

Nuclear & Plasma Sciences

Number 3 • September 2007

SOCIETY NEWS

CONFERENCES

HAWAII 2007 NUCLEAR SCIENCE SYMPOSIUM AND MEDICAL IMAGING CONFERENCE

October 28 – November 3, 2007

Hilton Hawaiian Village Beach Resort and Spa
Honolulu, Hawaii

The 2007 IEEE Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC) will be held October 28 – November 3, 2007 at the Hilton Hawaiian Village Beach Resort and Spa in Honolulu, Hawaii, USA. For the first time, the Hawaiian site was chosen for its location as a crossroad between the US mainland and the booming Asian-Pacific region. Detailed information concerning the joint conference can be found on the conference website at <http://www.nss-mic.org/2007>.

A major objective of the joint conference is to attract and welcome new members from countries in this region to the IEEE Nuclear and Plasma Sciences Society (NPSS) and to encourage current members in this region to become more actively involved in the Society. This follows our very successful experience of holding the conference in Europe, for the first time in Lyon, France in 2000 and then in Rome, Italy in 2004. We hope the 2007 conference will provide a unique opportunity to promote and foster closer interactions and collaborations between colleagues in nuclear science and medical imaging from

the Asian-Pacific countries and all over the world to further enhance its truly international character. A special session organized by our Asian-Pacific members is being planned.

The Organizing Committee was pleasantly surprised to see a record 1,506 abstract submissions. The program chairs are organizing the accepted papers into a five full-day NSS program with two parallel sessions and a four full-day MIC program with two parallel sessions with regular oral and poster presentations. The daily program includes two 1.5-hour sessions in the morning (8:30 AM to 12:00 Noon) and two 2-hour sessions (1:30 PM to 6:00 PM) in the afternoon. An afternoon of joint NSS-MIC sessions will be held on Tuesday, October 31. There will be a number of full and half-day topical short courses held before the meeting. A new addition to the program is a series of 50-minute refresher courses held during the meeting to review current topics of special interest. In addition, there will be two special-interest workshops on new developments in micro-

continued on page 3



Benjamin M. W.
Tsui
General Chair



Ronald J. Jaszczak
Deputy General
Chair



Ren-Yuan Zhu
NSS Program Chair



Eric C. Frey
MIC Program
Chair

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NEWSLETTER EDITOR:

Albe Dawson Larsen
Stanford Linear Accelerator Center
MS-66
2575 Sand Hill Road
Menlo Park, CA 94025
Tel: +1 650 926 2748
Fax: +1 650 926 5124
E-mail: amlarsen@slac.stanford.edu

EDITOR EMERITUS:

W. Kenneth Dawson
TRIUMF, 4004 Wesbrook Mall
Vancouver, British Columbia
Canada, V6T-2A3.
Tel: +1 604 222 7455
Fax: +1 604 222 7307
E-mail: k.dawson@ieee.org

IEEE MAGAZINES AND NEWSLETTERS:

Peter Tuohy, Production Manager
Paul Doto, Newsletter Coordinator

Contributors to September 2007 IEEE NPSS Newsletter in alphabetical order: Anupama Balasubramanian, Ilan Ben-Zvi, Uwe Bratzler, Peter N. Clout, Gerald Cooperstein, Albe Dawson Larsen, W. Kenneth Dawson, Craig Donaldson, Teresa Farris, Harold Flescher, Marc Gaillardin, Kelly Hahn, David L. Johnson, Jane M. Lehr, Tom Lewellen, John Luginsland, Siqi Luo, Jean Pierre Martin, Bill Moses, Farrokh Najmabadi, Tim Oldham, Sal Portillo, Oliver Prinz, Edl Schamiloglu, Karl H. Schoenbach, Stan Schriber, Brandon M. Smith, Mark Tillack, Benjamin M. W. Tsui, Margaret Votava, David A. Wetz, Peter S. Winokur, Steven J. Zinkle

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 5, 2008 for publication in the March 2008 Newsletter.

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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pattern gas detectors and on hadron therapy, and a special session on technology transfer.

To support and enhance these scientific and educational activities and to provide travel grants for students, a fund-raising campaign is underway.

A commercial exhibit featuring state-of-the-art products and services from a wide range of vendors will take place during the main part of the meeting. Also, a companion program will provide daily tours to the many attractions and activities in and around Honolulu and Oahu Island during the conference.

On behalf of the organizing committee, we extend our warmest welcome to you and encourage you to make plans now to attend this exciting joint conference of the IEEE Nuclear and Plasma Sciences Society. We look forward to welcoming you to beautiful Honolulu, Hawaii.

NSS PROGRAM

The Nuclear Science Symposium (NSS) this year promises to be remembered beyond the wonderful Hawaii venue. A total of 853 abstracts were received. To accommodate this record-breaking submission, NSS authors were polled to express their preference on the program length and the parallel session numbers. The poll shows a majority favoring a five-day NSS program with four parallel sessions. Accordingly, the NSS program this year is expanded from Monday to Friday. The NSS luncheon will be held on Monday, October 29, where various awards will be presented. Our lunch speaker, Gary Sanders, will describe the Thirty Meter Telescope (TMT) Project, planned to open the next generation of giant ground-based telescopes and to sweep away the disturbances of the atmosphere by use of adaptive optics.

The NSS plenary talks will be delivered on Monday, October 29, by the following speakers.

- Jim Virdee: **The Large Hadron Collider Experiments: Status and Physics Prospects**
- Jim Brau: **The Physics and Detectors of the International Linear Collider**
- David Hitlin: **The SuperB Project**
- Chris Bebek: **Dark Energy and the SNAP Space Mission**

The symposium also 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. The symposium program includes 380 oral papers in 60 parallel sessions and 450 poster papers in two poster sessions. The scientific topics to be covered this year are listed below.

- Instrumentation 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 and Nuclear Physics Instrumentation
- New Solid State Detectors
- Nuclear Measurements and Monitoring Techniques
- Photodetectors and Radiation Imaging
- Radiation Damage Effects
- Scintillators and Scintillation Detectors
- Solid State Tracking Detectors
- Synchrotron and Neutron Instrumentation
- Trigger and Front-End Electronics
- Instrumentation for Medical and Biological Research
- Accelerators and Beam Line Instrumentation
- Computing and Software for Experiments
- Neutron Imaging and Radiography

The NSS Short Course program will cover specialized topics, and provide an excellent educational opportunity for young scientists in the field. In addition, this year's NSS program features three refresher courses covering detectors, electronics and software.

