclear Science Symposium (NSS), to be held October 25-27 (NSS/MIC joint sessions on October 26), offers an outstanding opportunity for scientists and engineers in the field of nuclear science to meet with their colleagues and present new and original work on the latest developments in technology and instrumentation. Instruction on specialized topics will also be available through the Short Course program. Authors were invited to submit papers describing original, previously unpublished work in the topic areas listed below:

- Instrumentation for Homeland Security
- Nuclear Techniques for Homeland Security
- Analog and Digital Circuits
- Astrophysics and Space Instrumentation
- Data Acquisition and Analysis Systems
- Environmental Health and Safety Instrumentation
- Gaseous Detectors
- High Energy Physics Detectors
- Nuclear Measurements and Monitoring Techniques
- Photodetectors and Radiation Imaging
- Radiation Damage Effects
- Scintillation Detectors
- Solid State Tracking Detectors
- New Solid State Detectors
- Synchrotron Radiation Instrumentation
- Trigger and Front-End Systems
- Instrumentation for Medical and Biological Research
- Nuclear Physics Instrumentation
- Accelerators and Beam Line Instrumentation

They survived

Exploding star hunters make history.

BBC News Website

Not our beloved IEEE?

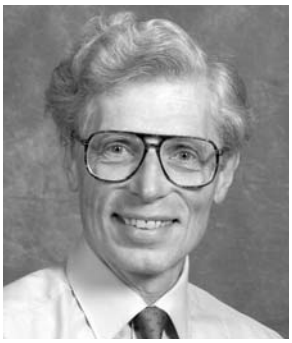
[The organization is] probably the only body where the lunatic fringe extends right to the centre.

Unnamed patent attorney quoted in New Scientist

Old refrain

One of these days is none of these days

Old English proverb



Steve Derenzo
NSS Short Course Chair

Jennifer Huber
MIC Short Course Chair

- Computing and Software for Experiments
- Neutron Imaging and Radiography

For information concerning the NSS Program, please contact:

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The Medical Imaging Conference (MIC), to be held October 27-29 (NSS/MIC joint sessions on October 26), provides a forum for fundamental theoretical and applied contributions to the physics, engineering, and mathematical aspects of medical imaging. This conference will provide the opportunity for an exchange of ideas and recent advances in medical imaging. Authors were invited to submit papers describing original and innovative technical contributions to the general field of medical imaging in the following areas:

- Emission Tomography Instrumentation (PET, SPECT)
- Multimodality Systems
- High Resolution and Animal Imaging Systems
- Image Reconstruction Methods
- Intraoperative Probes and Portable Imaging Systems
- Modeling of Medical Imaging Systems
- Evaluation of Imaging Systems and Reconstruction Methods
- Dynamic Data Acquisition and Reconstruction Methods
- Tracer Kinetic Modeling
- Quantitative Image Processing Methods
- Application of New Detector Materials and Technologies to Medical Imaging
- X-ray Imaging and X-ray Computed Tomography
- Synchrotron Radiation
- Other Imaging Modalities Utilizing Ionizing Radiation

For information concerning the MIC Program, please contact:

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CONTINUING EDUCATION PROGRAM

The Continuing Education Program this year consists of nine short courses covering topics of interest common to all conference programs. The following courses will be scheduled for the first two days of the conference to limit conflicts with the technical sessions. For more information, visit the conference web site (www.nss-mic.org/2005).

1. Radiation Detection and Measurement (2 days) - Glenn Knoll
2. Nuclear Science for Homeland Security (1 day) - Tony Peurrung
3. Integrated Circuit Front Ends for Nuclear Pulse Processing (1 day) - Paul O'Connor
4. Medical Imaging Fundamentals (1 day) - Todd Peterson
5. Molecular Imaging Basics (1/2 day) - Arion Chatziioannou
6. Statistical Methods for Image Reconstruction (1/2 day) - Jinyi Qi

For questions concerning the Short Course Program, please contact:

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WORKSHOPS

As of the time this article was submitted, workshops were still being organized. Full details of their programs may be found on the conference web site (http://www.nss-mic.org/2005)

OpenGATE Workshop
Thursday, October 27, 2005
1:00pm – 5:00pm
Chairman: Irene Buvat, PhD
Equipe "Imagerie in vivo de la perfusion et des échanges moléculaires"
http://www.guillemet.org/irene/equipe4

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PUBLICATIONS

The title and authors of accepted papers will appear in the Conference Program Handbook. Abstracts will be contained in USB memory sticks to be handed out to attendees when they pick up registration materials at the conference. Full paper texts will be published in the Conference Record, a nonrefereed journal of the conference proceedings, available only on CD-ROM. Prior to the mailing of the CD-ROM, the conference papers will be posted to the conference web site.

In addition, authors may submit their papers to the conference issue of the *IEEE Transactions on Nuclear Science* (TNS). This is a peer-reviewed journal with significant distribution within the nuclear science and medical imaging communities. All IEEE/NPSS member participants will receive a complimentary copy of the conference issue of the TNS. Alternatively, relevant papers may be independently submitted to the *IEEE Transactions on Medical Imaging* (TMI) - there is no special conference issue.

EXHIBITS PROGRAM

The NSS-MIC 2005 Exhibit Program will take place in a 10,000 sq. ft. area in the Grand Caribbean Ballroom. The space will be designed to ensure easy access to all the booths with the maximum of comfort and visibility for the exhibitor and visitor alike. The program of technical seminars and product presentations associated with the exhibition will be held in seminar rooms adjacent to the exhibits area.

In addition to the exhibits, all poster sessions and general coffee breaks will be held in the Grand Caribbean Ballroom and the adjacent foyer space to provide attendees with additional convenient access to the exhibits.

Up-to-date information on the Industrial Program including the list of exhibitors, their contact information and profiles, the exhibition floor plan, as well as details of the technical seminars and product presentations, is available on the conference web site (http://www.nss-mic.org/2005).

For all information concerning the exhibits program, please contact the Exhibition Coordinator.
Robert G. Finnegan
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Melville, NY 11747
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TOURS AND COMPANION PROGRAM

The focus of the Tours and Companion Program is to provide unusual experiences and activities not generally available to the public. The price of each day's activities includes a lunch or snacks with drinks, the services of a very knowledgeable tour guide, and all entrance fees. All tours depart from, and return to, the conference hotel. For those tours beginning in the morning, participants are invited to meet for a complimentary continental breakfast on the Caribbean Terrace.

The tours are subject to a minimum participation and the detailed itinerary of each tour may be changed without prior notice. For your comfort and safety, "sensible" footwear is advised – please visit the web site (http://www.nss-mic.org/2005) for complete details regarding restrictions and requirements.

Conference Arranged Tours:
Sunday:
Ponce City Excursion – All day including 2.5 hours each way on the bus Puerto Rico's second largest city is located on the southern coast.

"The Pearl of the South," Ponce was named after Loiza Ponce de Leon, great-grandson of Juan Ponce de Leon. Founded in 1692, Ponce is today Puerto Rico's principal shipping port on the Caribbean. The streets are lit with gas lamps and lined with neoclassical buildings, just as they were a century ago. Thanks to the restoration, Ponce now recalls the turn of the 20th century, when it rivaled San Juan as a wealthy business and cultural center. The tour will include a visit to the Ponce Art Museum. With more than 3,000 works of the European and American schools from the 14th to the 20th centuries, the museum's collection is known worldwide for its superb selection of Italian Baroque and British Pre-Raphaelite works as well as French Academy and 17th

Barbara Lewellen
Companion Program Chair

Carolyn Hoffman
Companion Program Cochair

Sine qua non

He would make an ideal judge. He has the kind of daring mind that glories in deciding an issue without understanding it.

Rex Stout

century Spanish (Golden Age) schools. The Museum also exhibits Puerto Rican and contemporary Latin American art.

Monday:

Old City Historical Walking Tour with Shopping – All day

This tour is for culture and history enthusiasts who like to get up close to the sites and examine the past first-hand.

Old San Juan is the oldest city in the U.S. There, you'll be able to stroll through Old Spanish cathedrals and forts such as San Cristobal, where you will see and learn how the Spanish built and defended their city. Afterwards, there will be an opportunity to do some shopping.

Tuesday:

Catamaran Snorkeling – 3 hours

The typical excursion entails a transfer to the marina where the guests will board a catamaran, to begin a leisurely sail to one of the offshore coral reefs. After anchoring near the reef, the captain and crew will inform the guests as to the safety rules and procedures and pass out the snorkeling equipment and safety gear for those who wish to snorkel. Guests typically have between one and two hours to snorkel, swim or relax at the beach while crew is preparing snacks. Depending on the number of individuals who sign up, we will offer both a morning and an afternoon trip.

Wednesday:

Combined Tour Camuy Caves and Aericibo:

The Camuy Caves System - The third largest underground river system in the world, which has taken millions of years to carve out the spectacular 300-acre network of subterranean chambers known as the Rio Camuy Caves. Today the underground cave system is part of a natural reserve that is recognized as one of the world's most impressive natural wonders. Developed and operated by the Puerto Rico Land Administration, the park provides visitors the opportunity to visit three of the system's most remarkable sinkholes and caves in safety and comfort. The Visitors will board trolleys for guided tours that carry them down the spiraling enplaned sinkhole, into one of the system's largest caves. After a walk through the 170-foot Cueva Clara, another shuttle takes them to a platform overlooking the 65-foot wide and 400-feet deep Tres Pueblos Sinkhole.

The Arecibo Observatory - The Arecibo Observatory is part of the National Astronomy and Ionosphere Center (NAIC), a national research center operated by Cornell University under a cooperative agreement with the National Science Foundation (NSF). As the site of the world's largest single-dish radio telescope, the Observatory is recognized as one of the most important national centers for research in radio astronomy, planetary radar and terrestrial aeronomy.

Option – (if enough attendees sign up in advance)

Puerto Rican Fusion Cuisine

Presented by the Conquistador Chefs –a 3 hour experience with some of the talented Chefs of El Conquistador. The Conquistador culinary team has won gold and silver medals in the Taste of the Culinary Competition 2003 in Jamaica, as well as gold, silver and bronze medals in the 2003 Florida Restaurant Show.

Bebidas – Guests will learn how to prepare Mojitos and Sangria

Appetizers – Guests will incorporate local ingredients such as plantain and shrimp into alcapurrias, a bite size appetizer.

Entree – Guests will be led into Isabela's kitchen for a lesson in preparing Sangria marinated pork loin stuffed with sweet mofongo, a Puerto Rican staple, with papaya salsa

Dessert – Back in El Faro, guests will learn about a Canasta de Frutas...a pastry basket dipped in chocolate and filled with mango mousse and garnished with fruit.

Thursday:

Nature Reserve Excursion with Eco Kayaking / Rio Grande.

Kayaking brings to the traveler the opportunity to explore remote areas inaccessible to most forms of marine transportation. The Mangrove river labyrinths that wind their way into salt lagoons sustain a wide variety of wild life, land and sea dwellers alike. Upon arrival at each site you will be given a brief safety and kayak lesson before teaming up in a tandem kayak. The sturdy kayaks and knowledgeable tour guides will assure a safe and fun experience for beginners and advanced sportsmen.

Friday:

Old San Juan and Bacardi Rum Distillery

Visitors to Casa Bacardi will be guided through

Who was he??

If he had not been a great fool, he would never have been a great writer.

Thomas Babington Macaulay

seven exquisitely designed and historically accurate rooms created to engage visitors as they experience the sight, smell and taste of Bacardi rum. Nosing booths invite visitors to take in the delicious smells of eight Bacardi rums. Learn the secrets of Bacardi rum making, including the secret strain of yeast isolated in 1862 and still used today. Demonstrations by professional bartenders will highlight the making of Bacardi classics such as the Cuba Libre, Mojito and Daiquiri from the Company's "Golden Cocktail Age," which occurred during prohibition when visitors flocked to Cuba to enjoy a then-American taboo.

After the tour of the Bacardi Facilities, we will depart for Old San Juan. Old San Juan is the oldest city in the U.S. There, you will be able to stroll through Old Spanish cathedrals and forts such as San Cristobal where you will see and learn how the Spanish built and defended their city.

Saturday:

El Yunque Rainforest Excursion

Named after the good Indian spirit, Yuquiyu, and shelter to the Carib Indians for 200 years, El Yunque is the only tropical rainforest in the U.S. National Forest System. Spanning 28,000 acres and reaching an elevation of 3,624 feet, the area receives over 100 billion gallons of rainfall each year. In El Yunque you will see many unique sights and hear many unique sounds unsurpassed by any of the natural wonders. Breathtaking views of feathery ferns, thick ropelike vines, white tuberoses, ginger, miniature orchids and some 240 different species of trees are in abundance throughout the area.

GENERAL CONFERENCE EVENTS

Monday, October 24 – Plenary session. The plenary session will be held in the Pablo Casals Ballroom

Tuesday, October 25 - Exhibition Reception
The NSS-MIC 2005 Exhibits Program will host a cocktail reception in the Grand Caribbean Ballroom beginning at 7:30 pm.

Tuesday, October 25 - NSS Luncheon
The NSS Luncheon will be held in the Pablo Casals Ballroom at 12:00 pm.

Wednesday, October 26 – Conference Reception
All participants are invited to a reception to be held near the El Yunque Garden at 7:30 pm.

Saturday, October 29 - MIC Banquet
The MIC banquet will take place on Saturday evening at the hotel or on its adjacent island.

REGISTRATION

This year, all registration formalities for participants are again being handled electronically through the conference web site at http://www.nss-mic.org/2005. Participants can register for the conference, Short Courses, Workshops, Tours and Companion Program, Technical Visits, as well as all social events and request hotel accommodations. Payment may be made in several convenient ways.

WYNDHAM EL CONQUISTADOR RESORT

Perched on top of cliffs overlooking the Atlantic Ocean and Caribbean Sea, this majestic paradise is the perfect Puerto Rico destination for outdoor recreation, championship golf and spa therapy. Each of the resort's four unique environments offers delightful touches and amenities of its own.

The Grand Hotel rises above it all with panoramic views, spacious bathrooms and walk-in closets. The ultraluxurious Las Casitas Village offers a Spanish-style atmosphere with private check-in, pool and personal butler. The villas of Las Olas Village are built into the side of a cliff and offer breathtaking ocean views, while the balconies of La Marina Village overlook the sea - just steps from the marina and quaint shops.

Outside, the hotel offers a host of activities. Enjoy the Arthur Hill championship golf course, wave running, horseback riding, windsurfing, scuba diving, fishing and swimming in one of six pools. Visit the adjacent private Palomino Island, explore the nearby El Yunque Rain Forest or relax in the Golden Door Spa and Fitness Center. Savor exquisite international cuisine and enjoy a sunset cruise.

Tom Lewellen, General Chair, can be reached at the University of Washington, P.O. Box 356004, Seattle, WA, USA 98195-6004; Phone: +1 205 598-6249; Fax: +1 205 598-4496; E-mail: tkldog@u.wash.edu.

Agreeing to disagree

I agree with everything in this if *not* is put in front of every statement.

John Maynard Keynes

UPDATE ON THE 21ST SYMPOSIUM ON FUSION ENGINEERING (SOFE05)

Nermin Uckan
General Chair

David Rasmussen
Program Chair

The 21st IEEE/NPSS Symposium on Fusion Engineering (SOFE05) will take place from September 26th to 29th, 2005 at the Hilton Hotel in downtown Knoxville, Tennessee. The Symposium is dedicated to the scientific, technological and engineering issues of fusion energy research. The ITER site decision has recently been announced and SOFE05 is the first international technical meeting to highlight this exciting future. A special Plenary session will include presentations from several of the ITER Participant Teams. This is a period of great activity in the worldwide fusion program. New devices include the EAST superconducting tokomak in China, the SST-1 superconducting tokomak in India; the KSTAR superconducting tokomak in South Korea; W7X in Germany; and NCSX, the National Ignition Facility, and upgrades to the Z-Accelerator in the USA. Multiple invited paper sessions will highlight the progress on these devices. Additional invited paper sessions will highlight recent events and findings from the major operating Inertial Fusion Energy (IFE) and MFE fusion devices and from fusion related technology research in materials, chamber technology, plasma technology, blanket technology, and power plant studies. Please visit the 21st SOFE web site at http://www.ornl.gov/sci/fed/sofe05/ for the detailed program and additional information about the Symposium.

David Rasmussen can be reached at Oak Ridge National Laboratory, P.O. Box 2008, MS6169, Oak Ridge, TN 37831-6169 USA; Phone: +1 865 574-1158; Fax: +1 865 576-7926; E-mail: Rasmussenda@ornl.gov.

Changing motives

Probably the most important scientific development of the 20th century is that economics replaced curiosity as the driving force behind research.