For information concerning the NSS Program, please contact:

Ren-Yuan Zhu, NSS Program Chair,
256-48, HEP, Caltech, Pasadena, CA 91125,
USA;

zhu@hep.caltech.edu;

Phone: +1 626-395-6661

Liyuan Zhang, NSS Deputy Chair.

256-48, HEP, Caltech, Pasadena, CA 91125,
USA;

liyuan@hep.caltech.edu;

Phone: +1 626-395-6618.

MIC PROGRAM

The 2007 MIC will span four full days (Wednesday, October 31 through Saturday, November 3) plus NSS-MIC joint sessions on Tuesday, October 30. The MIC provides a forum for presenting fundamental theoretical

Chronology

Age does not depend upon years, but on temperament and health. Some men are born old, and some never become so.

Tryon Edwards



Liyuan Zhang
Deputy NSS Program
Chair



Magnus Dahlbom
Deputy MIC Program
Chair

and applied contributions to the physics, engineering, and mathematical aspects of medical imaging. This conference will provide the opportunity for exchange of ideas and recent advances in medical imaging. There will be two plenary sessions, one on October 31 by Dr. H. William Strauss entitled *The Scintillating Future of Multi-Modality Cardiac Imaging* and one on November 1 on applications of nanotechnology to medicine. A 50-minute refresher course will be given at 7:30 AM each morning (topics are described below). The MIC Banquet will be held on Friday, November 2. The contributed papers are the heart of the program: a record 653 abstracts were received. To accommodate these and to provide adequate time for poster viewing, there will be over 400 posters presented in four two-hour poster sessions and 134 oral presentations in 20 oral sessions, two in parallel at a time, plus two joint sessions on Tuesday, October 30. Contributed papers will be presented describing original and innovative technical contributions to the field of medical imaging in the following areas:

- PET & PET/CT Instrumentation and Reconstruction
- SPECT & SPECT/CT Instrumentation and Reconstruction
- Small Animal Imaging and Imagers
- Application Specific Imagers
- X-ray CT Instrumentation and Reconstruction
- X-ray Imaging Technologies and Techniques
- Simulation Tools and Modeling of Imaging Systems
- Acquisition and Processing of Dynamic Data
- Quantitative Imaging and Compensation Methods
- Evaluation and Optimization of Imaging Systems and Image Reconstruction and Compensation Methods
- Scintillator-based Detection and Imaging Technologies
- Semiconductor Detector and Imaging Techniques
- Clinical Applications of Biomedical Imaging

In addition, 50-minute refresher courses will be given detailing advances in analytic reconstruction, X-ray computed tomography, scintillators, and photodetectors.

For information concerning the MIC Program, please contact:

Eric C. Frey,

MIC Program Chair,
Johns Hopkins University,
JHOC 4263,
601 N. Caroline Street,
Baltimore, MD 21287-0859, USA;
mic2007@jhmi.edu;
Phone: +1 443-287-2426.

Magnus Dahlbom,
MIC Deputy Program Chair,
David Geffen School of Medicine at UCLA,
650 Charles Young Drive South,
Los Angeles, CA 90095, USA;
mic2007@jhmi.edu;
Phone: +1 310-206-8273.

SHORT COURSE PROGRAM

In depth full-day and two-day courses on topical subjects in science and medical imaging will be offered prior to the Conference. Topics will include:

NSS Short Courses:

- Nuclear Science for Homeland Security
- Radiation Detection and Measurement
- Integrated Circuit Front Ends for Nuclear Pulse Processing

MIC Short Courses:

- Programming and Medical Applications Using Graphics Hardware
- Image Quality
- Molecular Biology
- Statistical Methods for Image Reconstruction
- Dynamic Imaging in Emission Computed Tomography
- Physics and Design of Detectors for PET and SPECT

Please visit the conference website www.nss-mic.org/2007 for updated information. For information regarding the Short Course program, please contact.

Stephen E. Derenzo, NSS Short Course Program Chair, Lawrence Berkeley National Laboratory, Berkeley, California, USA. sederenzo@lbl.gov. Phone: +1 510-486-4097 or

Grant T. Gullberg, MIC Short Course Program Chair, Lawrence Berkeley National Laboratory, Berkeley, California, USA. GTGullberg@lbl.gov. Phone: +1 510-486-7483

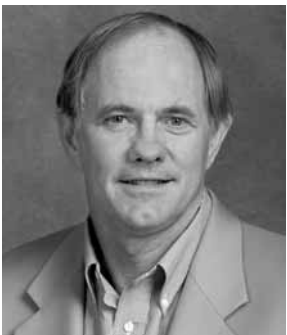
NEW REFRESHER COURSE PROGRAM

Refresher courses will be offered for the first time during the conference. They are short lectures designed to provide reviews of current topics that interest most participants. Topics will include:

NSS Refresher Courses:



Steve Derenzo
NSS Short Course
Chair



Grant Gullberg
MIC Short Course
Chair

- Improving Gas Detectors: Why and How
- Digital Designs with FPGAs: Examples and Resource Saving Tips

MIC Refresher Courses:

Two to four Refresher Courses and one or two Focused Courses on topics related to the meeting are scheduled for outside of normal session times. Please visit the conference website at www.nss-mic.org/2007 for updated information.

THE ASIAN-PACIFIC PROGRAM

Following the successful NSS/MIC conference in Europe, a major reason for holding the conference in Hawaii is to reach out to our colleagues in the fast growing regions of Asia and the South Pacific. A special Asian-Pacific Program has been organized to provide a forum for the participants to learn about the range of scientific research and technological development in the Asian-Pacific region that is of great interest to the multidisciplinary nuclear science communities, including HEP, radiation detectors and instrumentation, medical physics and medical imaging.

To overview the major NSS/MIC scientific activities in Asia and the South Pacific, three special Asian-Pacific sessions have been organized which are based on presentations from 18 invited speakers from Australia, China, Japan, South Korea, New Zealand and Singapore, but not limited to that. These sessions have been scheduled to overlap minimally with the other parts of the scientific program of the NSS/MIC conference to enable the maximum attendance by all conference participants and support the exchange of ideas and collaboration between East and West. Increased numbers of presentations from Asian and South Pacific countries are included in the regular NSS/MIC program.

The Asian-Pacific Program has demonstrated strong interest from Asian and South Pacific regions. This has essentially increased the number of conference participants this year. It will provide an informal forum for discussion of opportunities in mutually beneficial technology transfer and the commercialization of ideas between East and West, which will lead to future active attendance of our Asian and South Pacific colleagues at IEEE NSS MIC conferences and IEEE NPSS professional activities.