Karey Mullis (Nobel Laureate)

SPACE TECHNOLOGY AND APPLICATIONS INTERNATIONAL FORUM-STAIF

February 12 – 16, 2006

The Space Technology and Applications International Forum (STAIF-2006) will take place February 12-16, 2006, and will host conferences covering topics on human space exploration; nuclear power and propulsion; advanced energy conversion technologies; safety and environmental effects; planetary exploration missions; advanced concepts; spacecraft thermal control and management technologies; next generation space transportation; space exploration; and space colonization. Accepted papers are reviewed for publication in the archival Proceedings published by American Institute of Physics. www.unm.edu/~isnps/

James H. Crocker, General Chair, Lockheed Martin Space Systems

Donald D. Cobb, General Co Chair, Los Alamos National Laboratory

Mohamed S. El-Genk, Technical and Publication Chair, The University of New Mexico

Mary J. Bragg, Administrative Chair
The University of New Mexico's Institute for Space and Nuclear Power Studies
505-277-0446, isnps@unm.edu

Conference Site: Albuquerque Hilton Hotel

International Linear Collider Global Design Effort Launches On-line Newsletter

On August 18, 2005 at the Snowmass International Linear Collider Workshops, a new, weekly, on-line newsletter, *ILC NewsLine* was launched. This newsletter reports weekly, on Thursday, on work by Asian, European and American research teams. To subscribe, go to www.linearcollider.org. Keep up to date with progress on this exciting international program.

2006 IEEE NUCLEAR AND SPACE RADIATION EFFECTS CONFERENCE IS PLANNING FOR PONTE VEDRA BEACH, FLORIDA

July 17 – 21, 2006

The 2006 IEEE Nuclear and Space Radiation Effects Conference will be held July 17-21, 2006 in Ponte Vedra Beach, Florida, at the Sawgrass Marriott Resort and Spa. The conference features a Technical Program consisting of eight to ten sessions of contributed papers that describe the latest observations and research results in radiation effects, an up-to-date Short Course offered on July 17, a Radiation Effects Data Workshop, and an Industrial Exhibit. The Technical Program includes both oral and poster sessions.

The conference hotel is located at Ponte Vedra Beach, Florida, which is on the Atlantic coast between Jacksonville and St. Augustine. A complete technical and social program is being planned to maximize opportunities for information exchange and networking in the area of radiation effects on microelectronic and photonic devices, circuits, and systems. Supporters of the conference include the Defense Threat Reduction Agency, Sandia National Laboratories, Air Force Research Laboratory, the NASA Electronic Parts and Packaging Program, NASA Living With a Star Program, and the Jet Propulsion Laboratory.

TECHNICAL PROGRAM

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

We are soliciting papers describing significant new findings in the following or related areas:

Basic Mechanisms of Radiation Effects in Electronic Materials and Devices

- Ionizing Radiation Effects
- Materials and Device Effects
- Displacement Damage
- Single-Event Charge Collection Phenomena and Mechanisms
- Radiation Transport, Energy Deposition and Dosimetry
- Processing-Induced Radiation Effects

Radiation Effects on Electronic and Photonic Devices and Circuits

- MOS, Bipolar, and Advanced Technologies
- Isolation Technologies, such as SOI and SOS
- Optoelectronic and Optical Devices and Systems
- Methods for Hardened Design and Manufacturing
- Modeling of Devices, Circuits and Systems
- Particle Detectors and Associated Electronics for High-Energy Accelerators
- Cryogenic or High Temperature Effects
- Single-Event Effects
- Novel Device Structures, such as MEMs and Nanotechnologies

Space, Atmospheric and Terrestrial Radiation Effects

- Characterization and Modeling of Radiation Environments
- Space Weather Events and Effects
- Spacecraft Charging

Hardness Assurance Technology and Radiation Testing

- Testing Techniques, Guidelines and Hardness Assurance Methodology
- Radiation Exposure Facilities
- Dosimetry

Commercial Space Systems

New Developments of Interest to the Radiation Effects Community

RADIATION EFFECTS DATA WORKSHOP

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

PAPER SUBMITTAL

Information on the submission of summaries to

School daze

I thought it more blessed to teach than to be taught.

Randolph Churchill

Dawning thought

... but the trouble with an alarm clock is that what seems sensible when you set it seems absurd when it goes off.

Rex Stout

Lest we forget

War is nothing more than the continuation of politics by other means.

Karl Von Clausewitz

the 2006 NSREC for either the Technical Sessions or the Data Workshop can be found at www.nsrec.com. The deadline for submitting summaries is February 3, 2006.

SHORT COURSE

Attendees will have the opportunity to participate in a one-day Short Course on Monday, July 17. We are currently putting together a short course that focuses on modeling the space radiation environment and its effects on electronic devices and circuits. It will consist of tutorial presentations that begin with modeling the space radiation environment, and then moves to the simulation of basic interaction mechanisms that are relevant for the space environment. Next, modeling the charge transport and collection processes using technology computer-aided design tools will be presented followed by modeling circuit level single event effects radiation response. The course will be of interest both to radiation effects specialists and newcomers to the field alike.

INDUSTRIAL EXHIBIT

An Industrial Exhibit will be included as an integral part of the conference. The exhibit will be held on Tuesday and Wednesday. It will include exhibits from 35-40 exhibitors that represent companies or agencies involved in manufacturing electronic devices or systems for applications in space or nuclear environments, modeling and analysis of radiation effects at the device and system level, and radiation testing.

CONFERENCE COMMITTEE

General Chair
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301-286-8046

Technical Program
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Lockheed Martin
408-756-0120

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Finance
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REPORT ON THE 21ST BIENNIAL PARTICLE ACCELERATOR CONFERENCE, PAC05

The 2005 Particle Accelerator Conference (PAC05) took place on May 16-20, 2005, at the Knoxville Convention Center in Knoxville, Tennessee. This was the 21st occurrence of this biennial conference, which is the main event in the professional life of accelerator and beam engineers and scientists. The conference was jointly hosted by the Oak Ridge National Laboratory Spallation Neutron Source (SNS) - the largest accelerator construction project in the United States - and Thomas Jefferson National Accelerator Facility (JLab), Newport News, Virginia. The conference was sponsored by the

Institute of Electrical and Electronics Engineers under the Nuclear and Plasma Sciences Society (IEEE/NPSS) and the American Physical Society (APS) Division of Physics of Beams (APS/DPB). As usual, the conference covered new developments in all aspects of the science, technology, and use of particle accelerators. Unique to PAC05 was the special theme of "World Year of Physics," as declared by the United Nations (www.physics2005.org/) in honor of the 100th anniversary of Einstein's three discoveries: light quanta, Brownian motion, and the special theory of relativity. These discoveries had, and continue to have, a remarkable impact on science.

THE CONFERENCE PROPER

The conference and the exciting program attracted more than 1400 accelerator specialists to Knoxville during the week, making the event the second largest PAC ever. Geographically, 59% of the attendees were from the United States, 25% from Europe, 15% from Asia, and 1% from the Middle East, South America, and as far away as Australia. Almost 1400 (1359 precisely during the conference and 1388 now) papers were processed during the conference and will soon be published on the Joint Accelerator Conferences Web Site (www.JACoW.org/). The conference was also the occasion for honoring members of the accelerator community. The IEEE/NPSS Particle Accelerator Science and Technology Award was given to Ronald Davidson and Thomas Roser. The APS 2005 Wilson Prize was awarded to Keith R. Symon. The U.S. Particle Accelerator School prizes for Achievement in Accelerator Physics and Technology were given to Anton Piwinski and Wim Leemans and the APS/DPB 2005 Outstanding Doctoral Thesis Research in Beam Physics to Eduard Pozdeyev.

PAC05 AND THE WORLD YEAR OF PHYSICS

Einstein was ever present throughout the conference, beginning with the PAC05 web site (www.sns.gov/pac05/), which included an Einstein quotation on every page, and through several special activities during the week. Highlights included a Tuesday evening violin and piano concert by Jack Liebeck and Inon Barnatan, introduced by physics professor Brian Foster. On Wednesday afternoon, the U.S., Asian and European Particle Accelerator Conference series joined forces to propose a special session, "Einstein and the World Year of Physics," organized by Swapan Chattopadhyay (JLab). The session was chaired by Bill Madia (Battelle) and included four presentations relating present-day research to Einstein's legacy. Speakers were Michael Turner [National Science Foundation (NSF)], Makoto Kobayashi (KEK), Yoichiro Suzuki (University of Tokyo), and Carlo Rubbia (CERN).

To draw the public's attention to the World Year of Physics, an "Einstein in the City" festival was organized together with the City of Knoxville. The festival followed the "Einstein and the World Year of Physics" session and drew conference participants and several hundred additional people to the World's Fair Park, outside the convention center. Part of the festival was a science fair for local high school students; cash prizes between $200 and $5,000 were awarded to the projects judged to be the best by a select team of conference participants. A special panel of four physicists, moderated by Bill Madia, answered science-related questions from the public for about an hour. Questions included everything from "Why is science useful?" to "How many stars are in the universe?" to "What does an accelerator do?" Other activities included an appearance by "Einstein the Bird," a talking parrot from the local zoo, bluegrass music from a local band, as well as lots of good food and drink.

PAC05 AND THE SNS

While PAC05 ended officially on Friday afternoon, about 400 participants extended their stay by one more day to visit the SNS site. SNS is going into its last year before the first beam is scheduled to hit the mercury target and the first neutrons will be channeled to instruments. So far, beam has been commissioned to the end of the normal conducting linac, up to 157 MeV, and soon the superconducting linac will be turned on to boost the energy to 1.0 GeV. Later this year the compressor will be commissioned in preparation for user operation, to begin next summer. Tour participants will be among the last people to get a glimpse of what has been going on at the site over the last five years before much of the facility will be closed to visitors.

Drive carefully

It is the business of the future to be dangerous.

Alfred North Whitehead

Alas!

Nothing astonishes men so much as common sense and plain-dealing

Ralph Waldo Emerson

Theory versus practice

Though he [Mortimer Adler] teaches logic he knows better than to base his conduct upon it.

Katharine Graham

The price we pay

If men were angels, there would be no need for government.

James Madison

REPORT ON THE 2005 IEEE INTERNATIONAL CONFERENCE ON PLASMA SCIENCE (ICOPS 2005)

The 32nd IEEE International Conference on Plasma Science (ICOPS 2005) was held at the Portola Plaza Hotel in Monterey, California from Monday, 20 June through Thursday, 23 June. ICOPS 2005 was held the week following the biannual IEEE Pulsed Power Conference (PPC 2005), which was held Tuesday, 14 June through Friday, 17 June, also at the Portola Plaza. A minicourse held on the intervening weekend connected the two conferences.

ICOPS received a total of 490 abstracts (another 500 were received by PPC). The conference had about 510 attendees, with non-U.S. registrants accounting for 30% of the total. Thirty countries were represented at ICOPS. The number of non-U.S. participants could have been higher if it were not for new, more time-consuming visa application procedures for certain countries. About 23% of the registrants were students. The overall participation in ICOPS 2005 was high, about the same as ICOPS 2004 in Baltimore.

The technical program was excellent. The technical topics for ICOPS 2005 were grouped into seven broad technical areas, with each area headed by a Technical Area Coordinator (TAC), who also served as a member of the Technical Program Committee. The technical areas were:

1. Basic Processes in Fully and Partially Ionized Plasma
2. Microwave Generation and Microwave-Plasma Interactions
3. Charged Particle Beams and Sources
4. High Energy Density Plasmas and Their Interactions
5. Industrial, Commercial, and Medical Applications of Plasmas
6. Plasma Diagnostics
7. Pulsed Power and Other Plasma Applications

Across these technical areas, there were a total of 32 separate technical topics representative of the wide scope of scientific endeavor embraced within this meeting. Each topic had an individual Session Organizer (SO), responsible for organizing the technical sessions - selecting invited talks, determining oral and poster papers, ordering the sessions, and communicating with the other SOs. The full session list can be viewed at www.icops2005.org (click Technical Program). Sessions with more than 20 abstracts included: in Area 1, Computational Plasma Physics and Basic Processes; in Area 2, Codes and Modeling; in Area 3, Plasma, Ion, and Electron Sources; in Area 4, Radiation Physics (the highest-represented session with 57 abstracts) and Fusion; in Area 5, High-Pressure Plasma Processing, Low-Pressure Plasma Processing, and Medical, Biological, and Environmental Applications; and in Area 6, X-ray Diagnostics. The success of this meeting is primarily a result of the work by the TACs and the SOs; they are listed on the website. The technical program was highlighted by seven plenary talks covering a wide range of topics, and included the Plasma Science and Applications Committee Award presentation. They included:

- Ed Moses (Lawrence Livermore National Laboratory) – The National Ignition Facility – Status and Plans
- Todd Ditmire (University of Texas) – High Energy Density Physics with Terawatt- and Petawatt-Class Lasers
- Mike Cuneo (Sandia National Laboratories) – Double Z-Pinch Hohlraums: Symmetric ICF Capsule Implosions and Wire-Array Z-Pinch Source Physics
- Armelle Vardelle (University of Limoges) – Three-Dimensional Time-Dependent Model of DC Plasma Torches
- Robert Goldston (Princeton Plasma Physics Laboratory) – Advances in Magnetic Fusion Science and the ITER Project
- Jean-Louis Bol (Ion Beams Applications Inc,. Belgium) – State-of-the-Art Electron, Proton, and X-ray Generators for Medical and Industrial Applications
- Neville Luhmann, Jr. (University of California–Davis), PSAC Award presentation – Millimeter Waves Imaging and Visualization of Plasma Waves and Instabilities

A Special Issue of *IEEE Transactions on Plasma Science* will be published to document ICOPS 2005, in addition to the Conference Record - Abstracts book. The Special Issue is

devoted to Invited and Plenary talks from ICOPS 2005. Steve Gitomer of Los Alamos National Laboratory and the Editor of TPS, is overseeing the Special Issue.

The annual Plasma Science and Applications Committee Award was presented to Neville Luhmann, Jr. of the University of California at Davis.

Satellite meetings included the Workshop of Multi-Beam Laser Plasma Interactions and Related Physics organized by Robert Kirkwood (LLNL), an NRC Plasma Science Committee town hall meeting run by Mark Kushner (Iowa State University), a MAGIC Users' Group meeting chaired by Lars Ludeking and David Smithe of ATK Mission Research, and a DTRA group meeting run by Bob Commisso (NRL).

The ICOPS 2005 weekend minicourse, Physics of Z-Pinch Plasmas, was organized by Chris Deeney of Sandia National Laboratories. The course attendance totaled about 55 - an exceptional showing – and was found to be invigorating by all attendees.

The ICOPS offers a Student Travel Grant Program to encourage student participation. The Chair of the Student Travel Grant Committee (a PSAC/EXCOM function) for 2005 was John Luginsland of NumerEx, assisted by John Booske of the University of Wisconsin. Eleven students were offered travel support to attend ICOPS 2005, from four different countries.

To encourage membership in the IEEE, the ICOPS meetings offer free, half-year memberships to the IEEE, on-site at the conference. Vernon Price performed this customary service at the registration booth, although for the last time

There were several activities geared toward getting people together to interact. In addition to the welcoming reception on Sunday night and the traditional conference banquet on Tuesday night, a concert by Dromedary, a two-person eclectic string band, was held Monday night and a barbeque beach party was held Wednesday night.

ICOPS 2005 benefited enormously from the generous support of a number of organizations. Supporters for ICOPS 2005 included: the National Nuclear Security Administration, Air Force Office of Scientific Research, Defense Threat Reduction Agency, Los Alamos National Laboratory, Lawrence Livermore National Laboratory, Sandia National Laboratories, NumerEx, Sandia National Laboratories, Ktech Corp, Diversified Technologies Inc., Titan Pulses Sciences Division, Adelphi Technology, XTech and Prism Computational Sciences.

Sophie Chantrenne (Ktech Corp.) was the Conference Co-Chair and shouldered the majority of organizational work.

For additional information, see the web site at www.icops2005.org

Robert Cauble may be contacted at Lawrence Livermore National Laboratory, cauble@llnl.gov.

Ah, yes!

A gaffe occurs not when a politician lies, but when he tells the truth.

Michael Kinsley

REPORT ON THE 2005 NUCLEAR AND RADIATION SPACE EFFECTS CONFERENCE

Fred Sexton, 2005 Conference General Chairman, summarized some statistics from the 2005 conference. A total of 595 people attended the technical sessions, the short course, or both. In addition, we registered 63 people for the exhibits, for a grand total of 658 attendees. The technical sessions were very strong, with 145 papers presented during the 4 -day conference (51 orals, 62 posters, 32 data workshop) and four 90-minute presentations during the short course. International attendance (led by France with 26 and Japan with 10) was 84, an increase of 11 over 2004 attendance. U.S. attendance reached 511, the highest since the mid 1990s, with the largest numbers of attendees coming from California (131), New Mexico (56), Virginia (42), Maryland (32), Washington (30), and Tennessee (26).

Janet Barth, 2006 Conference General Chairman, announced that the Nuclear and Space Radiation Effects Conference will be held on July 17-21, 2006, at the Marriott Sawgrass Resort in Ponte Vedra Beach, Florida. The Technical Program Chairman will be Gary Lum from Lockheed-Martin. Robert Reed of Vanderbilt University's Institute for Space and Defense Electronics is organizing the tutorial Short Course. Once again, NSREC 2006 is planning a Poster Session (chaired by Hugh Barnaby of Arizona State University), a Radiation Effects Data Workshop (chaired by David Hiemstra of MD Robotics) and an Industrial Exhibit (chaired by Richard Elmhurst of Honeywell). Nick van Vonno of Intersil is handling local arrange-

Teresa Farris
Radiation Effects Publicity Chair

ments and assembling the social program, which will be highlighted by a social featuring foods from the various regions of Florida.

We continue to look for ways to encourage NPSS membership among the members of our community. As we have in recent years, we distributed a QuickTime video recording of the previous year's Short Course on CDROM (playable on your Mac or PC), and provided this CD to each NPSS member who attended. We encouraged our NPSS members to show this Short Course video to their non-NPSS colleagues. Tim Holman of Vanderbilt University leads this effort.

Minutes from the REC Open Meeting are available at www.nsrec.com. For the most current information on the Nuclear and Space Radiation Effects Conference, including information on paper submission, please visit this web site.

Jean Gasiot

PHELPS AWARD RECIPIENTS

Simone Gerardin

Aditya Karmarkar

JEAN GASIOT RECEIVES THE 2005 NSREC RADIATION EFFECTS AWARD

Professor Jean Gasiot from the Université Montpellier, France received the 2005 Radiation Effects Award at the IEEE Nuclear and Space Radiation Effects Conference in Seattle. The award was created to recognize individuals who have had a sustained history of outstanding and innovative technical and/or leadership contributions to the radiation effects community. Professor Gasiot's citation is "for technical contributions and leadership that have enhanced the understanding of radiation effects in semiconductor devices, for strong contributions to the European radiation effects community, and for promoting radiation effects education."

Professor Gasiot is a radiation physics specialist who currently works on issues related to reliability of electronic devices and systems in space and nuclear environments. He showed the first experimental evidence of the importance of fast thermoluminescent dosimetry using laser CO_2 heating, in both 1D and 2D dosimetry applications. He performed pioneering work on optically stimulated luminescence (OSL) and played a key role in the development of high performance materials and systems currently used in 2D dosimetry. Jean Gasiot has developed in Montpellier a group dedicated to the study of radiation effects on materials and devices, with a special emphasis on basic mechanisms, device modeling, and radiation hardening.

Jean Gasiot has been an invited researcher at Washington State University and with the U.S. Navy in Silver Spring, MD. He is the founder and the first President of the RADECS (Radiation and its Effects on Components & Systems) Association, and a member of various scientific associations. RADECS is the first European radiation effects conference.

PHELPS AWARD

On behalf of NPSS, we are proud to announce two recipients of the Paul Phelps Continuing Education Grant:

Simone Gerardin

Simone Gerardin received the Laurea degree (magna cum laude) in Electronics Engineering from the University of Padova in 2003, with a thesis about the flicker noise in MOSFETs with ultra-thin gate oxide. In 2004 he started a Ph.D. at the same university on the reliability and radiation hardness of deep-submicron bulk and SOI CMOS technologies, working, in particular, on the effects induced by heavy ions. He has authored or co-authored five papers accepted for presentation at international conferences on radiation effects in electronics (NSREC and RADECS) and three papers published in international journals. Simone was nominated by his professor, Dr. Alessandro Paccagnella.

Aditya Karmarkar

Aditya Karmarkar graduated from the University of Pune, India with a Metallurgy major in 1998. He received the University of Pune Gold Medal for the academic year 1997 – 1998 and joined the Interdisciplinary Program in Materials Science at Vanderbilt University in 1999. He completed his Master's degree in 2001, dealing with aging and long-term reliability of MOS capacitors. For his Ph.D. Aditya is studying the effects of proton radiation on GaN-based devices. He has authored or coauthored six papers, including several that were presented at NSREC. Aditya was nominated by his advisor, Dr. Ronald Schrimpf.

Teresa Farris, Radiation Effects Publicity Chairwoman, can be reached at +1 719 594-8035; E-mail: teresa.farris@aeroflex.com.

PRESIDENT'S REPORT

Bill Moses
NPSS President

Following the lead of my last Newsletter article (which talked about the value of volunteers), I'm going to focus this article on a single issue that is important at all levels of IEEE. This time I would like to talk about membership in IEEE and NPSS. I'm not going to dun you to become members—you are already IEEE and NPSS members or you wouldn't be getting this Newsletter! Instead, I want to talk about why people become members and what kind of benefits we can offer members.

Membership is generally considered to be a good thing. If an organization has a large number of members, that indicates that it is doing things that people consider to be important and is doing them well. IEEE takes a lot of pride in the fact that it is the world's largest professional organization. A large membership roster also indicates that we take care of our members—that we are giving them some benefit that they value. Therefore, there is presently a bit of concern because the number of members has held approximately steady over the last few years, while the number of people attending NPSS conferences and publishing in NPSS journals has grown.

Why do people join IEEE and NPSS? For some, it is to get a financial benefit. When I joined NPSS, I could subscribe to my favorite journal (in my case TNS) at a very low cost, and these tremendously valuable journals would be sitting on my bookshelf any time that I needed them. I didn't have to take the ten-minute walk over to the library to read up on the latest developments or to look up a paper. Today I rarely walk to the library to read or copy a journal—I download them at my desk. Since my institution has electronic subscriptions to most of the journals that I need, my personal access is really only of value when I am traveling or when there are the inevitable hiccups with our institutional subscription. In short, while NPSS still offers low cost publications to its members, it is a benefit that has lost a lot of its value.

The other main monetary benefit is reduced registration fees at conferences, but as my employer pays my registration fees, it doesn't really benefit me. There are some other monetary benefits of IEEE membership, such as low cost insurance and an email alias service, but for most people these are not compelling reasons to join the IEEE and NPSS.

Yet, I have remained a member—why? Like many people, the reason I stay a member of IEEE and NPSS is not financial. I think that most people are members of IEEE and NPSS for the same sort of reason that they are members of the Sierra Club, the PTA, or a church. They believe that the work that IEEE and NPSS perform is both important and done well, and they want to lend their support. They are members because there is a community that they identify with and want to be part of. They are members because they want to "give back" to an organization. For some, it is like making a donation to a charity.

I feel that these are good reasons for becoming a member. The IEEE and NPSS are doing valuable work. I shudder to think what my profession would be like if the IEEE / NPSS (and organizations like them) did not sponsor conferences and journals. Conferences and journals do not just happen—they take a tremendous amount of work and organization. But when talking to a prospective member it can be difficult to answer the question, "Why join NPSS?" A financial "deal" is something that can be explained (and understood) very quickly. The concepts of altruism, service, and community take much longer to explain, and in many cases are never understood.

Could the NPSS offer monetary benefits that would be valuable to members? We would certainly like to, but the NPSS AdCom has been discussing this question for several years now without yet finding a clearly viable answer. It is difficult to provide something that is a monetary deal—we can't offer to give members something that costs us more than the membership fee! We already provide the things that we produce (publications and conferences) to members "at cost," but the value

And it corrupts

If you don't have a philosophy, all you're left with is power.

Maurice Boyd

And vice versa??

I adore simple pleasures. They are the last refuge of the complex.

Oscar Wilde

of these items to individual members is decreasing for the reasons above. And because we are a service organization, many of the valuable things that we provide (such as the ability to present at conferences or publish in journals) are open to both members and nonmembers. By being altruistic and serving the entire profession (instead of just our members), we lose a lot of opportunities to treat our members specially.

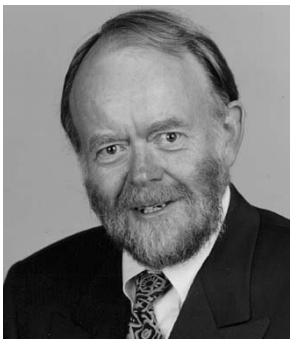
Maybe the way to encourage membership is to lower the membership fee to the point where it is insignificant (i.e., reduce the barrier to becoming a member)? Unfortunately, this would be fiscally irresponsible. The NPSS has no control over the IEEE membership fee and the NPSS membership fee is already too low (it does not quite cover the cost to maintain membership rolls, run the various elections, create and mail you this Newsletter, etc.), so cutting the total membership cost by a significant factor is out of the question. Some discussions have gone in a diametrically opposite direction and debated whether we need any members! Could we not serve the community by organizing conferences, publishing journals, etc., but not have any members? We serve the community (whether they are members or not), and many people who are not members still contribute to IEEE and NPSS by helping organize our conferences or reviewing articles for our journals. While this scenario does not feel right to me (by definition, an organization needs to have some minimum number of people who are a part of it), I have a hard time arguing against it on more than a gut level.

The IEEE and NPSS are wrestling with these and similar issues. As the previous paragraphs surely show, we have more questions and desires than we have answers. We are concerned about membership and serving our members. Our top priority is to keep the IEEE and NPSS communities strong and help them serve the profession. We would like to keep the cost for membership reasonable, especially for people early in their careers and others that have financial constraints, and we would like to show our members that we appreciate them by offering benefits that they value. Yet we cannot spin straw into gold, and so we cannot do all the things that we would like to do.

If you have any thoughts on these or any other issues, please feel free to contact me.

Bill Moses can be reached at the Lawrence Berkeley National Laboratory, MS 55-121, One Cyclotron Road, Berkeley, CA 94720-8099 USA; E-mail: wwmoses@lbl.gov.

Albe Dawson Larsen
IEEE NPSS Secretary



Peter Clout,
Secretary Pro Tem

SECRETARY'S REPORT

The following are Albe Larsen's excerpts from Peter Clout's Minutes of the June 12, 2005 meeting; therefore, any errors can be attributed to her misunderstanding or misinterpretation.

The NPSS Administrative Committee met in Monterey, California on Sunday, June 12, 2005 preceding the contiguous ICOPS and Pulsed Power meetings. It had been AdCom's hope to meet in the weekend between these two conferences, but the Directors' Series and TAB meetings caused alteration of this plan.

Once again, Ed Lampo has urged more timely closing of conference books. Conference treasurers and future treasurers note: bills can be paid directly by IEEE from the NPSS account, allowing you to close books on time. Otherwise we lose revenue through steadily increasing late fees.

On the bright side, Ed noted that we expect to increase reserves in 2006, and that IEEE reserves are now in a much healthier state – about 50% of annual projected revenue, which is comfortable.

The AV project is under way and NPSS is repaying IEEE over a three year period for the equipment purchases. NSS/MIC pay about $25k for the use of this equipment; other conferences pay less, resulting in savings for the conferences and a potential for registration fee reduction.

President Bill Moses commented in particular on the lateness of the 2004 NSS CD and other late publications. If a deadline with IEEE Publications is missed by even a day, the project falls to the end of the queue and is handled as soon as possible. Since the Pubs staff is stretched very thin, this can mean a long wait, so editors, keep to your schedules.

Stan Schriber noted that APS DPB is considering a registration differential for members and nonmembers. DPB membership has fallen to the point that it may lose its status as a Division of APS. In general, institutions pay for registration fees while individuals pay for society memberships, so there is often little incentive to be a member.

Patrick O'Shea has been appointed to his

department's chair at the University of Maryland and has found it necessary to resign from AdCom. A new member will be elected this year who will be able to run for a full term at the end of what was Pat's term.

We are hopeful that Stuart Long, Division IV Director, will attend the next meeting of AdCom.

Technical Committee reports include a report of a highly successful Real Time conference at the AlbaNova University, and PAC with 1400 attendees including 60 subsidized students. PAC has rejected a suggestion of APAC to meet every third year, with a 3-year rotation cycle for PAC, EPAC and APAC. An 8-month rotation may be considered. Plans are well in hand for the rest of this year's conferences – SFE and NSS/MIC.

In 2007 PAC, and the combined ICOPS/Pulsed Power/22nd SFE conferences will be held contiguously in Albuquerque. NSS/MIC will be held in Hawaii, and the 2008 NSS/MIC will be held in Germany. Site selection is in progress.

Uwe Bratzler, chair of the Transnational Committee asked that several issues be brought to TAB, including the ongoing problems for international scientists to get visas to enter the USA for conferences, and also dues rates for various countries.

Peter Winokur, Chair of the Fellows Evaluation Committee, noted that the committee reviewed 19 applications. As our society is so broad, this is a tough job. However, last year one-half of our candidates were accepted as new Fellows, whereas most societies have about one-third of their applicants elevated. Peter is considering some changes in the committee's methods of operation, and would like to see Fellows from all our Technical areas. It is none too early to start on 2006 nominations!

It was suggested that our Students and Careers Committee be terminated and that a liaison to EAB be appointed. No action was taken on this.

Charles Neumeyer, liaison to IEEE-USA's Energy Policy Committee was asked to revise the fusion energy white paper originally submitted when Ned Sauthoff was our liaison. Chas and Ned have submitted a draft revision to the committee.

Jane Lehr offered, as part of unfinished business, that non-IEEE authors of papers be sent a letter encouraging membership. She also attended an IEEE membership workshop that included a day of orientation and two days of retreat.

AdCom has had little enthusiasm for involvement with the IEEE XELL program that would record and sell copies of society conference short courses. It is expensive and there is no track record as yet.

AdCom Actions:

- The revised Constitution and Bylaws of the RITC were accepted pending approval by the NPSS membership. See these in this Newsletter.
- It was moved, seconded and passed that the ICOPS award be increased from $1500 to $2000, with the award funded by the International Conference on Plasma Science.
- It was moved, seconded and passed that the Transnational Committee be allocated $1000 for administrative expenses.
- It was moved, seconded and passed that the Space Technology and Applications Conference 2006 (STAIF-06) be held in cooperation with IEEE NPSS.

At the close of the meeting, Vernon Price was given hearty applause for his work in recruiting members at NPSS conferences and for keeping NPSS interest in membership active. Vern has asked to step down as chair of the Members and Chapters Functional Committee.

The next meeting of the NPSS AdCom will be on Sunday, October 23, 2005 at the Wyndham El Conquistador Hotel and Resort outside San Juan, Puerto Rico.

The first meeting of 2006 will be a combined retreat and meeting in New Brunswick, NJ and at IEEE headquarters in Piscataway, NJ on Friday and Saturday, February 24 and 25, 2006.

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Like computers

Nevertheless, when someone creates a system in which you cannot tell whether or not you are being fooled, you're being fooled.

P.J. O'Rourke

COMPUTER APPLICATIONS IN NUCLEAR AND PLASMA SCIENCE

Jean-Pierre Martin
Chair, CANPS

The main activity of the CANPS technical committee in the last few months was the venue of the 14th Real Time conference at the Alba Nova University Center in Stockholm. The conference, chaired by Richard Jacobsson, was very successful and was attended by 200 participants. Two short courses were offered: one about Gigabit Networking for Data Acquisition Systems, and the other on "System on Programmable Chip." There were close to 60 participants for each of the short courses.

The 2005 CANPS Outstanding Achievement Award was given to Ed Barsotti, from Fermilab. Ed has been committed during his career to data acquisition issues. He has contributed to the definition of the FASTBUS and VME standards, and has been very innovative in the design of the modern event-building architecture that we see now in most large experiments (scalable parallel open architecture data acquisition systems, switch networks, etc). We should remember also that at the very beginning (RT79, RT81 and RT83) the Real Time Conferences were organized by ad hoc committees. The association of the RT conferences with IEEE-NPSS was concluded only after the RT83 Berkeley conference. In 1984, the IEEE-NPSS CANPS technical committee was created to manage the future RT conferences, and Ed Barsotti was the first chair of this newly born CANPS committee.

The composition of the CANPS committee is now updated every two years, at the time of the RT conference. New rules about the duties of the committee members have been established. There were 20 CANPS members present at the Stockholm conference and the committee had a formal meeting at this occasion. The site for RT2007 conference was discussed. It will be organized in the U.S. and one open option is Fermilab, although no firm decision has been taken yet, as we are waiting for more information about the logistics and the budget. A small committee has been formed to investigate the possible organization of RT2009 in Asia.

The CANPS committee has announced at the conference a new service, called "OpenCard." The goal of this service is to provide a repository of information in the field of data acquisition systems, and provide a convenient way to share the developments made by the participants. The topics include hardware modules, ASICs, firmware, and software packages. The data base includes a short description of the items, and references to contact the authors. The servers are located at TRIUMF (Canada) and at the Paul Scherrer Institute (PSI) in Switzerland. It can be accessed on the WEB at www.open-card.org.