All registered participants are entitled to attend the Asian-Pacific sessions and contribute to the exchange of ideas. All presented invited papers with in the Asian-Pacific program will be submitted to the IEEE TNS for publication.

For information concerning the Asian-Pacific Program, please contact: **Anatoly B. Rozenfeld**, Asian-Pacific Program Chair, Centre for Medical Radiation Physics, Faculty of Engineering, University of Wollongong, Wollongong, NSW 2522, Australia; Anatoly@uow.edu.au; Phone: +61-2-42214574



Anatoly Rozenfeld
Asian-Pacific
Program Chair

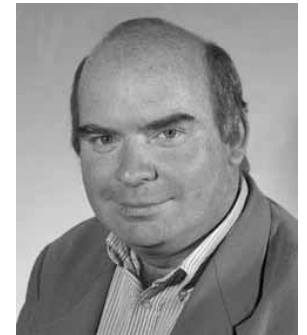
**WORKSHOP ON NEW DEVELOPMENTS
IN MICRO-PATTERN GAS DETECTORS**

The recent results in the field of Micro-Pattern Gas Detectors – used for fast tracking at the LHC and planned for high precision tracking at the ILC, pixel readout of Micro-pattern Gas Detectors, astrophysics research and medical applications, optical readout of MPGD, with a focus on design principles, performance, reliability and limitations - will be discussed. The workshop format includes invited speakers and presentations selected from submitted abstracts.

The Workshop Topics will include:

- High Precision Tracking for TPC
- High Rate Tracking, Triggering and Aging Studies
- Gaseous Photomultipliers
- New Manufacturing Technologies for MPGD
- Pixel Readout of Micro-Pattern Gas Detectors
- Astrophysics, Neutrino Physics and Medical Imaging
- Optical Readout of Micro-Pattern Gas Detectors
- System Aspects: Detector and Electronic Integration

For more information on the workshop, please contact the co-chairs: Paul Colas, SACLAY, France, Paul.Colas@cea.fr, Leszek Ropelewski, CERN, Switzerland, Leszek.Ropelewski@cern.ch or Maxim Titov, SACLAY, France, maxim.titov@cea.fr.



Paul Colas
Co-chair, Workshop
on Micropattern Gas
Detectors



Leszek Ropelewski
Co-chair, Workshop
on Micropattern Gas
Detectors



Maxim Titov
Co-chair, Workshop
on Micropattern Gas
Detectors

**WORKSHOP ON INNOVATIVE
TECHNIQUES FOR HADRON THERAPY**

This one day workshop will review the evolution of innovative concepts and instrumentation around technologies for hadron beam radiotherapy (hadron therapy). This emerg-



Ron Keyser
Industrial Program
Chair

ing field is a perfect illustration of merging Nuclear and Radiation Instrumentation experts with the Medical Imaging community. The goal of the workshop is to provide a forum for interested participants to discuss in a convivial manner the technical progress in the field and to exchange recent experiences. The workshop format will consist of invited review talks, and oral and poster presentations. The preliminary agenda includes review talks and presentations in the areas of new accelerator concepts for protons, ions, antiprotons and neutrons, instrumentation for beam delivery control and real time dose monitoring, and simulation and modeling for beam delivery and patient treatment planning.

For more information on the workshop, please contact the workshop co-chairs:

Patrick Le Dû, DAPNIA CEA Saclay, France (pledu@cea.fr), Anatoly Rozenfeld, University of Wollongong, Australia (anatoly@uow.edu.au) or Steve Peggs, Brookhaven National Laboratory, USA (peggs@bnl.gov).

SPECIAL SESSION ON TECHNOLOGY TRANSFER

In the special session on Technology Transfer professionals and top experts from the field will share their experience and present examples of great success stories within our community where “just an idea” or “small invention” has led to a new commercial product, spin-off, or a new company. Conference participants will have an opportunity to inquire and learn about the necessary steps for such paths of success. Technology Transfer Office professionals and experts will provide information concerning intellectual property, patents, seed money, venture capital and other forms of start-up funding. Detailed information can be found on the conference website www.nss-mic.org/2007.

For more information, contact the co-chairs of the Special Session: Uwe Bratzler, Uwe.Bratzler@cern.ch or Jean-Marie Le Goff, Jean-Marie.Le.Goff@cern.ch.

PUBLICATIONS

All papers presented at the NSS, MIC and Workshops will be published in the Conference Record provided they are received on or before November 16, 2007. In addition, all authors are encouraged to submit their papers to the *IEEE Transactions*

on *Nuclear Science*. Authors of medical imaging papers may alternatively choose to submit their manuscripts to the *IEEE Transactions on Medical Imaging*. All Transaction papers will be subject to a formal review process. Detailed information on paper publication will be provided to authors of accepted papers.

INDUSTRIAL PROGRAM

A record number of vendors with products and services related to the NSS and MIC have registered to participate in the Industrial Program, both for the exhibition and the program of technical seminars. An exhibition area central to conference activities will be provided to display the latest products and innovations. Interested vendors should quickly contact:

Ron Keyser, Industrial Program Chair, ORTEC, 801 South Illinois Avenue, Oak Ridge, Tennessee, 37831 USA; Ron.Keyser@ametec.com; Phone: +1 865-483-2146.

TOURS AND COMPANION PROGRAM

The focus of the Companion program is to provide an opportunity to meet new people and experience Hawaii through a variety of activities. All tours depart from and return to the conference hotel. For tours beginning in the morning, participants are invited to meet for a complimentary Continental breakfast in the Rainbow Room. We hope your visit will be enhanced by the opportunity to experience the beauty of Hawaii through these activities.

DAILY TOURS

Sunday, October 28

The Grand Circle Island Tour will leave the Hilton Hawaiian Village at 7:15 am and return at 3:15 pm. We will visit the famous sites of Diamond Head Lookout, Pali Lookout, Hanauma Bay, and Halona Point/Blow Hole. Traveling north around the island we will see the exclusive Kahala Estates, North Shore surfing beaches, Wiamea Bay and sugar and pineapple fields, and stop at Kelemano Plantation for a no-host lunch. Our tour will also include a visit to the famous Byodo-In Temple.

Monday, October 29

and Thursday, November 1

Pearl Harbor/Arizona Memorial/City Tour Our exclusive tour includes a 75-minute guided tour, documentary film, short boat



Uwe Bratzler
Co-Chair, Technology
Transfer Session
General Chair,
NSS/MIC 2008

trip, and self-exploration of the USS Arizona Memorial. You will have an opportunity to visit the museum, museum shops and many self-guided exhibits located throughout the Visitors Center and park grounds. No reservations are taken for the Arizona Memorial tour and tickets are on a first-come, first-served basis. This tour will leave the hotel at least by 7 am and will return by 11 am. Our driving tour will include Punchbowl National Cemetery, Iolani Palace, the State Capitol, Kawaiahao Church and Mission Homes, and the famous King Kamehameha Statue.

Tuesday, October 30
and Friday, November 2

Kayak or Snorkel Adventure Tours

Today you will have a choice of three all day adventure tours. A Kayak Adventure tour for those with some kayaking experience, will begin with a trip to Kailua Beach and a safety briefing with mapping and orientation of the paddling area. Your kayak, paddle, padded backrest, life jacket and picnic lunch are included in the price.

For beginners, we offer a tour with a trained naturalist to guide you along the beautiful coastal area. You will be landing your safe and stable sit-on kayak on one of two world famous beaches (Kailua or Lanikai) for some snorkeling among the tropical fish and sea turtles. Your guide is a master paddler and instructor so you will learn the fun and safe way to paddle your kayak. Guide, kayak, snorkel gear, padded backrest and picnic lunch are included in the price.

A third option for today's adventure is a Snorkel trip providing a day in an area where sea turtles abound. A boogie board, snorkeling gear and delicious picnic lunch are included in the price. All tours leave the Hilton Hawaiian Village at 8:15 am and return at 3 pm.

Wednesday, October 31

Hawaiian Waterfall Hiking Adventure

Spectacular 2000 foot jagged cliffs tower above as you walk into the lush Koolau mountains that rise above Kaneohe Bay. We will visit a picturesque rainforest waterfall and enjoy Hawaii's unique rainforest plants and birds. You will have the choice of a morning hike leaving the Hilton Hawaiian Village at 8 am and returning at 12 noon or an afternoon hike leaving the Hilton at 2 pm and returning at 6 pm.

Thursday, November 1

Pearl Harbor/Manoa Waterfall Hiking Adventure

Thursday offers two choices for your day's activities. The Pearl Harbor/Arizona Memorial/City Tour will be repeated (see Monday's tour) or you may choose to fulfill your fantasies about Hawaii's lush rainforests, giant ferns, cascading tropical waterfalls, picturesque streams and unique species that can be found nowhere else on earth, on the Manoa Waterfall Hiking Adventure. This tour leaves the Hilton Hawaiian Village at 8 am for a morning hike or at 2 pm for an afternoon hike.

Friday, November 2

Snorkeling Adventure or Waikele Outlet Shopping

Today you may choose to a trip to Snorkel among sea turtles on the Snorkeling Adventure (see Tuesday's activities) or take the exclusive charter bus to the Waikele Outlet stores for a day of shopping.

Saturday, November 3

Polynesian Cultural Center

Plan for an all day trip to explore the unique and varied cultures of the South Pacific. We will leave the Hilton Hawaiian Village at 10 am for a visit to the Polynesian Cultural Center and return at 9:30 pm. The price includes round trip transportation and admission to the center, which includes the 7 Polynesian Villages and Pageant of the Long Canoes. Meals are not included.

Details of the Companion Program and registration will be posted to the conference website www.nss-mic.org/2007. For more information concerning the Tour and Companion Program, please contact Kathy Gullberg or Nancy Jaszczak, Tour and Companion Program Co-Chairs, kathy.gullberg@gmail.com and njj@spect.com.

REGISTRATION

This year all registration formalities for participants are being handled electronically through the conference web site at <http://www.nss-mic.org/2007>. 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 via our link to the hotel's website. Payment may be made in several convenient ways.

**And
ever-present**

The problem is
that in politics,
hypocrisy is
essential.

Margaret Wentz

Licence to err

You can break
every grammatical
and syntactical
rule consciously
when, and only
when, you have
rendered yourself
incapable of
breaking them
unconsciously.

Bernard Levin



Christina Sanders
Registration Chair

TRAVELING TO HONOLULU, HAWAII

A formal letter of invitation for visa purposes can be downloaded from, and more information on Honolulu, Hawaii, hotel accommodations and general travel information can be found on the conference website www.nss-mic.org/2007.

Benjamin M. W. Tsui, General Chair, can be

reached at Department of Radiology, Johns Hopkins University, JHOC 4263, 601 N. Caroline Street, Baltimore, MD 21287-0859, USA; nss-mic2007@jhmi.edu; Phone: +1 443-287-4025.

Ronald J. Jaszczak, Deputy General Chair, at Duke University Medical Center, DUMC-3949, Durham, NC 27710, USA; r.jaszczak@ieee.org; Phone: +1 919-684-7685.

2008 IEEE NUCLEAR SCIENCE SYMPOSIUM/MEDICAL IMAGING CONFERENCE/ROOM TEMPERATURE SEMICONDUCTOR X- AND GAMMA RAY DETECTORS WORKSHOP SECOND STATUS UPDATE

In a rut

People make such a big thing of living and it really isn't that important... You go to bed at night and you fall asleep and it's all over. Then you wake up the next day and you have to start all over again.

Andy Warhol

The Nuclear Science Symposium (NSS), Medical Imaging Conference (MIC), and 16th International Workshop on Room Temperature Semiconductor X- and Gamma-Ray Detectors (RTSD) will be held for the first time in Germany, in the culturally rich city of Dresden, on 19-25 October 2008, at the International Congress Center Dresden. Forschungszentrum Dresden-Rossendorf (FZD, was FZR), a German national physics laboratory, is both the cosponsor and local organizing institution in Dresden.

This will be the third NSS/MIC held outside North America. Attendance at the European-based NSS/MIC meetings has been strong from the beginning, and has steadily increased since with about 1,300 participants in Lyon (2000) and over 1,800 participants in Rome (2004). It is anticipated that the Dresden 2008 conference will be the largest yet, with 2,000 participants or more.

Preparations for this major annual event for our world-wide science community are on schedule and in full swing. Currently, the scientific program as well as the detailed local arrangements are being worked out. In addition to the regular workshop program in

Dresden, two Satellite Workshops will be offered, one before and another one after the conference week, by two of the largest and most renowned laboratories in our fields; at DESY in Hamburg and at Forschungszentrum Jülich (located near Cologne). The workshops will cover state-of-the-art topics of the laboratories' current research. In addition to the scientific value of these workshops and laboratory visits, this will also be a great opportunity to experience other areas of Germany. All conference registrants are welcome to participate.