Jean-Pierre Martin, chair of the Computer Applications in Nuclear and Plasma Science Technical Committee, can be reached at the University of Montreal, RJA Lévesque Laboratory, Montreal (QC), Canada H3C 3J7. Phone +1 514 343 7340; e-mail: jpmartin@lps.umontreal.ca.

Phil Heitzenroeder
Chair, Fusion Technology

FUSION TECHNOLOGY

Cadarache, France Chosen as the ITER Site

On June 28, 2005, high-level governmental representatives of the six ITER participant parties meeting at the ITER Ministerial Meeting in Moscow, Russia jointly declared that Cadarache in southern France was chosen as the ITER site. The six participant parties include China, the European Union, Japan, South Korea, Russia, and the U.S. This important decision follows a period of intense negotiations between Japan, who proposed a site in Rokkashomura on Japan's North Island, and France, who proposed the Cadarache site. In statements following the signing at the Ministerial Meeting (www.sc.doe.gov.), U.S. Secretary of Energy Samuel W. Bodman noted "Plentiful, reliable energy is crucial to continued worldwide eco-

nomic development. Fusion technologies have the potential to transform how energy is produced and provide significant amounts of safe, environmentally-friendly power in the future. The ITER project will make this vision a reality." DOE Office of Science Director Raymond L. Orbach added "The United States supports the decision of the parties to the ITER negotiations to conduct the international fusion reaction experiment at Cadarache, France and the U.S. looks forward to getting ITER construction there underway as soon as practical. It boded well for ITER that there were two serviceable sites and six parties committed to this important fusion project. Now that the partners have agreed on a site, the ITER negotiations must also resolve an agreed-upon financial and procurement arrangement, together with a satisfactory management and oversight arrangement..."

ITER's mission is to demonstrate the scientific and technological feasibility of fusion energy. It is designed to produce 500 MW of power in pulses of about 400 s duration as its baseline with longer more advanced scenarios possible; first operation is expected in 2016. More information on ITER can be found at the ITER web site, www.ITER.org, and at the FIRE web site, FIRE.pppl.gov . Please refer to Fusion Technology articles in the September, '04 and June, '05 IEEE/NPSS Society News for more information on the proposed U.S. participation in ITER.

Phil Heitzenroeder, chair of the Fusion Technology Standing Committee, can be reached at the Princeton Plasma Physics Laboratory, P.O. Box 451, Princeton, NJ 08543-0451; Phone: +1 609 243 3043; E-mail: pheitzen@pppl.gov.

Advance!

When my back is to the wall, I turn around and fight.

Attributed to John Major

NUCLEAR MEDICAL AND IMAGING SCIENCES

Magnus Dahlbom, *Chair, Nuclear Medical and Imaging Sciences Technical Committee*

It is once again that busy time of year when most of us are getting ready for the annual Nuclear Sciences Symposium and Medical Imaging Conference. This is the premier meeting for Medical Imaging and Nuclear Science, and as in the past, I look forward to this meeting with great anticipation to learn the latest developments in the field. This year's meeting has been organized by Tom Lewellen, University of Washington, General Chair, Simon Cherry, UC Davis, MIC Chair, and Dick Lanza, MIT, NSS Chair. As in past years, the conference will offer a number of short courses that this year will include: Medical Imaging Fundamentals, Molecular Imaging Basics, and Statistical Methods for Image Reconstruction. The conferences will be held at the EI Conquistador Hotel and Resort outside San Juan, Puerto Rico. The meeting schedule has been organized into morning and late afternoon sessions, which will allow us to relax in the afternoons and enjoy the facilities the resort has to offer. There will also be extensive companion and family activities programs available to take advantage of the many attractions of Puerto Rico. Due the attractiveness of this venue, it is possible that the rooms at the resort may sell out. Hotels are available in San Juan. However, this is some distance away from the conference hotel. Therefore, make sure to make your reservation early to guarantee a room at the conference hotel.

In 2006, the conference will be held at the Town and Country Inn in San Diego, and the planning for this meeting is well on its way. The general chair in 2006 is Graham Smith, BNL and the MIC Program chair is John Aarsvold, Emory University. In 2007, the meeting will for the first time be held in Hawaii at the Hilton Hawaiian Village Resort in Honolulu. The general chair for this meeting is Ben Tsui, Johns Hopkins, and Eric Frey, Johns Hopkins will be the MIC program chair.

The conference site for the 2008 meeting has not been decided yet, but the meeting will once again be held in Europe. It is expected that the site selection committee will announce the selected city before the end of the NSS/MIC conference in San Juan.

One of the bodies within the IEEE responsible for medical imaging related activities is the Nuclear Medical and Imaging Sciences Technical Committee or NMISTC. All IEEE NPSS members who have expressed interest in being a part of NMISTC are NMISTC members. The NMISTC is managed by the Nuclear Medical and Imaging Sciences Council (NMISC), which has 15 members elected from the general membership of the NMISTC. Five people are elected to the NMISC each year, and each person is elected to a 3-year term. One of the main functions of the council is to oversee the MIC portion of the annual NSS/MIC. This

includes the selection of conference committees and chairs, the development of short courses and other educational activities at the conference. More information about the NMISTC and the NMISC can be found at: http://ewh.ieee.org/soc/nps/nmisc/.

By now, you should, or will shortly, receive the ballots for the members that have been nominated to serve on the council for the next 3 years, starting January 2006. Make sure that you vote on five of the nominees and return the ballot to IEEE.

At the end of this year, the following NMISC members' terms expire: John Aarsvold, Ron Huesman, Tom Lewellen, Chris Thompson, and Ben Tsui. I would like to thank them for their contributions and work on the council.

At the end of this year my tenure as the Chair of the NMISC is over. This has been a very enjoyable and rewarding experience for me, and I hope that I will be able to serve the members of the NMISTC at some time in the future. Starting in 2006, Tom Lewellen will serve as the chair of this committee for the next two years. With his many years of experience within the Medical Imaging Community and the IEEE, he will be an excellent chair of the NMISC, and I wish him good luck on his tenure.

Magnus Dahlbom, Ph.D., Chair, NMISC, can be reached at the David Geffen School of Medicine at UCLA, Department of Molecular and Medical Pharmacology, Los Angeles, CA 90095. Phone: +1 310-206-8273, FAX: +1 310-206-4899, e-mail: mdahlbom@mednet.ucla.edu.

ANNUAL REPORT FROM THE RADIATION EFFECTS COMMITTEE

Ron Schrimpf
Chair, Radiation Effects Technical Committee

The IEEE Radiation Effects Committee (REC) held its annual Open Meeting on July 14, 2005 at the Sheraton Seattle Hotel and Towers in Seattle, Washington, during the 2005 Nuclear and Space Radiation Effects Conference (NSREC). The meeting included reports from the chairmen of the 2004 through 2008 NSRECs.

An election was held during the Open Meeting for Junior Member-at-Large to the Radiation Effects Steering Group (RESG). The RESG welcomes Wayne Abare from Harris Corporation as its newly elected Junior Member-at-Large. Wayne joins Veronique Ferlet-Cavrois from the Commissariat à l'Energie Atomique (CEA) and Steve Clark from the Air Force Research Lab, who are serving as Member-at-Large and Senior Member-at-Large, respectively. Gary Lum of Lockheed Martin was honored for completing his three-year term in the Member-at-Large positions.

During the Open Meeting, Ron Schrimpf mentioned the General Chairs of the upcoming NSRECs. Janet Barth of NASA GSFC, Lloyd Massengill of Vanderbilt University, Paul Dodd of Sandia National Labs, and Mark Hopkins of the Aerospace Corporation are the General Chairs of the 2006-2009 NSRECs, respectively.

Dan Fleetwood of Vanderbilt University, 2004 Conference General Chairman, recognized each member of his conference committee with an award plaque. Dan and his team organized an outstanding conference in Atlanta, Georgia.

Ron Schrimpf, Chair of the Radiation Effects Technical Committee, can be reached at Vanderbilt University, 5635 Stevenson Center, Nashville, TN 37232; Phone: +1 615 343-6507; Fax: +1 615 343-9550; E-mail: ron.schrimpf@vanderbilt.edu

REPORT FROM THE RADIATION INSTRUMENTATION COMMITTEE

Craig Woody
Chair, Radiation Instrumentation Technical Committee

The main event of the RITC this fall will be the upcoming NSS/MIC meeting that will be held at the Wyndham El Conquistador Resort Hotel in San Juan, Puerto Rico from October 23-29, 2005. Tom Lewellen and his committee have been extremely busy preparing for what is shaping up to be another very exciting meeting at a wonderful location. More of the details can be found in Tom's report in this Newsletter, but I would encourage everyone to make their reservations early, as it looks like it will be another large meeting and space is very limited at the hotel.

The other main activity of the RISC during the past several months has been on the site

selection for the 2008 meeting. Three members of the Site Selection Committee (Craig Woody, Ron Keyser and Roger Gearhart) visited three potential sites at the end of May and early June of this year: Berlin, Hamburg and Dresden. They were also met there by the local German Site Selection Team, led by Uwe Bratzler, Ralf Engels, Klaus Mueller and Maxim Titov, who accompanied them to all three sites. In addition, two other members of the RISC Site Selection Committee (Patrick Le Dû and Erik Heijne) visited these sites prior to our visit. The Site Selection Committee made its report and recommended Dresden as the preferred location for the 2008 meeting, and that Uwe Bratzler be selected as the General Chairman. However, there was also considerable support for Hamburg by many of our European colleagues, and the feeling that DESY should play a significant role in hosting the meeting. The RISC and NMISC must now vote to approve the final selection of the site, and we will then proceed to negotiate the final contracts with the host institution, conference center and hotels. It is hoped that this process can be completed by early this fall.

Plans are also proceeding rapidly for the 2006 NSS/MIC/RTSD, which will be held from October 28 to November 4 at the Town and Country Resort and Convention Center in San Diego. All of the major positions on the Conference Committee have been filled and several Conference Committee members visited the Town and Country this past summer. An official conference announcement and Call for Papers will be distributed at the NSS/MIC meeting in Puerto Rico with more detailed information about dates, deadlines, paper submission and registration.

Another major development for the RITC during the past six months has been a revision to its Constitution. A Constitution Revision Subcommittee of the RISC began looking at the RITC Constitution in early January to determine what types of changes would be appropriate since its last major revision five years ago. One of the main areas of focus was in the way the RISC and NMISC participate in the planning and oversight of the NSS/MIC conference. With nearly equal numbers of NSS and MIC participants attending recent conferences, it was felt that the RISC and NMISC should have a more equal role in the oversight process, which includes the selection of the site, the General Chairman, and the NSS and MIC Program Chairs. As a result, a new Joint Oversight Committee, made up of members of both the RISC and NMISC, was set up to provide for the continuation and long term planning of the NSS/MIC conference. In addition, a Joint Executive Subcommittee was formed to appoint the Chairperson of the Joint Oversight Committee and to approve its membership. Other changes included increasing the term of the RISC chair from two to three years, eliminating the requirement to subscribe to the *Transactions on Nuclear Science* to be a member of the RITC, and various other smaller changes to make the Constitution more consistent with how it applies to the RITC today. The revised Constitution was approved by the AdCom at its meeting in June, and will officially go into effect unless there are objections by the RITC constituency as a whole. The entire revised Constitution is printed in this Newsletter, and anyone having any objections or comments should send them to me in writing by E-mail at woody@bnl.gov within 90 days of the receipt of this Newsletter.

This summer, we will also be having our annual election of new members to the RISC. We have seven candidates on the ballot this year for five slots with terms starting in January of 2006. The candidates are Ren-yuan Zhu, Gyuseong Cho, Maxim Titov, Kanai Shah, David Wehe, John Valentine, and Jerry Va'vra. David Wehe and John Valentine are no strangers to the RISC, both having served terms previously, while the others are also well known to many of us as frequent attendees of the NSS/MIC conference, and having served in various capacities for the NSS. You should have already received your ballot, so please be sure to cast your vote and return your ballot on time so that it can be counted in time for the election.

Lastly, we have had several superb nominees for the RITC Outstanding Achievement Award this year. The RISC Awards Subcommittee deliberated at great length to make its final decision on who will win this prestigious award this year, and the result should be announced shortly. The award will be given at the NSS luncheon in San Juan, so please be sure to be there to honor this outstanding individual for achievements and contributions to our Society.

Craig Woody can be reached at Brookhaven National Laboratory, Physics Department, Bldg 510C, Upton, NY 11973; Phone: +1 631 344-2752; Fax: +1 631 344-3253; E-mail: woody@bnl.gov.

RADIATION INSTRUMENTATION TECHNICAL COMMITTEE CONSTITUTION AND BYLAWS

CONSTITUTION

ARTICLE I - NAME AND OBJECTIVE

Section 1. The organization shall be known as the Radiation Instrumentation Technical Committee of the IEEE Nuclear and Plasma Sciences Society, referred to hereinafter as the RITC.

Section 2. The RITC shall strive for the advancement of the theory and application of Ionizing Radiation Instrumentation and of its allied arts and sciences and maintenance of high scientific and technical standards among its members.

Section 3. The RITC shall aid in promoting close cooperation and exchange of technical information among its members and to this end shall hold meetings for the presentation and discussion of original contributions, shall assist in the publication of the *Transactions on Nuclear Science*, provide for peer recognition of individuals, promote a positive image of ionizing radiation instrumentation science and applications, act as liaison between IEEE and other organizations in the area of radiation instrumentation, and otherwise provide for the needs of its members.

ARTICLE II - FIELD OF INTEREST

Section 1. The field of interest of the RITC is Ionizing Radiation Instrumentation and its applications. The emphasis is on the tools utilized, primarily the radiation sensors, associated electronics, and techniques for processing the measured data. It shall devote itself to publication or other dissemination of original contributions to the theory, design, experiments, educational methods and applications of Ionizing Radiation Instrumentation. Areas of technical interest will include, but not be limited to, the following:

Section 2.

a) Sensors for detecting and quantifying ionizing radiation, including X-ray, gamma ray, alpha particle, electron (beta particle), positron and neutron radiation as well as products of high energy interactions or nuclear interactions.
b) Sources of ionizing radiation.
c) Analog and digital electronics used in conjunction with the components in 1) and 2).
d) Instrumentation, systems, and applications incorporating the components in a), b), and c).

ARTICLE III - MEMBERSHIP

Section 1. Members of the RITC are those individuals who are members of the IEEE and NPSS having an interest in Ionizing Radiation Instrumentation.

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

ARTICLE IV - ADMINISTRATION

Section 1. The RITC shall be managed by a Radiation Instrumentation Steering Committee (RISC) consisting of elected members-at-large, plus certain ex-officio members as specified herein and in the Bylaws. The number of elected members-at-large shall be fifteen.

Section 2.

a) The terms of office of the elected members-at-large of RISC shall be three years. Members-at-large who have served a full term may not become a member-at-large again until at least one year after the expiration of their term. Election of members-at-large shall be held annually to fill vacancies for the coming year.
b) Any RISC member or subcommittee member may be removed from office if they fail to perform their duties in a manner that is consistent with the best interests of the IEEE, the NPSS, the RITC or the RISC. This prerogative of the RISC should be exercised only in extreme cases and only after due process and consideration as specified in the Bylaws.

Section 3.

a) The affairs of the RITC shall be managed by a Chairperson, as directed by the RISC and in accordance with his or her powers and duties as defined hereunder and in the Bylaws. In the event of the Chairperson's absence or incapacity, the Vice-Chairperson, or if the Vice-Chairperson is unavailable, then the Most Recent Past-Chairperson, shall perform the Chairperson's duties.
b) In the event that neither the Chairperson, the Vice-Chairperson, or the Most Recent Past Chairperson is able to take office as prescribed in the Bylaws, or if all are incapacitated or if all offices become vacant, the RISC shall promptly elect an Acting Chairperson from among the members-at-large to assume the duties of Chairperson until either a Chairperson, Vice-Chairperson, or Most Recent Past Chairperson takes office or resumes their duties.
c) The Chairperson shall appoint a Secretary for the RISC. The Secretary need not be chosen from among the elected members at large.

Section 4.

a) The Vice-Chairperson, who is Chairperson-elect, shall be elected by the voting members of the RISC from among the eligible members of the RISC. The term of office shall be three years as Vice-Chairperson, followed by three years

as Chairperson, followed by three years as the Most Recent Past Chairperson. The election of Vice-Chairperson shall be held as defined in the Bylaws.

b) All elected members-at-large presently serving their elected term shall be eligible for election as Chairperson or Vice-Chairperson.

c) No person can be elected as Vice-Chairperson for two consecutive terms. However, if the Vice-Chairperson is required to perform the duties of the Chairperson, the Vice-Chairperson is eligible to become Chairperson when his or her nominal term as Vice-Chairperson is complete.

d) After the terms as elected members-at-large of the Chairperson, Vice-Chairperson and Most Recent Past Chairperson expire, they shall be considered ex-officio members of the RISC with vote for the duration of their terms in their respective Chairperson positions.