As the 2008 NSS/MIC General Chair, being also active in the NPSS Transnational Committee (TNC), I encourage and welcome feedback and input of any ideas, suggestions, or any other comments you may have, related to the preparation work and shaping of this major event for our world-wide science community.

For additional information and to provide feedback, ideas and suggestions, please contact the 2008 IEEE NSS/MIC General Chair: Dr. Uwe Bratzler, CERN and TMU, European Organization for Nuclear Research, Physics Department, 1211 Geneva 23, Switzerland; E-mail: Uwe.Bratzler@cern.ch.

2008 NUCLEAR AND SPACE RADIATION EFFECTS CONFERENCE IS PLANNING FOR TUCSON, ARIZONA

JULY 14 – 18, 2008

The 2008 IEEE Nuclear and Space Radiation Effects Conference will be held July 14-18, 2008 in Tucson, Arizona at the newly-opened JW Marriott Starr Pass Resort and Spa. The conference will feature a Technical Program consisting of nine sessions of contributed papers (both oral and poster) that describe the latest observations and research results in radiation effects, an up-to-date Short Course offered on July 14, a Radiation Effects Data Workshop, and an Industrial Exhibit.

The conference hotel is located in Tucson, Arizona, west of the downtown area and near to Gates Pass. 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, Jet Propulsion Laboratory, Aeroflex Colorado Springs, Boeing, BAE Systems, Micro-RDC, Honeywell, ST Microelectronics and Northrup Grumman.

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.

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

Basic Mechanisms of Radiation Effects in Electronic Materials and Devices

- 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
- Soft Error Rates (SER)

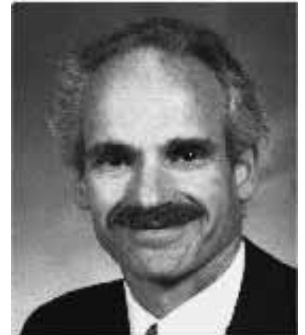
Hardness Assurance Technology and Radiation Testing

- 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



Tim Oldham
Chair, Radiation Effects Technical Committee



Teresa Farris
Radiation Effects VP for Publicity

Our fate

Perpetual war
for perpetual
peace

Gore Vidal

Works both ways

...political motivation can be as important as justifying correct views in science as they are in justifying false ones.

Robert Proctor

What counts

Throughout all written history the killing of people was never limited by the ability to kill people but always by the amount of intention to kill people.

Edward Teller

response data to scientists and engineers who use electronic devices in a radiation environment, and for designers of radiation-hardened or radiation-tolerant systems. Papers describing new simulation facilities are also welcomed.

PAPER SUBMITTAL

Information on the submission of summaries to the 2008 NSREC for either the Technical Sessions or the Data Workshop can be found at www.nsrec.com. The deadline for submitting summaries is **February 1, 2008**.

SHORT COURSE

Attendees will have the opportunity to participate in a one-day Short Course on Monday, July 14. The theme for the 2008 short course is: "Soft Errors from the Ground Up" and is being organized by Jeff Black of the Vanderbilt University/ISDE. 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

Paul E. Dodd
Sandia National Laboratories
505-844-1447

Technical Program

Nick van Vonno

Consultant/Intersil
321-255-2791

Local Arrangements

Bill Heidergott
General Dynamics
480-441-4598

Short Course

Jeff Black
Vanderbilt/ISDE
615-322-3758

Publicity

Teresa Farris
Aeroflex Colorado Springs
719-594-8035

Finance

Gary Dunham
NAVSEA Crane
812-854-6422

Awards

Mike Xapos
NASA/GSFC
301-286-2263

Industrial Exhibits

John Jewell
Sandia National Laboratories
505-797-8846

Poster Chair

Jeff Titus
NAVSEA Crane
812-854-1617

Data Workshop Chair

Jim Felix
Sandia National Laboratories
505-844-6132

REPORT ON PPPS-2007

The Pulsed Power and Plasma Science Conference

The Pulsed Power and Plasma Science Conference (PPPS-2007), a combination of the 16th Biennial IEEE International Pulsed Power Conference and the 34th Annual IEEE International Conference on Plasma Science, took place in Albuquerque, New Mexico, June 17-22, 2007. The 2007 Symposium on Fusion Engineering collocated with the PPPS-2007 Conference. A registrant to either conference (the registration fees were identical) had access to all technical sessions in both conferences. The poster sessions were held jointly as well.

The General Chair of PPPS-2007 was Professor Edl Schamiloglu from the University of New Mexico and the Technical Program Chair was Dr. Frank Peterkin from the Naval Surface Warfare Center, Dahlgren Division. Professor John Gaudet of the University of New Mexico was the Treasurer and Mr. Charles Reuben of the University of New Mexico was the Conference Secretary.

There were almost 1200 registrants at the PPPS-2007 Conference, of which 455 were from outside the US. The distribution of foreign registrants is shown in the chart on the following page. After the US, the greatest number of registrants were from South Korea (73), followed by Japan (56), the Russian Federation (48), the United Kingdom (48), France (40), and China (36). The European registrants (including the Russian Federation) totaled 207, while the Asia/Pacific registrants totaled 209 (including Australia).

Over 900 presentations were made across 7 plenary sessions, 54 oral sessions (6 parallel

oral sessions over four and one-half days), and 5 poster sessions. There were no competing oral sessions during the poster sessions.

The PPPS-2007 organizers set aside \$20,000 to support student travel to the conference. The organizers express their gratitude to Dr. John Luginsland (NumerEx) for organizing the selection of the student travel grant awardees.

Since the PPPS-2007 conference is a combination of two IEEE NPSS conferences, four Best Student Presentation awards were given (described in the Awards section of this Newsletter). The PPPS-2007 organizers thank Dr. Dave Abe of NRL for organizing the process and selecting the travel grant awardees.

The PPPS-2007 Exhibitors' Program was directed by Darryl Droemer (NSTech/Sandia National Laboratories). There were 49 booths occupied by 46 vendors in the NE Exhibit Hall of the Albuquerque Convention Center (shared space with the poster session and cyber café). Several of the vendors came from Europe to exhibit at this conference.