Section 5. The Chairperson, with the concurrence of RISC, shall have the power to create and disband Subcommittees of the RISC, including, but not limited to, those listed in the Bylaws. The Chairperson shall be an ex-officio member with vote on all Subcommittees.

Section 6. The Chairperson, as soon as expedient after their election, shall appoint the Chairpersons of the Subcommittees provided for in the Bylaws.

ARTICLE V - NOMINATIONS AND ELECTION OF RISC MEMBERS-AT-LARGE

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

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

Section 3. If a member of the RISC does not complete their term and the term has more than one year remaining, the vacancy shall be filled at the next election for the unexpired portion of the term.

ARTICLE VI - MEETINGS

Section 1. The RITC may hold meetings, conferences, symposia or conventions and publish associated proceedings either alone or in cooperation with other organizations subject to applicable IEEE and NPSS rules and regulations.

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

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

Section 4. Business of the RISC may be handled by correspondence, telephone, facsimile, E-mail, telegraph, or other means of communication where, in the opinion of the Chairperson, matters requiring prompt action can be adequately handled in that manner. A majority vote of the full RISC is required to take action in such a case. Telephone actions or other actions that do not involve a written record are to be promptly confirmed in writing by the Chairperson.

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

ARTICLE VII - AMENDMENTS

Section 1. Amendments to this Constitution may be initiated by petition submitted by a two-thirds vote of the RISC, such petition being submitted to the Ad Com of the NPSS for approval. After such approval, the proposed amendment shall be publicized in the NPSS Newsletter, with notice that it goes into effect unless 20 RITC members object within 90 days of the date of mailing of the notice. If such objections are received, a copy of the proposed amendment shall be mailed with a ballot to all members of the RITC at least 30 days before the date set for the return of the ballots; the ballots shall carry a statement of the deadline for their return. When a mail vote of the entire RITC membership is made necessary, approval of the amendment by at least two-thirds of the ballots returned shall be necessary for its enactment.

Section 2. As an alternative to this procedure outlined in Section 1 above, 10 members of the RITC may submit a petition to the Ad Com of the NPSS. If approved by the NPSS Ad Com and after notification of the RISC, the proposed amendment shall be submitted to the membership by mail ballot as described above.

Section 3. RITC Bylaws, and amendments thereto, may be adopted by two-thirds vote of those present at a RISC meeting, provided that notice of the proposed Bylaw or amendment has been sent to each member of the RISC at least a week prior to such meeting. Alternatively, a RITC Bylaw or amendment may be adopted by a two-thirds mail vote of the members of the RISC, provided a 30-day period is provided for such responses. In either event, the proposed Bylaw or amendment shall be published in the NPSS Newsletter. No Bylaw or amendment shall take effect until it has been approved by the Ad Com of the NPSS.

ARTICLE VIII - REVISION

Section 1. The Chairperson of the RISC shall appoint a seven-person Subcommittee no later than January 1, 2000, and every five years thereafter to evaluate the effectiveness of this Constitution and Bylaws, to study the rules of governance required by the activities of the RITC at that time, and to consider revising the Constitution and Bylaws appropriate to the existing and anticipated needs of the RITC.

RITC BYLAWS

1. RISC: Article IV of the Constitution provides that the RISC shall consist of a number of elected members-at-large plus certain ex-officio members. The ex-officio members of the RISC shall be (unless they are already elected members-at-large) the Chairperson of RISC, the Vice-Chairperson of RISC, the Most Recent Past Chairperson of RISC, the Chairperson of each Subcommittee, the Chairperson of the Nuclear Medical and Imaging Sciences Council, the Editor of the *IEEE Transactions on Nuclear Science*, the Conference Editor for the Nuclear Science Symposium, and such other ex-officio members as are provided for in the Constitution and Bylaws of the NPSS.

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

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

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

2. Nomination and Election of RISC Members: Article IV of the Constitution specifies the number of RISC members-at-large, as well as the term length and restrictions. One third of the RISC members-at-large posts, plus any vacancies occurring in the previous year, are to be filled each year by election of the general membership of the RITC.

   2.1 The Chairperson of the RISC is responsible for ensuring that at least one nomination is made for each vacant post. Nominations may be made by any member of the RISC or any member in good standing of the RITC. Self nominations are allowed.

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

   2.3 If there are more nominations than posts to be filled, those nominees receiving the highest number of votes will be elected to the vacant posts.

   2.4 The Chairperson of the RISC shall assure that a call for nominations is conveyed to the entire RITC membership via the NPSS Newsletter before April 1. Nominations must be submitted to the RISC Chairperson by July 1. Such nominations must include an expression by the nominee of willingness to serve if elected.

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

   2.6 On or about July 31, the Secretary shall arrange for the distribution to the members of the RITC a ballot to elect the candidates to fill vacancies on the RISC. The ballot shall be accompanied by short biographical sketch of each nominee with an indication of his Radiation Instrumentation activities and former or present IEEE activities.

   2.7 Sixty days after distribution of the ballots, the IEEE Headquarters shall count and tabulate the votes received and report the results to the RISC.

   2.8 The RISC shall submit to the Secretary of the NPSS Ad Com the names of the candidates with the largest number of votes to fill the designated vacancies.

3. Subcommittees: The Chairperson of the RISC, in concurrence with the RISC, shall appoint the Chairpersons for the following Subcommittees:
   -A Fellows and Awards Subcommittee.
   -Other Subcommittees as shall be required for the operation of the RITC.

   3.1 The term of office of a Chairperson of a Subcommittee shall be one year, but a Subcommittee Chairperson may be reappointed to the same position.

   3.2 The Chairperson of a Subcommittee must be a member of the RITC. However, in general, preference should be given to elected members of the RISC to serve as Chairpersons of its Subcommittees.

   3.3 Each of the Subcommittees shall submit a written report of its activities to the RISC prior to or at the Annual Meeting.

   3.4 The membership of the Subcommittees shall be appointed by the Chairperson of that Subcommittee. The membership and activities of the Subcommittees should be publicized to the membership of the RITC via the NPSS Newsletter, and suggestions for Subcommittee membership should be invited from RITC members.

   3.5 The Nuclear Science Symposium and Medical Imaging Conference Oversight Subcommittee shall be a Joint

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

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

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

6. Election of Vice-Chairperson of RISC: The Vice-Chairperson of RISC shall be nominated and elected from among the eligible members-at-large of the RISC. A minimum of one month before the Annual Meeting of the RISC, the RISC Secretary will notify all current RISC members of the upcoming election and solicit nominations (self-nominations are allowed). The nominations will be closed two weeks before the annual meeting of the RISC, and the Chairperson of the RISC is responsible for ensuring that at least one nomination for Vice-Chairperson is received by this time. The Secretary of RISC shall announce to all voting RISC members-at-large the identities of the candidates at least one week before the annual meeting, and also inform them of the procedure for casting a ballot if they are unable to attend the RISC annual meeting. The vote will occur during the Annual Meeting of the RISC. If there is only one candidate, then that candidate will be elected at the Annual Meeting by those RISC members in attendance. If there is more than one candidate, a secret ballot will be taken during the Annual Meeting and the Chairperson shall designate tellers to immediately count the ballots. Voting RISC members-at-large who are not attending the Annual Meeting of the RISC may submit a ballot by notifying the RISC Secretary of their choice. The results of the vote shall be announced and the nominee receiving a majority of votes cast shall be declared elected. In the event that no candidate receives a majority of votes cast, runoff elections shall be conducted by secret ballot at the Annual Meeting of RISC among the candidates receiving the two highest number of votes until one candidate receives a majority of the votes cast. For these runoff elections, only those RISC members in attendance may cast a vote. The terms of office of the Chairperson, Vice-Chairperson and Most Recent Past Chairperson of RISC shall begin January 1 of the year immediately following their election.

7. Removal from Office: In order for a member of the RISC or a RISC Subcommittee member to be removed from office, a petition signed by a minimum of five voting RISC members is necessary to initiate the removal process. The petition must include the name of the member to be removed, the position in question, and a description of the grounds for removal. Upon receipt of the petition, the Secretary will notify all RISC members that such a petition has been received, notify the member in question, and give that member 30 days to provide a written response. After this period, the Secretary will send a ballot that includes the statement of the grounds for removal and its rebuttal to each voting RISC member. The ballots will be returned to the Secretary who will tally the votes within 30 days after the ballots were sent. A minimum of two-thirds vote is required to remove the member from office. In the event that the Secretary is the member in question, the Chairperson will designate an alternate RISC member to perform these duties. If the Chairperson or Vice-Chairperson is removed from office, an election will be held within 30 days to select a new Chairperson or Vice-Chairperson according to the rules listed in the Bylaws for the election of the Vice-Chairperson

8. Open Business Meeting: An open business meeting of the RITC shall be held in conjunction with the annual IEEE Nuclear Science Symposium and Medical Imaging Conference.

9. Records: The Secretary shall maintain a permanent record of all nonroutine motions passed by the RISC, and provide a tabulation of the most recent five years of motions and a copy of the RITC Constitution and Bylaws to each newly elected member-at-large to the RISC.

Revised, May 2005

2006 PLASMA SCIENCE AND APPLICATIONS AWARD

Nominations Due September 16, 2005

Wes Lawson

Established in 1993, this award recognizes "outstanding contributions to the field of plasma science." The recipient need not be a member of the Nuclear and Plasma Sciences Society or the IEEE, but where candidates have otherwise equal qualifications, preference shall be given to the candidate who is an IEEE member. The award includes a cash prize, a plaque, and the privilege of presenting a plenary address at the ICOPS. Nominations should be submitted to Wes Lawson at the address given below by September 16th, 2005. The nomination package should include a nominating letter, biographical material for the person nominated with a publication list, and letters of support from at least 3 people. Please also include an E-mail address for the nominator where receipt of the package will be confirmed.

Information about other awards sponsored by the IEEE Nuclear and Plasma Sciences Society are described on the NPS website at http://ewh.ieee.org/soc/nps/.

Prof. Wes Lawson, Chair, Awards Subcommittee can be reached at the Department of Electrical and Computer Engineering University of Maryland, College Park, MD 20742; Phone: +1 301 490-5958; Fax: +1 301 314-9437; E-mail: lawson@umd.edu.

FUNCTIONAL COMMITTEES

AWARDS COMMITTEE

Igor Alexeff
Chair, Awards Committee

Twenty-five award applications were submitted to the committee this year for Society awards. The breakdown is as follows:

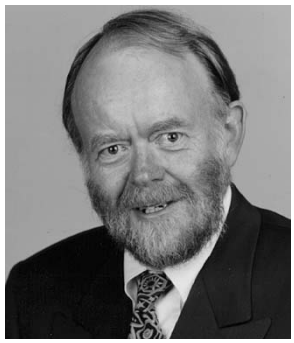
Merit	5	Early Achievement	5
Shea	2	Graduate Student	13

The applications are of very high caliber, and processing is proceeding, with a delay due to the high volume of material submitted.

Remember, it isn't too early to think of 2006 nominations for these awards. Forms are available on the web!

Igor Alexeff, the Awards Chairman, can be reached at the University of Tennessee, Ferris Hall 315, Middle Drive, Knoxville, TN 37996-2100; Phone: +1 865-974-5467; E-mail: alexeff@utk.edu.

COMMUNICATIONS COMMITTEE



Peter Clout
Chair, Communications Committee

We continue the promotion of NPSS membership and NPSS activities by providing brochures and leaflets for the conferences that we sponsor, setting up a membership booth and manning it, ensuring that screens promoting NPSS and its activities are playing before and between talks, and by maintaining our web site. All this work is done by volunteers and I would like to thank them all for their time and effort.

Of course, NPSS is a Society of all its members and without the active help of members, journals would not be published and meetings would not be organized. The profession relies on the volunteerism of its members to ensure that the communication that stimulates innovation and accelerates progress is facilitated. In addition, the printed record provides an archive of progress in our fields and help, inspiration, and stimulation to those who can not attend meetings.

We each play our part and the main work of the communications committee is to collect the promotional and general informational

material, package it and ensure its distribution. Of course, I am not referring to technical articles here, but to information about the activities and information about the fields of engineering and science that we serve. We are looking for input all the time including photographs that we can use, and proposed web pages that inform the nonmembers and the general public about the fields that we work in. What else can you think of to help send our message?

I encourage you to go to our web pages and review them with the question in your mind that if you were a member of the public, what information would be useful here? Of course, I am extremely interested in receiving proposed new pages to add!

We are always looking for volunteers to help with the activities and so please do not hesitate to contact me if you are interested!

The brochures for this year and next year have now been printed along with two leaflets. One leaflet is new and I would especially welcome constructive comments on it.

Peter Clout, chair of the Communications Committee, can be reached at Vista Control Systems Inc., 176 Central Park Sq., Los Alamos, NM 87544-4031, Phone: +1 505 662-2484; Fax: +1 505 662-3956; E-mail: clout@vista-control.com.

Non-optional option

Anyone will lie when the alternative is intolerable.

Rex Stout

FELLOW CANDIDATE EVALUATION COMMITTEE

IEEE FELLOW NOMINATIONS ARE DUE BY MARCH 1, 2006

Peter Winokur
Chair, Fellows Committee

Sounds far away? Not really. Every year, deserving nominations for the grade of IEEE Fellow fail to make the deadline. I encourage you to nominate a deserving colleague and begin the job of preparing the application and lining up references now. Nominating forms, detailed instructions, and frequently asked questions can be found at the IEEE Fellow Program Web Site at www.ieee.org/fellows.

To be nominated, the candidate must meet the following three basic qualifications: hold Senior Member grade at the time the nomination is submitted; be an 'active' member (that is, dues must be current); and must have completed five years of service in any grade of IEEE membership. Note: IEEE affiliate membership within an IEEE society does not apply. I'm often shocked to learn that folks who have made significant contributions to our Society aren't even Senior Members. It only takes a few minutes to prepare an application to be a Senior Member and it is web based.

A nomination must be supported by at least five, but no more than eight references from active IEEE Fellows. A list of IEEE Fellows can be found at the IEEE Fellow Program Web Site or in the current IEEE Membership Directory. In addition, a Fellow Nomination Resource Center (FNRC) has been established. The purpose of the Center is to assist nominators in locating the required number of references to support a nomination to IEEE Fellow Grade. The Center will operate on an experimental basis for a 3-year period. It is a volunteer support group comprised of a Chair and Case Managers, all of whom must be IEEE Fellow grade members. Nominators wishing assistance from the FNRC must initiate a request by sending an e-mail to FNRC@ieee.org.

This year we expect the IEEE Electronic Fellow Nomination Process to be fully implemented, which will make it even easier for you to complete the nomination form. The completed nomination form is automatically forwarded to references.

Last year was my first year as Chair of the NPSS Fellow Evaluation Committee (FEC). And what a year it was! We had 19 nominations from NPSS, an all time high. This meant a lot of work for the FEC and hopefully NPSS will have many new fellows announced at the Board of Directors meeting in December. I want to thank the FEC for all their efforts. They are: Randy Brill, Victor Granatstein, Osamu Ishihara, George Miley, Paul Phelps, Stan Schriber, Jim Schwank, and Peter Turchi.

The IEEE Board of Directors recently approved changes to the process for nominating and electing IEEE members to Fellow Grade. The goal of these changes is to increase

Math lesson

There are two kinds of statistics, the kind you look up and the kind you make up.

Rex Stout

the number of nominations received for members from industry and to make the process more receptive to nominations received for application engineers or engineering practitioners who have made contributions of unusual distinction to the profession. Specifically the changes established a new nomination category for individual contributions, "Application Engineer/Practitioner." This category recognizes significant contributions in "product development, advancement in system, application or operation, project management or construction activity, process development, manufacturing innovation, codes or standards development, or other application of technology."

Also, the existing designation, "Engineer/Scientist" was changed to, "Research Engineer/Scientist." The other existing categories, "Educator" and "Technical Leader" remain the same. So, the IEEE now recognizes contributions in four distinct categories.

On behalf of the NPSS Fellows Evaluation Committee, I urge you to consider making an IEEE Fellow nomination next year. March 1, 2006 will be here sooner than you think.

Peter S. Winokur, Chair, NPSS IEEE Fellow Candidate Evaluation Committee, can be reached at the National Nuclear Security Administration, Washington DC Office; Phone: +1 202 586-5480; E-mail: p.winokur@ieee.org.