The PPPS-2007 Companion Program was organized by Mrs. Judy Gilman and was open to companions of both PPST and SOFE conference registrants. On Monday the companions took a tour of the Utility Shack and learned about Native American jewelry. They were then given a walking tour of Old Town in Albuquerque. On Tuesday the companions were given a tour of Acoma Pueblo. On Wednesday they visited Santa Fe and the Georgia O'Keefe Museum. On Thursday the companions toured the art collection of the



Edl Schamiloglu
PPPS 2007 Chair



Sure bet

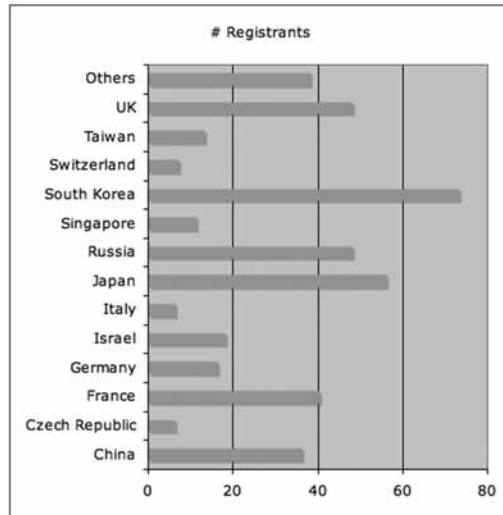
I know before it starts that a horse race is going to be won by a horse, and I don't much care which.

*Unknown
quoted by
Fred Hoyle*

Enroll now!

The proper study of mankind is woman.

Henry B. Adams



beautiful Hyatt Regency Tamaya Spa and Resort and spent a leisurely afternoon. The Conference Organizers thank Judy for the wonderful job she did in organizing the Companion Program. Each of the four days was well attended.

The conference registration opened on Sunday afternoon June 17, followed by a Welcome Reception on Sunday evening (joint reception with SOFE). The New Mexico Woodwind Quintet performed during the reception.

The Conference technical program opened on Monday morning with a SuperPlenary Session. Three plenary addresses were presented on Monday morning to a combined audience of PPPS-2007 and SOFE-2007 registrants. The first speaker was Dr. Keith Matzen, Director of the Pulsed Power Sciences Center at Sandia National Laboratories, whose address on Pulsed Power activities at Sandia focused on the refurbishment of the Z-accelerator. The second speaker, representing the ICOPS community, was Dr. Andrew Ng of Lawrence Livermore National Laboratory, whose address described recent advances in warm, dense matter. The final speaker, representing the SOFE community, was Mr. Brad Nelson of Oak Ridge National Laboratory. His address described the engineering challenges of the ITER Joint International Tokamak project.

On Monday evening Kelly Hahn of Sandia National Laboratories organized a Women in Pulsed Power and Plasma Science Reception. All women registrants were given a ticket and the remaining tickets were distributed to conference registrants on a first-come-first-served basis. Kelly invited Dr. Joan Woodard, Executive Vice President of Sandia National Laboratories, to give a brief presentation at the

reception. (Kelly describes this event in a brief article following this report).

There was a Special Evening Forum on Monday entitled: National Academies Plasma 2010 Open Forum. This forum was organized by Professor Steven Cowley of UCLA, co-chair of the National Academies Panel whose report was just released in June. Professor Mark Kushner (Iowa State) discussed the low-temperature plasma portion of the report.

Tuesday morning opened with a Joint Plenary Session with SOFE. Dr. Ed Moses of Lawrence Livermore National Laboratory presented an address describing progress on completion of the National Ignition Facility (NIF), as well as the National Ignition Campaign. Following the Plenary, Albuquerque Mayor Martin Chavez paid an impromptu visit and welcomed the conference attendees to his city. Mayor Chavez spoke of Albuquerque's past, with the city having celebrated its Tricentennial in 2006. He also spoke of Albuquerque's future, with national laboratories, high tech industry and a growing film industry joining forces to lead the economic engine of the future.

Tuesday evening was the Night Out at the Rio Grande Zoo, joint with SOFE. The weather was perfect and the conference registrants were entertained by the Salsa Band Café Mocha. Registrants also had an opportunity to tour the Zoo exhibits, which were open only to the PPPS-2007 and SOFE Conference registrants.

Wednesday morning opened with the PSAC Award Lecture by the 2007 recipient of the award, Prof. Yitzhak Maron of the Weizmann Institute of Science. His lecture was entitled *Interaction of Plasmas with Pulsed Magnetic Fields: What Can We Learn from the Field Measurements?*

On Wednesday evening the PPPS-2007 Conference hosted a Members Only Reception. All IEEE members were provided a ticket to this event. The purpose of this reception was to allow IEEE members an opportunity to meet with other members, and encourage Senior Membership and Fellow Nominations. There were over 350 members attending this reception.

Drs. Jim Benford and John Swegle organized a Special Wednesday Evening Forum entitled: *High Power Microwaves: Where do we go from here?* The organizers invited Dr. Kirk Hackett (Chief Scientist, Air Force Research Laboratory, Directed Energy Microwaves

Directorate), Dr. Tom Hussey (Chief Scientist, Air Force Office of Scientific Research), Professor Andreas Neuber (Texas Tech University), and Academician Michael Yalandin (Institute of Electrophysics, Ekaterinburg, Russia) to present their views of the future in this field. The room was overflowing with over 80 interested audience members. The panelists fielded questions following their presentations.

The Thursday morning plenary was the Erwin Marx Award Lecture by the 2007 recipient, Dr. David L. Johnson (L-3 Communications, retired from Sandia National Laboratories). His lecture was entitled *From Hermes I to ZR: Forty One Years of Pulsed Power*.

The PPS-2007 Awards Banquet took place Thursday evening. The New Mexico Woodwind Quintet entertained the attendees during the reception. Following the banquet the Conference Awards were formally presented to all of the recipients (see the photos and bios for all the award recipients in the Awards portion of the Newsletter). The evening closed with a spirited presentation of future ICOPS, Power Modulator, and Pulsed Power Conferences.

The Friday morning plenary was the Peter Haas Award Lecture by the 2007 recipient, Professor Karl H. Schoenbach (Old Dominion University). His lecture was entitled *Bioelectrics – Using Nanosecond Pulsed Power Technology to Control Biological Cell Functions*.

It was a pleasure to find all 6 oral sessions on Friday 5 PM to be filled with conference participants.

All conference registrants will have an opportunity to submit papers that will be published in the Proceedings of the PPS-2007 Conference. In addition, two Special Issues of the *IEEE Transactions on Plasma Science* will be derived from papers presented at this conference. The first is the Special Issue on Plenary and Invited talks from PPS-2007, edited by Mounir Laroussi (Old Dominion University), Frank Hegeler (Naval Research Laboratory) and XinPei Lu (HuaZhong University of Science and Technology), which will be published in April 2008. The second is the Special Issue on Pulsed Power Science and Technology, edited by Bryan

Oliver (Sandia National Laboratories), Frank Peterkin (Naval Surface Warfare Center, Dahlgren Division), and Randy Curry (University of Missouri-Columbia), which will be published October 2008.

The Minicourse associated with the PPS-2007 Conference was organized by Professor Mark Gilmore (University of New Mexico) and Mr. Dan Jobe (Ktech Corporation). The Minicourse, entitled *Diagnostics for High Density Plasmas and Pulsed Power Systems*, was attended by 60 participants and took place Friday and Saturday. The Minicourse dinner was hosted by the High Finance Restaurant atop Sandia Peak. Registrants took the Sandia Peak Tram for their 20 minute flight to dinner.

A special workshop was organized by Professor Martin Gundersen of USC that was entitled *Writing for and Working with the Film Industry: An Introduction for Scientists and Engineers*. This workshop was open to registrants of PPS-2007, SOFE, and the IEEE Particle Accelerator Conference (which took place the week following PPS-2007). Two prominent Hollywood insiders ran the workshop, Syd Field, known for writing the “Bible” of screenwriting, and Alex Singer, a prominent Director known for several movies and numerous Star Trek: The Next Generation episodes. Over 70 registrants participated in this Saturday workshop, part of IEEE NPSS’s Weekend of Science outreach to K-12 in Albuquerque and the greater New Mexico community (see Sal Portillo’s article describing this event).

The PPS-2007 Organizers thank the scientific community for their participation in the conference and look forward to seeing their friends and colleagues at the next ICOPS (Karlsruhe, Germany June 15-19 2008, organized by Professor Manfred Thumm, KFK) and at the next Pulsed Power Conference (Washington, DC June 29-July 2, 2009, organized by Dr. Frank Peterkin, NSWC Dahlgren Division).

Edl Schamiloglu can be reached at the Department of Electrical and Computer Engineering MSC01 11001 Univ. of New Mexico, Albuquerque, NM 87131-000; Phone:+1505-277-4423; Fax: +1 505-277-1439; E-mail: edl@ece.unm.edu.

Don't cloud the issue

A fanatic is one who can't change his mind and won't change the subject.

Winston Churchill

Life after death

It was too bad an idea to be allowed to die.

Robert L. Park

WOMEN IN PULSED POWER AND PLASMA SCIENCE



Kelly Hahn
Organizer

In conjunction with the 2007 IEEE Pulsed Power and Plasma Science (PPPS) Conference, the IEEE Women in Engineering (WIE) and the PPPS conference organizers jointly sponsored the “Women in Pulsed Power and Plasma Science” evening reception held on June 18 at the Convention Center in Albuquerque, NM. Approximately 80 people, half of whom were female, attended the social event, hosted by Dr. Kelly Hahn of Sandia National Laboratories (SNL). The invited speaker, Dr. Joan Woodard, Executive Vice President and Deputy Director of SNL, delivered a lively speech drawing from her own experiences throughout her career. Woodard concluded her talk with some interesting statistics regarding how women from around the world perceive themselves in the workplace in relation to their roles at home.

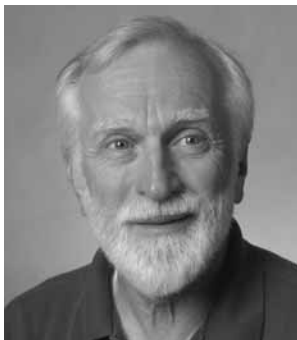
The intent of the reception was simply to give an opportunity for the female conference participants to convene in a social gathering.

Events like this give the chance for women in the community to get to know each other, because there are so few women in the workplace in these particular fields. Of the approximately 1200 conference attendees, about 100 were women. Of these, about half were students and a third were from outside the United States.

The PPPS Conference, chaired by Prof. Edl Schamiloglu of the University of New Mexico, was a combination of two conferences, the 16th IEEE Pulsed Power Conference and 34th International Conference on Plasma Science. Technical topics included pulsed power accelerators, z-pinch plasmas, and high power microwaves, just to name a few.

The mission of WIE is to “inspire, engage, encourage, and empower IEEE women worldwide.” Interestingly, 2.5 % of members of the IEEE are WIE members. Of those, about a third are male.

2007 PARTICLE ACCELERATOR CONFERENCE



Stan Schriber
Chair, PAC '07

The 2007 Particle Accelerator Conference on Accelerator Science and Technology (PAC'07) was held 2007 June 25-29 at the Albuquerque Convention Center [Fig. 1 – see end of article for figures] in New Mexico. It was attended by over 1,350 delegates from 25 different countries (63% North America, 24% Europe, 11% Asia and 2% Other). The web site for the conference is at <http://pac07.org>. This was the twenty-second conference in the biennial series that began in 1965. PAC'07 was held under the sponsorship of the Nuclear and Plasma Sciences Society of the Institute of Electrical and Electronics Engineers, and the Division of Physics of Beams of the American Physical Society. It is because of these technical societies and the volunteers from these organizations that these successful series of conferences take place, permitting exchange of information and effective interactions. Membership in these professional societies is what keeps these conferences strong and able to provide services for the entire accelerator community.

Los Alamos National Laboratories was the host for PAC'07 and provided a tour of their

high-power linac-based research facility LAN-SCE after the conference on Saturday, June 30, 2007.

The organizers expected about 1200 attendees and about 50 industrial exhibitors, making for a suitable and useful communication and exchange opportunity. The turnout exceeded all expectations, at 1350 delegates and 64 industrial exhibits. These are based on paid registrations, however the number of people registered was 1589 as can be seen from the following table of registration by region:

Table 1: Registration Numbers

Region	Number
North America	999
Europe	376
Asia	169
South America	17
Australia	2
Other	18
TOTAL	1589

PAC'07 registered 130 students or retirees, 50 one-day members and of the rest 70% were early registrants (with a 10% lower registration fee) and 30% late registrants. About 30% of



Ilan Ben Zvi
Chair, Particle Accelerator Science and Technology Technical Committee

registrants, other than students, retirees and one-days, benefited from an additional 10% reduction in registration fee based on being a member of APS-DPB, IEEE-NPSS and/or EPS-AG.

Similarly, the number of papers contributed was also large. Prepress publication of the conference record was planned to be on the JACoW site by Friday, July 13, but was in fact available by July 6, a whole week ahead of that tight schedule! Concerns have been expressed relative to paper submissions with obvious errors included on purpose, so that the author(s) can make changes during the conference after talking to peers. This was apparently mentioned by a few authors who perform this unfortunate practice on purpose. The conference editing team managed to edit more than half of the contributions prior to the start of the conference, and this is an important aspect of having the conference record available so soon after the conference. Some consideration is required in the future to firm up the necessity of having the paper submission deadline the Wednesday prior to the conference – if we are going to have the proceedings available in a timely fashion and completed by a fully volunteer group who have other jobs to do when the conference ends.