MEMBERSHIP DEVELOPMENT AND CHAPTERS COMMITTEE

Vernon G. Price
Chairman

Membership: During the early 1990's and during the decade of the 1980's, membership levels in the Nuclear and Plasma Sciences Society (measured at the beginning of the each year) hovered closely about 3000. From 1997 on, the level of the membership gradually decreased but a surge in membership occurred in the 2002 period when Dr. Peter Clout and the Communications Committee initiated a well-designed membership booth for recruiting use at NPSS conferences. The improved booth attracted new members. The surge is apparent in Figure 1 where recent yearly January data is plotted. Membership in IEEE reached a plateau in 2002 and since that time, membership as a whole has decreased, falling 11.9% from its 2002 level to the January 2005 level. of 353,680 members. There was a fall-off of 3.8% in this year's IEEE membership compared to the previous January. The NPSS January fall-off of 3.9% compared to the previous January therefore was not unusual.

The plots in Figure 2 illustrate the effects of the termination runs by IEEE for those members who did not renew their membership. This year, NPSS lost 347 members in the drop-off compared to the level in January 2005. Thus, 347 people will be needed to join our society during this year to bring us back to last January's level. We are likely, however, to persuade only about 300 to do so giving us a 3% loss for the year. The drop-off in IEEE mem-

Figure 1. Annual Trends in Recent NPSS Population (January data). The surge in membership is likely a result of Dr. Clout's new booth.

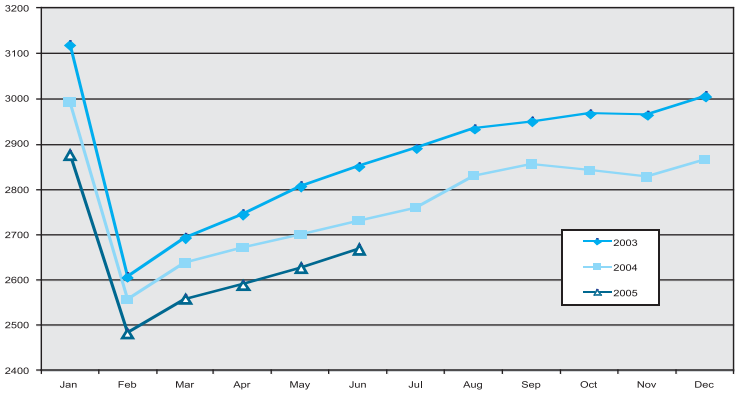


Figure 2. Monthly trends in NPSS membership. The fall-off in February occurs with the termination run by IEEE for lapsed members

bership in February was 75,000 members. Considerable expense is involved in recruiting that same number to replace the lost people, keeping the IEEE membership constant.

In 2002, the average NPSS population over the year (taking into account the drop-off) was 3061. In 2004 that same average fell to 2773 or a loss in membership of 9.4%. The 2004 membership consisted of 2521 higher grade members, 208 students and 44 affiliate members.

Can anything be done to stem this attrition in NPSS membership? Four factors may be considered:

- Develop better slide presentations to be used at NPSS conferences and workshops extolling the value of IEEE/NPSS membership and illustrating its benefits to IEEE members and to nonmembers alike.
- Induce IEEE members at conferences who are not members of NPSS (about one half of the IEEE members attending our conferences fall into this category) to add NPSS to their membership. At $16 per year, this is not particularly expensive.
- Create inducements for an IEEE member to join NPSS if not already a member. Answer the question "I am a member of IEEE, what additional benefit will I receive if I also join the NPSS society?" At the present, the wide availability of XPLORE at academic and at commercial institutions has reduced that important value in NPSS membership.
- Increase our rate of nomination of NPSS members to higher grade levels. Society membership is an important factor in getting this done.

Chapters: About half of the NPSS chapters are struggling in their efforts to hold regular meetings, reaching the minimum of two meetings per year to remain current and viable. During this year, I have had the opportunity to meet with representatives of several chapters who have attended NPSS conferences and have encouraged them in their efforts to remain alive and active. I had productive discussions with leaders of the French, German, Italian and some U.S. chapters to learn of their needs and problems. In the next Newsletter, I will outline some of their answers to my questions and may find some suggested solutions.

Vernon G. Price may be contacted at 22151 Berkeley Ct., Los Altos CA 94024-7452, USA; Phone +1 408 737-0778: Fax: +1 408 737-1922: E-mail: v.price@ieee.org.

Cloudy crystal ball

In the Bible there is enough clarity to enlighten the Elect, and enough obscurity to humble them.

Blaise Pascal

STATEMENTS FROM IEEE CANDIDATES

Each year we solicit comments from the candidates for the IEEE offices of President-elect, TAB Vice President-elect, and if a contest, Division IV Director-elect. Each candidate has been asked to submit a statement for NPSS Newsletter readers, and the following candidates have submitted statements to help you in the election process. Many thanks to all of them, and remember to cast your vote!

Candidates for 2006 IEEE President-elect

Leah H. Jamieson

Leah H. Jamieson
President-elect Candidate

I extend my thanks to the NPS Society for this opportunity to talk about my priorities for the IEEE. I also extend my sincere congratulations to the Society and to you, the NPSS members, for taking this extra step to be informed voters in the election.

Over the next five years, the quality that will have the greatest, longest-lasting impact on the IEEE will be our ability to navigate change: our ability to turn challenges into opportunities. This will determine our responsiveness to the changing needs of our members and to the changing needs of the profession. My priorities are in four areas:

NIMBLENESS IN MOVING INTO EMERGING TECHNOLOGY AREAS:

The rate of change of technology, already blindingly fast, is accelerating. We must continue to improve our ability to identify new technologies in the IEEE domain, create agile new technology communities, and establish ourselves as the place to go for novice-to-expert information about new areas. Similarly, we must forge partnerships and collaborations that reflect the increasingly interdisciplinary nature of technology solutions to humanity's needs.

Opportunities:

- Increase our agility in new areas by creating "lightweight" structures that allow the quick formation of interdisciplinary communities in emerging technical areas. Foster collaboration between Societies and Councils, both within and beyond IEEE, through access to seed funds for new technology initiatives.
- Take advantage of the flexibility of the web to quickly make visible our activities in new areas.
- Develop new technical content that focuses on newcomers in a technical area; as we enter new areas, focus on both theory and applications from the outset.
- Strive to become a trusted resource in new technology areas for a wide audience that includes the media, policy makers, and venture capitalists.

DELIBERATE AGILITY IN THE CONTINUALLY CHANGING INFORMATION CULTURE:

Publishing is at the heart of both IEEE's business and its service to the profession. We must be at the forefront in using technology to enhance access and use of our publications. Our content and tools must be relevant to students, researchers, engineers and professionals at all stages of their careers, and, increasingly, to the public. We must also, with due deliberation, plot a course that reflects a deep understanding of the changing economics of publishing.

Opportunities:

- Develop our understanding of how people – especially young people – access, use, organize, and share information; use this understanding to develop benefits, products, and services that put IEEE content and services at the center of how people work.
- Increase our ability to develop and test a wide range of new products and services through "rapid deployment" experiments, including experiments with new web commerce and communication capabilities. The IEEE Societies, as creators of most of IEEE's content, are crucial as the source and testers of publishing experiments. We must work with our Societies and their publications to develop an entrepreneurial culture, including an appropriate financial culture, that fosters innovation in our offerings.

SUPPORT FOR ENGINEERS THROUGHOUT THEIR CAREERS:

Current estimates put the half-life of engineering knowledge – the time interval in which half of what an engineer knows becomes obsolete –

Sorry, but...

[The author] has clearly attempted the impossible. But he need not have failed so grossly.

Anthony Blunt

at between 2.5 and 7.5 years. Just as IEEE is the preferred source for highest quality technical information, it should also become the preferred source for highest quality educational material for lifelong learning and professional development.

Opportunities:
- Provide continuity in members' careers through local and technical communities and internet/web services that support professional development to bridge career transitions.
- Become an international leader in continuing education and lifelong learning.

GLOBAL RELEVANCE, LOCAL NEEDS:
IEEE's structure gives us the opportunity to knit together the global nature of engineering with an understanding of specific local and regional needs. IEEE must use this structure to serve both the global profession and the changing needs of members throughout the world.

Opportunities:
- Take advantage of the global nature of the IEEE to enhance members' ability to be effective in the global engineering profession.
- Recognize and work to meet specific local and regional needs in technology development, education, accreditation, professional development, information content and services, and technology policy.

There are guiding principles that I believe are essential to IEEE's success in meeting these challenges:
- Maintaining a strategic focus;
- Valuing teamwork, communication, collaboration, and consensus-building among the many IEEE stakeholders;
- Promoting financial models that balance revenue opportunities with member benefits and ensure the long-term financial health of the IEEE;
- Paying constant attention to the value of membership, the affordability of membership, and how the foundations of the value of membership are evolving;
- Recruiting, retaining, and appreciating volunteers, who are the heart of IEEE;
- Providing value to the global profession and to society.

The role of the President of IEEE is to combine the strengths of this outstanding organization with a vision for how it can meet the challenges of the future. I will bring to the position of President a record of strong leadership skills and a long history of service to the IEEE. I will be guided by the key principles – strategic focus, teamwork and communication, sound financial models, value of membership, appreciation for volunteers, value to the profession – in helping IEEE meet the challenges and realize the opportunities that the changing world is presenting us.

Gerald H. Peterson

Gerald H. Peterson
President-elect Candidate

NPSS Newsletter readers,
I am honored to be a candidate for the office of IEEE President-elect 2006, and to have this opportunity to share a few brief remarks on my candidacy - please see my web site: http://ghpeterson.home.att.net

Over 37 years, I have held positions in hardware and software design and engineering management and hold one U.S. Patent in the field of telecommunications. In the past 17 years I have specialized in industry global strategic standardization. I currently hold the position of Senior Manager Emeritus at Lucent Technologies Bell Labs.

I hold Electrical Engineering degrees from the University of Washington and Rutgers University (both in the USA). I am a member of the Tau Beta Pi Engineering Honor Society. In 2001 I was recognized as a "Who's Who" in its publication, THE BENT of Tau Beta Pi. Also in 2001 I received the American National Standards Institute's Finegan Standards Medal for leadership in the development and application of voluntary standards. In addition to my leadership experience in the IEEE, I have served in elected national and international leadership positions that have delivered global technical standards and fostered increased global cooperation.

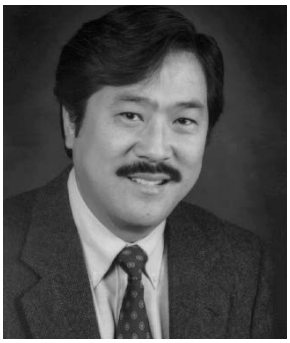
We live in a time of accelerating change and globalization. The IEEE must both respond to and help drive these changes if it is to continue to be a preeminent technical society. Key among these changes is how it delivers value to industry worldwide and, thus, value to the members of the IEEE. I see this change to be focused on the technical, educational, regional, publications and standards services and products and in advancing, modifying and replacing them as we evolve both the value of the IEEE

and the business model we use to support the delivery of value. Further, the IEEE must continue to offer value to an expanding and changing set of technical disciplines and I consider the NPSS to be one excellent example of this open policy. The current IEEE Designated Fields of: Engineering, Computer Science and Information Tech, Physical Sciences, Biological & Medical Sciences, Mathematics, Technical Communications, Education, Management, and Law and Policy is very broad, nevertheless I remain open and proactive on expanding and changing our designated fields as the future unfolds.

I know both the importance and the scope of the responsibility of being IEEE President and Chief Executive Officer, and if elected I am committed to giving my full time and attention to the office of IEEE President in 2007. I appreciate your consideration and welcome your questions, comments, and suggestions.

Jerry Peterson
gbpeterson@ieee.org

James M. Tien



James M. Tien
President-elect Candidate

Let me begin by thanking those of you who collected signatures for my petition candidacy; I am now a 2006 IEEE President-Elect candidate because of your hard work!

My vision for the IEEE is based on the same reasons for which I became a member in 1974 and why I became a volunteer in 1983. I consider IEEE to be my "Global Resource of Choice" for scientific, educational and professional products and services; indeed, IEEE has played a critical role in my career – ostensibly more for my academic than for my parallel industrial career. If elected, I pledge to make IEEE more relevant and supportive of all member careers. As examples, IEEE must offer more global and portable member benefits (to support a typical career that includes multiple employers); IEEE must meet the continuing education needs of our members (who must update their knowledge base while being on the job); and IEEE must think and act globally for the profession and think and act locally for the members (who have different cultural and professional needs).

One concern that will affect NPSS and all our technical societies is the issue of "open access;" that is, publications derived from government-funded research should be readily available and accessible. Although as a researcher I can applaud this stance, I am afraid that IEEE's financial viability will be irrevocably undermined unless we take immediate steps to change IEEE's current financial structure, one that is based on deriving more than 50 percent of our revenues on the sale of our publications. Even if open access does not necessarily imply "free access," it is obvious that we must curtail our dependency on publication revenues. We must develop new intellectual products and services that can be a source for new revenues. Indeed, in 2003 and as the newly elected EAB/VP, I worked with EAB staff and volunteers to launch IEEE/Thomson's forthcoming Expert Now (formerly known as XELL) web-based learning library; it will contain the best of our conference tutorials and short courses. In addition to meeting our continuing education needs, Expert Now will serve as a new revenue source and possibly grow to replace the lucrative publication business.

I feel that I have the qualifications to continue to help IEEE become the global resource of choice, as I have tried to do so in all my volunteer activities, including in my recent positions as VP of Publications and as VP of Education. I am culturally sensitive (having resided for extensive periods in Regions 1, 9 and 10); technically involved (having been active in 4 Societies); and professionally involved (having been active on 4 of IEEE's 7 Major Boards). I possess a strong educational background (with degrees from RPI and MIT); extensive industrial experience (having worked at Bell Laboratories, at The RAND Corporation, and currently at Structured Decisions Corporation, a company that I co-founded in 1974); extensive academic experience (being on RPI's faculty since 1977). Moreover, I have extensive leadership experience (at IEEE, in industry, and at RPI where I have been a Department Chair since 1985 and twice the Dean of Engineering) and demonstrated excellence (having been recognized with a number of IEEE and other technical awards, including IEEE Fellow and election to the U. S. National Academy of Engineering). Finally, I humbly ask not only for your vote, but also for your involvement: **Together, We Can Advance IEEE's Global Value.**

All alone

They make a wilderness and call it peace.

Tacitus

CANDIDATES FOR 2006 DIVISION IV DELEGATE-ELECT/DIRECTOR-ELECT

Edward Della Torre

If elected IEEE Division IV Delegate-Elect/Director-Elect, I am prepared to represent the interests of the members of our Societies. As an active researcher, I am well acquainted with all aspects of performing research. The interests of the IEEE are not limited to any one country, and only through international cooperation can we achieve our lofty goals. Dissemination of ideas is crucial to our mission, and we should endeavor to maintain our high standards through our Transactions, Conferences and other means. It is important to maintain a financially sound Institute and member societies in order to achieve these ends.

The IEEE has helped my career immensely, through its publications and conferences, and I intend to work to keep those gates as wide open as possible for others. I have attended TAB meetings, served on many committees, presided over major conferences, both U.S. and non U.S. and was President of the Magnetics Society. So I have become familiar with the problems of a multinational society. I will do everything that I can to perpetuate these goals.

Edward Della Torre

Ralph H. Justus

No statement provided.

CANDIDATES FOR 2006 TECHNICAL ACTIVITIES BOARD VICE PRESIDENT ELECT

J. Roberto Boisson De Marca

IEEE technical societies and councils face significant and immediate challenges that must be addressed in the next two to five years. Some of these challenges are internal to TAB's internal organizational structure, some are due to changes in IEEE's modus operandi and yet others, probably the most threatening ones, are caused by advances in technology and a changing attitude in industry.

The most visible challenge is how societies can have a viable and healthy future in light of IEEE's new financial reality. However there are several other threats which have compounded this issue and will require very creative solutions, namely: (i) the shift to electronic media and centralized products such as IEL and Enterprise and the associated threat to the visibility of societies and councils and to the ownership of the intellectual products they create; (ii) maintaining society and council memberships when they are no longer required for access to IP; (iii) the growth of open access publishing and the associated threat to publication products and income; (iv) the shift in attitude change in industry where precompetitive research is no longer a priority

J. Roberto Boisson de Marca

The people's choice

Politics and politicians have a low name in Canada - as they do in most of the nations where they represent the only real alternative to tyranny.

Walter Stewart

and is virtually no longer done, and as a consequence IEEE society products and activities are perceived as less critical by industry top management; (v) the need for the IEEE Technical Activities Board (TAB) to organize itself better so that it can be more effective in achieving its goals within IEEE and in influencing IEEE Board of Director (BoD) decisions and; (vi) the need for TAB to act as a truly single and cohesive entity where Societies/Councils can spontaneously develop joint strategies and foster evolutions, while making sure our members and the engineering community are always provided the best services possible.

It is clear to me that these difficulties equally affect S/Cs of all sizes. Therefore there is a need for a joint and concerted effort by everyone concerned in IEEE technical activities to find the most effective and enduring solutions that will guarantee the collective well-being of the Societies and Councils for many years to come. These solutions will most likely come from ideas and contributions of volunteers representing different S/Cs. If elected I will lead a joint, concerted and focused effort to identify effective and enduring solutions that will guarantee a healthy future for IEEE Technical Activities and high quality, high value member services. I intend to lead TAB by focusing efforts in these strategically key issues, reducing time devoted to more general discussions and to peripheral topics.

In addition to serving as chair of the Technical Activities Board, another important role of the VP-Technical Activities (VP-TA) is to be a key player in the BoD and in the IEEE management structure. I am a firm believer that IEEE must remain a member-driven organization and that the volunteers are the most valuable asset of the organization. I have also been a longstanding and vocal defender of the importance of strong and vital Societies/Councils (to attract the world leading volunteers and the IP they produce) as essential to IEEE's success.. As IEEE Board member I pledge to be a firm advocate of these concepts as well as always demand that the BoD actions are guided by fiscal responsibility (please see editorial in IEEE Communications Magazine – Is IEEE strangling its golden geese? -http://www.comsoc.org/livepubs/ci1/public/2001/sep/cipresmess.html). Finally, as VP-TA I will always make sure Societies/Councils TAB concerns as well as member needs are heard and properly addressed by the IEEE Board of Directors.

I have proven management and leadership skills as demonstrated by my achievements as ComSoc President (http://www.comsoc.org/livepubs/ci1/public/2001/dec/cipresmess.html), including the best Society year ever in terms of total revenue, and IEEE Division III Director. I seek your support to add my contribution to those of past TAB Vice Presidents in leading the necessarily multilevel effort forwards, so that the future of IEEE can be even more successful than its past -- a bigger and brighter future for IEEE

Peter W. Staecker

Peter W. Staecker

Technical Activities creates the intellectual property that defines the IEEE brand. Societies and Councils, represented by outstanding volunteers and staff, have managed growing publications and conference businesses, and have drawn strength from a growing global membership base. Likewise, the S/Cs been effective custodians of their share (roughly 90%) of IEEE reserves, and have met the significant financial challenges of 2001-2002. The financial markets have stabilized, but changes in our business environment are redefining our tactical and strategic roadmap for the next few years, and will test our ability to work together.

How is our business environment changing? Here are some further thoughts on the businesses that are managed by the S/Cs (noting that with respect to Publications, the Societies and Councils create the intellectual property, and Publications Operations renders it in electronic and paper form.):

CONFERENCES: ARE WE ON AUTOPILOT?

Conference activities are currently the most autonomous of the three businesses – in some instances isolated from the Administrative Committees of their parent Society/Council leadership. Financial reporting procedures at

IEEE were tightened at the request of our external auditors, so Conference accrual reporting, initiated in 2004, will require more oversight of financial reporting at the S/C level. Additional events on the conference business horizon:

- IEEE-sponsored conferences increased by 15% (to 380) this year.
- For-profit publishers who have a capability of providing full exhibit/technical program/publication capability compete with IEEE conferences.

So we have competent competition, a significant (and growing) revenue stream at risk, and urgently need an S/C forum for sharing opinions and establishing strategy.

MEMBERSHIP: CAN WE RECOVER OUR MEMBERSHIP SLIDE?

S/C membership has shown a steady decline since 2001.

While the IEEE Membership Development Committee is sponsoring an activity focused on corporate outreach, there are countless examples of successes at the Society level in working with industry. These include conference exhibit activities, awards and recognition for contributors to the Society and industry's field of interest, and sponsorship or participation in chapter activities. These grass root successes can serve as the basis for scaling to the IEEE level, build on the valid local experiences of conference and chapter volunteers, and are scalable to Institute-wide initiatives.

Other membership issues are Publication- and Conference-related: Exit polls conducted in late 2004 from those who did not renew S/C memberships indicate that Society publications, conferences, services and fees were not satisfactory. Renewing members stressed the need for continuous improvement in publications and services, such as:

1. High-quality, on-time technical information
2. Help with keeping current with their immediate technical areas as well as staying informed on emerging technology areas.
3. Help with information overload, in particular, finding essential information quickly.

Responses have quickly dropped into place:

1. A S/C backlog reduction project for 2005 will print 12,000 incremental pages; A S/C backfile project for 2006 will add pre-1988 IP to IEL.
2. New Technology Directions Committee portal at www.ieee.org/portal/pages/tab/meetings/ntdc/index.html includes directions to the TAB Emerging Technology Communities at www.ieee.org/emergingtech.
3. Publications Services and Products Board (PSPB) is moving additional ideas for new content and tools through both Pub Operations and the 2006 New Initiatives process.

But… are we moving quickly enough? Given the rapid growth of convenient desktop access to IEEE intellectual property through institutional subscription, the value of Society membership will rapidly shrink. Members are the source of volunteers and volunteers are the lifeblood of the Societies and therefore the Institute. It is therefore imperative that we quickly assess other means of offering value to Society members, including conference discounts, educational products, online communities, and other personal benefits. In so doing, we must remember the global extent of our membership, and remember the cultural and economic diversity of our members and volunteers.

Finally, membership retention and renewal is a contact sport. Consider Society volunteer outreach and communication efforts to the younger Society members (1-2 years of membership) to understand their needs, expectations, and financial sensitivities.

PUBLICATIONS: SUCCESSFUL BUSINESS, CLOUDS ON THE HORIZON?

IEL was a major asset during the years of financial stress, and is the envy of other not-for-profit (as well as for-profit) publishers. At the same time, the Open Access movement, increases in technical literature and capable search engines on the open (and closed) web pose threats to our existing publishing (and membership) business models. Strategies for dealing with Open Access have been identified and will be prioritized in coming months. Experiments in business strategies have been proposed that improve our competitive position with or without an Open Access scenario.

In conclusion, my view of the task before TAB is to manage the challenges facing the three businesses above, realizing that there are important threads, all with human faces, feelings, and points of view, that link them together. The Societies and Councils and their volunteers are the necessary elements of IEEE's vitality, and must be nurtured and preserved.

Thank you for your consideration, and to learn more see http://mysite.verizon.net/vze38mmc/index.htm

Tricky!

This charming bungalow has an arch way.

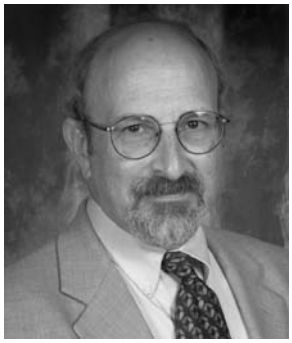
Vancouver, BC Real Estate Flier

Mature reflection

Inside every older person is a young person wondering what happened.

Lynette Henze

TRANSACTIONS ON PLASMA SCIENCE FORTHCOMING SPECIAL TOPIC ISSUES



Steve Gitomer
TPS Editor

2005 ISSUES TO BE PUBLISHED

August 2005

Selected Papers from Power Modulator Conference – 2004, Guest Editors: Professor Hulya Kirkici (Auburn University, AL USA), Professor Andreas A. Neuber (Texas Technical University, Lubbock, TX USA), and Professor Ryan Umstattd (Naval Postgraduate School, Monterey, CA USA)

October 2005

Vacuum Discharge Plasmas, Guest Editors: Dr. Kenneth W. Struve (Sandia National Laboratories, Albuquerque, NM USA) & Dr. Sergei M. Shkol'nik (Ioffe Physical-Technical Institute, Russian Academy of Sciences, St. Petersburg, Russia)

December 2005 ...

Ion Sources, Guest Editor: Professor Marthe Bacal (Ecole Polytechnique, Palaiseau, France)

2006 ISSUES TO BE PUBLISHED

February 2006

Plasma Display Panels and Microdischarges, Guest Editors: Dr. Jean-Pierre Boeuf (Université Paul Sabatier, Toulouse, France), Professor Ki-Woong Whang (Seoul National University, Seoul, South Korea), and Professor Heiju Uchiike (Saga University, Saga, Japan)

April 2006

Physics of Dusty Plasmas, Guest Editor: TBD (tentative)

Plenary and Invited Papers from ICOPS 2005, Guest Editors: Dr. Adrian Cross (University of Strathclyde, Glasgow, Scotland) and Dr. Vladimir Kolobov (CFD Research Corporation, Huntsville, AL USA)

Z-pinches, Guest Editors: Christine Coverdale (Sandia National Laboratories, Albuquerque, NM USA) and Alexander Velikovich (Naval Research Laboratory, Washington, DC USA)

June 2006

High Power Microwave Generation, Guest Editors: Professor Wesley Lawson (University of Maryland, College Park, Maryland, USA), Dr. Chiping Chen (Massachusetts Institute of Technology, Cambridge, Massachusetts USA), and Dr. Daryl W. Sprehn (Stanford University, SLAC, Stanford, California USA)

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August 2006

Plasma-Based Surface Modification and Treatment Technologies, Guest Editors: Paul Chu (City University of Hong Kong, Hong Kong) and Ken Yukimura (Doshisha University, Kyoto, Japan)

Nonthermal Medical/Biological Applications of Ionized Gases and Electromagnetic Fields, Guest Editors: Juergen Kolb (Old Dominion University, Norfolk, VA USA), Michael Kong (Loughborough University, Leicestershire, UK) and Peter F. Blackmore (Eastern Virginia Medical School, Norfolk, VA USA)

October 2006

Pulsed Power Science and Technology, Guest Editors: Jane Lehr (Sandia National Laboratories, Albuquerque, NM USA), Mark Savage (Sandia National Laboratories, Albuquerque, NM USA) and Brian Oliver (MRC, Albuquerque, NM USA)

Spacecraft Charging Technology, Guest Editors: Shu Lai (Air Force Research Laboratory, Hanscom AFB, MA USA), Henry Garrett (Jet Propulsion Laboratory, Pasadena, CA USA), Mengu Cho (Kyushu Institute of Technology, Kitakyushu, Japan), and Alain Hilgers (European Space Agency, Noordwijk, The Netherlands)

December 2006

Space and Cosmic Plasmas, Guest Editor: Dr. Anthony Peratt (Los Alamos National Laboratory, Los Alamos, NM USA)

Plasma-Aided Combustion, Guest Editors: Dr. Louis Rosocha (Los Alamos National Laboratory, Los Alamos, NM USA), Dr. Igor Matveev (Applied Plasma Technologies, Falls Church, VA USA)

ARTICLES

THE LEVITATED DIPOLE EXPERIMENT (LDX)

M. Mauel[1], J. Kesner[2] and J.V. Minervini[2]

The Levitated Dipole Experiment (LDX) is a newly completed research facility developed as a collaborative project of the Plasma Physics Laboratory of Columbia University and the Plasma Science and Fusion Center (PSFC) of the Massachusetts Institute of Technology to test whether fusion can benefit from nature's way to confine high-temperature plasma. The goal of the program is to understand the equilibrium, stability and confinement properties for plasma that is confined in the field of a levitated dipole. LDX experiments are yielding new data on confinement and stability of high-beta plasmas in a dipole magnetic field, control of particle circulation and control of adiabatic heating.

An important objective of the LDX research program is to create an innovative partnership between plasma scientists and magnet technology experts. By incorporating state-of-the-art engineering and design in its three superconducting magnets, LDX has gained a unique and world-class research facility for long-pulse plasma physics research.

The LDX device is shown in Figs. 1 and 2. LDX consists of three circular and coaxial superconducting magnets, the floating coil, the charging coil, and the levitation coil, a large cylindrical vacuum chamber, basic plasma diagnostics, two microwave ECRH heating systems, and two low-current shaping coils with independent power supplies. The dipole geometry gives the experiment a remarkably wide diagnostic access to large volume plasmas and enables scientific experiments that have never before been possible.

Superconducting Floating Coil: The floating coil (F-coil) is a superconducting magnet comprised of a single 1.5 km length of conductor carrying up to 1.5 MA turns in a persistent mode. The design of this novel conductor, coil and its cryostat include:

- High critical current density, low loss, high stability Nb_3Sn (cable-in-copper-channel) conductor,
- Inductive charging arrangement with one very low resistance joint,
- Very low heat loss cryostat design with high load, low heat leak laminated crash supports,
- Indirect cooling by a flow heat exchanger with removable helium transfer ports.

Optimal combination of these technologies has allowed for up to a 2 hour levitation time.

High Temperature Superconducting Levitation Coil: The floating coil is supported by a levitation coil (L-coil) which is located on the top of the vacuum vessel. In addition to providing the magnetic force to levitate the 550 kg floating coil, the L-coil must also be modulated with a feedback signal to provide vertical stability. This coil uses a high temperature superconducting (HTS)

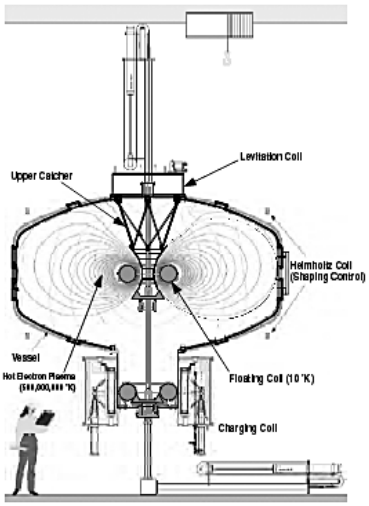
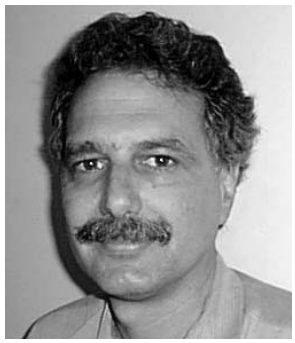


Fig. 1 Schematic cross-section of the LDX.

M. Mauel

J. Kesner



J.V. Minervini

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tape (BSCCO-2223) and is the first HTS coil to be used in a US fusion program.

Superconducting Charging Coil: The NbTi C-coil serves to inductively charge/discharge the floating superconducting magnet to/from 1.2 MA·T when it is resting in the charging station at the bottom of the LDX vacuum vessel. The charging coil (C-coil) was designed and fabricated by the Efremov Institute-Sintez (St. Petersburg, Russia).

The LDX experiment began operation in August 2004. Using multifrequency electron cyclotron resonance heating (ECRH), high-beta plasmas have been created, sustained for many seconds, and studied while the high-field dipole magnet was mechanically supported by three, thin (1 cm dia.) support rods. These experiments were the first stage of a carefully planned operational program that allows for the safe and reliable operation of the LDX superconducting magnets and the coordinated installation and test of diagnostics and research tools. During our first stage operation, significant programmatic and scientific results were achieved including: (i) demonstration of reliable operation of the high-field superconducting magnets, (ii) long-pulse, quasi-steady-state (> 10 s) plasma formation using electron-cyclotron resonance heating (ECRH), (iii) achievement of peak equatorial plasma beta near 10%, (iv) operation of all base diagnostics and data acquisition systems, (v) identification and parameterization of three discharge "regimes" having unique physics properties, (vi) preliminary study of ECRH profile control using multiple-frequency heating, (vii) identification of beta-limiting instability driven by a large fractional density of energetic trapped electrons, (viii) preliminary study of plasma shape effects, (ix) preliminary study of plasma density profile using movable edge probes and a single-cord microwave interferometer, and (x) preliminary study of X-ray emissivity using an array of X-ray detectors.

These first-stage experiments using a supported dipole are nearly complete, and they have already met, or exceeded, all first-stage program objectives. During the next stage of the project modifications are being made to enable fully levitated operation.

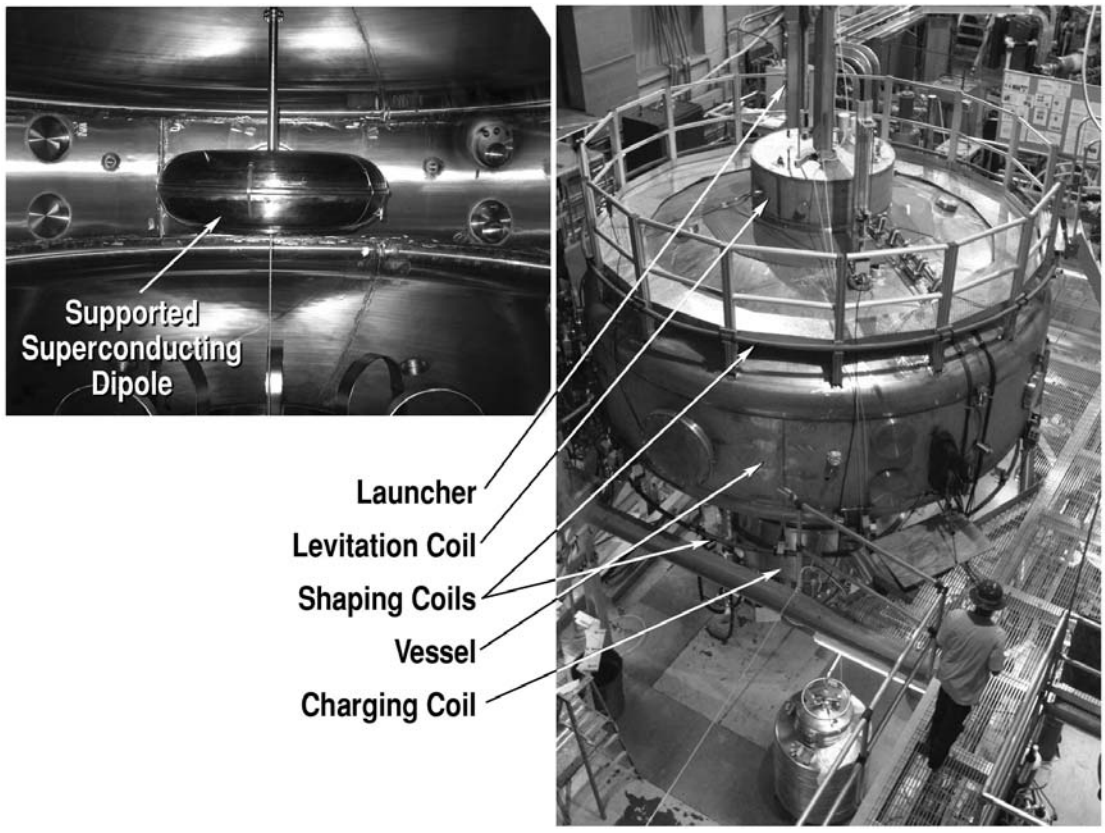

Fig 2.a) View inside the vacuum chamber of the supported dipole magnet.
Fig2.b) Overview of the LDX.

Radiation Effects – Old Lessons, New Opportunities

Michael L. Alles
Vanderbilt University Institute for Space and Defense Electronics

Historically, defense and space applications have been primary drivers of the study of radiation effects in semiconductors. Several years ago, with the end of the cold war and the (temporary) change of DARPA to ARPA, there was some decrease in the level of activity in this area. More recent developments have revived interest in the subject, including emphasis on space missions, the need to update technologies to support world stability, homeland security and technology scaling. One trend in the radiation-hardened electronics community has been to attempt to use commercial technologies, either commercial off the shelf (COTS) or hardened by design (HBD) parts, due to the limited availability of hardened by process options. Consequently, there has been a good bit of effort in characterizing COTS parts as well as characterization of advanced commercial processes for radiation response, such as the DARPA (note the D is back) Radiation Hardened by Design Program.

Of particular interest is the increased concern over single event radiation effects in commercial applications that has been occurring over the past ~ 1-2 years. For example, for the past couple of years, Cisco Systems has included application notes with "work arounds" for single event upsets in their high speed commercial routers. Terrestrial single event errors have been of concern for some time in high reliability computers and commercial DRAMs. With advanced CMOS device dimensions scaling to the sub-100 nm regime, and supply voltages approaching 1 volt, the tight spacing and low noise margins are problematic for terrestrial single event errors in commercial logic and SRAM circuits. In fact the IEEE Nuclear and Space Radiation Effects Conference (NSREC) this year included a short course by Dr. Robert Baumann of Texas Instruments on this subject.

The growth of commercial interest in this area provides opportunities for researchers in the radiation effects community to leverage the knowledge gained in the work on radiation-hardened applications. Among the opportunities are:

Study of radiation effects in new materials and advanced device structures:
Leading edge technology options include the use of silicon-on-insulator, high-k gate dielectrics, low-k interlevel dielectrics, copper metallization, and strained silicon. Scaled bulk and SOI CMOS both can exhibit parasitic bipolar enhancement of radiation-induced photocurrents. The response of these materials and devices to radiation should be understood and incorporated into analysis of the circuit responses.

Modeling and simulation of interactions involving multiple devices:
The high packing density of advanced circuits increases the probability that multiple devices may be affected by a single event, and contribute to the resulting response. For example, multiple devices in a common well may be impacted by a single event that collapses the well potential. Nuclear reactions may produce products that deposit charge at multiple circuit nodes. These types of multiple device events may be the weak link in many cases and must be accounted for in design topology.

Understanding and accounting for the complex 3D structures of today's circuits (including the overlayer materials):
Below the active devices, complex doping profiles on junctions, wells, and substrates (which may include the use of SOI) can affect single event charge collection. At the active device level, nonplanar devices (such as FinFETs) are proposed to address scaling limitations. Above the active layer are complex stacks of high-Z metals and interlevel dielectrics with which ionizing radiation interacts prior to reaching the devices. Understanding and accounting for how particles interact with the multiple materials and geometric structures and deposit energy

Michael L. Alles

Free trade redux

Why should we do anything for posterity; what has posterity ever done for us?

Sir Boyle Roche

is vital to predict and understand the circuit response.

Development of advanced simulation technology to reduce testing requirements:
Commercial applications tend to be very cost sensitive. Radiation-hardened applications may be required to operate in environments for which it is not possible to test. In all cases, iteration of technology or design with repeated testing is very costly and time consuming. A more comprehensive "virtual testing" capability is needed to reduce the testing burden. The advent of inexpensive powerful parallel computing capabilities has opened the door to making this a feasible option.

Development and application of hardened by design techniques to address commercial needs:
There has been substantial work in the development of device and circuit topologies that are optimized to mitigate radiation effects. In many cases, the tradeoff (increases area, decreases performance) associated with these techniques may not be acceptable for commercial applications. However, there may be applications where some of these techniques may be leveraged in improving the radiation tolerance of commercial designs.

Incorporation of radiation effects as a reliability design criterion in commercial design flows:
For the most part, the impact of radiation on circuits is simulated through a combination of energy deposition, device response, and circuit level response simulation techniques. The process is not highly automated, nor are the models and capabilities well integrated into electronic design automation (EDA) tool flows. The opportunity exists to integrate radiation effects as reliability considerations in design flows, such as incorporation of radiation-aware compact models, design rules, and parasitic extraction into process design kits.

These are exciting times for the study of radiation effects. Wrestling with how to meet the continuing needs of strategic and space applications in a challenging business environment, characterization of commercial technologies for radiation response, application of radiation-effects experience to address growing commercial concerns, and development of radiation-aware design environments present ongoing opportunities for researchers in the radiation effects community.

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OTHER NEWS

Radiation Effects Community Loses Early Leader

LEN ADAMS, Age 67

24th February 1938 to 14th June 2005

Len Adams

Len Adams, earlier Head of the Radiation Effects and Component Analysis Techniques Section at the European Space Agency's European Space Research and Technology Centre (ESTEC) and later a consultant and honorary professor at Brunel University, spent most of his career doing work he really enjoyed. He was born in 1938 in India, where his father was on a Royal Air Force posting. His early career was in the British Merchant Navy as the youngest, fully qualified, radio officer in the fleet. He served firstly on passenger liners and then moved on to tankers and tank landing ships. After five years he left the sea, and worked at GEC Stanmore Research Laboratories as a missiles

trials engineer. He subsequently worked at Imperial College's field station in Ascot, as an experimental officer doing research into thunderstorms. In 1965 he moved on to being an engineer at the European Space Research Organisation (ESRO) in Delft, The Netherlands. Here he started in the Technical Directorate being involved with building and testing of rocket payloads and later satellite systems. The work of this growing international organisation, originally scientific, evolved into spacecraft engineering and launch for the whole of Europe. In the late sixties, Len moved with the organisation to the large laboratory, ESTEC, at Noordwijk and lived in Oegstgeest, near Leiden.

Len developed several of the arts which were desperately needed for making good spacecraft and as a Component Laboratory Manager, Len guided a team of experts which gave technical support to ESRO project groups in all matters concerning electronic components. Component reliability evaluations and failure analysis were carried out in this group's own laboratory, which at that time was rated as one of the most advanced Component Laboratories in Europe. The application of advanced techniques to failure analysis also soon opened the door to the radiation area. The component laboratory's 150 KeV X-ray system and Scanning Electron Microscopes were used as early irradiation sources. As a resourceful engineer with physics experience Len very early tackled "Radiation Hardness Assurance" addressing all aspects of the effects of space radiation on components. Len supplied that resourcefulness, which extended to imaginative ways of using laboratory radiation to simulate the "great radiation laboratory" of outer space. The successful development of the laboratory CASE (Californium-252 Assessment of Single-event Effects) system and later the installation of the Co-60 gamma cell, are good examples of rapid progress. With the successful installation of external test sites such as the Proton Irradiation Facility at PSI, Switzerland and the Heavy-ion Irradiation Facility at UCL, Belgium, Len, as Head of the Radiation Effects and Component Analysis Techniques Section of the European Space Agency, was behind numerous internal and external activities, studies, qualification programs and later flight experiments. Len's passion for flying radiation experiments started back in 1977 with the GEOS flight where simple MOS transistors measured the space environment in geostationary orbit, to current Standard Radiation Environment Monitors (REM) flown on MIR and STRV-1A, and the SREM on PROBA and Rosetta. Because of the complex mixture of skills needed, Len's group soon grew to a considerable size and had an international reputation as an original contributor to space technology and a source of funds for research. Len's role also evolved into being the point to which NASA and other national space agencies could come for information and collaboration in this specialist field. Thus, a part of the life of Len and his staff was extensive travel missions to the USA, Japan, Russia, India and South American countries, co-ordinating projects, giving scientific papers or reporting back to management on the policies and plans of other nations. His professional activities in promoting the science of radiation effects included work with the RADECS Association in Europe and IEEE/NSREC in the USA. Len often served as a reviewer or session chair at theses conferences and published many papers at the *IEEE/Transactions on Nuclear Science*, in RADECS proceedings and other scientific journals. Important and lasting products of this intensive (and well-funded) work were the numerous ESA standards documents involving "Radiation Hardness Assurance" and the associated information banks. One of the "Contractor Reports" in this activity later evolved into the "Radiation Effects Handbook," by Holmes-Siedle and Adams, published by Oxford University Press, in two editions, 1992 and 2002, which attempted to encapsulate all this knowledge into a straightforward guide for engineers.

An illustration of the speed at which Len got things done was his active support for a new invention called a RADFET, a special semiconductor transistor that measured accumulated radiation damage in space for a suitably small expense of weight and power (unmanned satellites cannot spare much of either). Starting development in 1975, the device was flying in space by 1977. This must be a record for speed, since ideas usually take much longer to get into space. This illustrates a special influence which Len had on the projects which he handled. One knew that Len would always be positive and speedy. Any dis-

Oysters too

Nature has its weak side, if only we can find it.

James Watt

Hard to avoid

One should never go to America for the first time.

Jawaharlal Nehru

cussion or disagreements would be resolved in a friendly way and one would come out of the discussion feeling better and probably laughing as well. It was in this aspect that his bubbling personality and enjoyment of his work came out: in large organisations, special persuasion may be needed to achieve results. Around ESTEC, Len's laugh was often audible while a masterpiece of persuasion took place in a corridor. The process would often be rounded off later with a friendly meal or a "pie and a pint."

After retirement in 1998, Len moved to England. He did consulting work for Spur Electron, a small component reliability firm, advised CERN in Geneva on the parts requirements for the new LHC accelerator and, as an Honorary Professor, directed the research of at least one student at Brunel University. At his home at Aldeburgh on the East Coast, he was able to follow his enthusiasms for model making, especially boats, restoring old cars, gardening and experimental cuisine. Through his son-in-law he developed an interest in steam railways, and enjoyed a number of trips out on the footplate of various engines on the North Yorkshire Moors Railway. He also experienced more unusual forms of travel, including the steam lorry shown in the photograph and a flight in a Tiger Moth aircraft.

He met his wife Yvette at GEC Stanmore, and they were married in 1962. He is survived by Yvette and their two daughters, Nikki and Jayne.

The obituary above was written by Andrew Holmes-Siedle, Oxford, UK and Reno Harboe-Sorensen, Nordwijk, The Netherlands who met Len in 1975 and 1970 respectively. Overseas colleagues and friends wishing to make a memorial donation for Len Adams may send checks made out to "Aldeburgh Community Responders," a volunteer first-aid team which helped with Len's illness more than once. In the first instance, they may contact the authors of this obituary (Andrew's email is holmes.siedle@dial.pipex.com).

Society of Nuclear Medicine Honors Ed Hoffman

Simon R. Cherry, *First Recipient, Edward Hoffman Memorial Award*

The Computer and Instrumentation Council of the Society of Nuclear Medicine has initiated a new award honoring former IEEE NPSS President Edward J. Hoffman who passed away in July 2004. Named the Edward Hoffman Memorial Award, it is given in recognition of "Outstanding Scientific Contributions to the field of Computers and Instrumentation in Nuclear Medicine."

The first recipient of this annual award was Simon R. Cherry, Ph.D., a Professor in the Department of Biomedical Engineering at the University of California at Davis, and a former postdoctoral fellow in Dr. Hoffman's laboratory at UCLA. The award was presented to Dr. Cherry in Toronto in June at the 52nd annual meeting of the Society of Nuclear Medicine by the President of the Computer and Instrumentation Council, Dr. George Zubal. Prior to the award presentation, Dr. Cherry gave a talk detailing some of Dr. Hoffman's many contributions to the field of nuclear medicine and also highlighted Dr. Hoffman's influence on his own research over the past 15 years.

The IEEE Nuclear & Plasma Sciences Society is there...

IEEE

NUCLEAR & PLASMA SCIENCES SOCIETY

INVESTIGATING THE FUNDAMENTAL NATURE OF MATTER

The community of physicists and engineers represented by the Particle Accelerator Conference and the Particle Accelerator Science and Technology Committee provide the beams of particles that the nuclear and high-energy physics experiments need for their research. Attendees of the Nuclear Science Symposium, organized by the Radiation Instrumentation Committee, develop the detectors that are used to detect and characterize the particles resulting from the interactions, leaving the analysis to the nuclear and high-energy physicists.

DEVELOPING ENERGY SOURCES AND THE EFFICIENT USE OF ENERGY

No one can question the importance of a reliable and low-cost energy supply. Sessions in the Nuclear Science Symposium are devoted to nuclear power systems and the Symposium on Fusion Engineering and the Fusion Technology Committee are devoted to the development of Fusion Power. The International Conference on Plasma Science and the Plasma Science and Applications Committee are devoted to all aspects of plasmas including efficient lighting, material processing, and many other applications. Power sources for many applications, including particle accelerator, fusion, plasma, and hydrodynamics systems are the focus of the Pulsed Power Conference and the Pulsed Power Science and Technology Committee.

HEALTH CARE

The Medical Imaging Conference, organized by the Nuclear Medical and Imaging Sciences Technical Committee, provides a forum for the presentation of new concepts and developments in nuclear medical technology. This has significantly impacted new developments in medical diagnosis. The technology has evolved into health care systems using positron emission tomography (PET), single photon emission computed tomography (SPECT), X-ray computed tomography (CT), mammography, and digital radiography systems, all of which are based on radiation detection systems and reconstruction algorithms developed by the community of the NPSS Medical Imaging Conference (MIC). Cancer treatment with particle beams requires particle accelerators, the subject of the Particle Accelerator Conference community. The International Conference on Plasma Science also has sessions on medical and biological applications.

PROBING THE UNIVERSE AND EXPLOITING SPACE

The extreme reliability required of electronics in a high radiation environment is the reason for the Nuclear and Space Radiation Effects Conference, organized by the Radiation Effects Committee, the European Conference on Radiation and its Effects on Components and Systems. In addition, the Nuclear Science Symposium has astrophysics detector sessions.

DATA HANDLING AND SEMICONDUCTOR DEVELOPMENT

New technologies in all these areas need the highest performance data capture and processing involving electronics and specialized computer hardware and software. The Real-Time Conference organized by the Computer Applications in Nuclear and Plasma Science Technical Committee covers all these aspects as well as the International Conference on Accelerator and Large Experimental Physics Control Systems. The work of the community of researchers represented by the Nuclear and Space Radiation Effects Conference adds to the reliability of semiconductors for everyone; for example, making semiconductor memory errors almost a distant memory.

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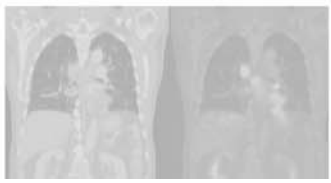

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