Table 2 shows the number of abstracts submitted by region.

Table 2: Paper abstract submissions to the SPMS system - 1591.

Papers actually uploaded for publication as part of the conference record - 1372

Region	Number
North America	926
Europe	386
Asia	253
South America	16
Australia	6
Middle East	4
TOTAL	1591 (Uploaded 1372)

Prior to the official start of the conference, a joint PPPS-PAC'07-sponsored Science Weekend open to the public was a successful event held in the lower lobby of the Convention Center on Saturday, June 23. Many young individuals experienced the wonders of magnets, electricity, plasmas and vacuum. On Sunday afternoon June 24, a special student poster session was held to allow young researchers to interact with each other and to provide a forum for reviewing their work by peers in the community.

As at previous conferences in the series, the attendance of 70 young scientists from all over

the world was made possible by sponsorship from ANL, APS-DPB, EPS-AG, IEEE-NPSS, LBNL, NSF and TJNAF. In addition, four \$500 cash awards and two honorable mention certificates for best student papers were awarded, sponsored by IEEE-NPSS and EPS-AG.

Stan Schriber [Fig. 2], LANL and Michigan State University, Chair of the PAC Organizing Committee (OC) opened the conference. CERN's Lyndon Evans, Leader of the LHC Project, opened the scientific program with a presentation entitled *LHC: Construction and Commissioning Status*. Chan Joshi, UCLA, gave the closing presentation on *Plasma Accelerators – Progress and the Future*. Two hundred and twenty-one invited and contributed oral presentations of very high quality were made during the week.

The excellent scientific program was organized by the Scientific Program Committee (SPC) chaired by Robert Garnett, LANL. It spanned five days, with scientific plenary sessions Monday morning and Friday afternoon. Also in plenary session were the Awards Ceremony and a special session on International Industrial Forums for the ILC. Three parallel oral sessions were held the rest of the week, with seven poster sessions scheduled throughout the week. The scientific program boasted 121 invited papers, 100 contributed oral presentations, and more than 1400 poster presentations, and close to 1400 contributions are published in the present proceedings.

An industrial exhibition (intermixed with the poster and coffee break areas) took place during the first three days of the conference. Sixty-four companies presented their high technology products and services to the delegates in an excellent atmosphere conducive to discussions. Their participation enhanced the scope of the conference.

The Awards Ceremony in honor of Louis Costrell's many contributions to PAC over the years (now named the Louis Costrell Awards Session) was a highlight of the conference. Lee Teng of ANL received the APS Robert R. Wilson Prize, Jeroen van Tilborg of LBNL and TU-Eindhoven received the APS Award for outstanding doctoral thesis research in beam physics. Two IEEE-NPSS awards went jointly to Satoshi Ozaki and Michael Harrison [Fig. 3] of BNL for leadership in the successful design and construction of RHIC, and to Victor Malka [Fig. 4], CNRS, Palaiseau, for groundbreaking work on laser-plasma accelerators.

The US Particle Accelerator School awards

Academic distinction

A university is a place where men of principle outnumber men of honour.

Ernest May

Apocrypha

I had a great idea this morning but I didn't like it.

Samuel Goldwyn

Do as I say...

To be good is noble; to teach others to be good is nobler, and no trouble.

Mark Twain

Damp squib

The trouble with the Foreign Secretary is that you can load him but he doesn't fire.

William Tyrrell

went to Sergei Nagaitsev, FNAL, and to Yaroslav Derbenev, JLAB. Furthermore, Mark Hogan, SLAC; Norbert Holtkamp, ITER (formerly ORNL); Alexander Lumpkin, ANL; Lia Merminga, TJNAF; Sergei Nagaitsev, FNAL and Petr Ostroumov, ANL were announced as newly elected APS-DPB Fellows. Wim Leemans [Fig. 5], LBNL and Warren Mori, UCLA were announced as newly elected IEEE-NPSS Fellows relevant to the field of accelerators.

The special Physics Teachers' Day held Wednesday, June 27 was a great success because of the time and effort contributed by Hillary Smith, Mike Thout, Dave Swellenbach, Jacob Flanz, Alan Hurd, Bruce Carlsten and S. Y. Lee.

The conference banquet preceded by a reception entertained by a traveling mariachi band (Mariachi Nuevo Sonido) was a big success with 1020 attendees. The highlight of the banquet was the Ice Mountain Dance Group, especially the very young members of this local dance troupe. The companion program was well attended and explored many interesting regions of the Land of Enchantment. Although there were last-minute "glitches" to the Los Alamos area tour (due to changes to the tour made by LANL officials), most participants enjoyed the opportunity to see some of the aspects of Los Alamos and the Bandelier National Monument. An interesting statistic is the fair amount of liquid that was consumed at the conference including 11250 cups of coffee, 50 gallons of Margaritas, 25 gallons of sangria, 712 bottles of beer and 986 bottles of wine.

The main medium for the proceedings of this conference is publication on the JACoW site (www.jacow.org). There will be no hard copy volumes. The processing of the electronic files of contributions prior to, during and after the conference, was achieved by a dynamic team composed of 17 "seasoned experts" and volunteers from the Joint Accelerator Conferences Website (JACoW) collaboration. Thanks to the dedicated, professional job accomplished by this team, a prepress version of these proceedings was published less than 5 working days after the conference. This final version is published at the JACoW site one month after the conference.

Three significant actions took place during the conference that will have impacts for future PAC conferences in North America. At the PAC OC Tuesday evening meeting it was approved unanimously to join the Europeans

and Asians in a three-year-cycle, international conference series while maintaining a North American PAC series interspersed with these international conferences such that a PAC type conference (international or North American) will occur in North America on an approximate 18 month separation schedule. The second action by the PAC OC was the adoption of a set of bylaws, for the first time since the launch of the conference series. The bylaws formalize various aspects of the organization of the conference, including the membership of the OC. The third action was a unanimous approval by the PAC Coordinating Committee (composed of past, present and future PAC, EPAC and APAC chairs) to start the international series of conferences in 2010 in Kyoto, Japan, with 2011 in Valencia, Spain and 2012 in North America (location TBD). Our next North American PAC style conferences will be held in Vancouver, Canada in 2009 and in New York, New York in 2011.

Special thanks on behalf of the attendees, sponsoring agencies and the host go to all who helped in numerous ways before, during and after the conference. Their dedicated and enthusiastic efforts made the conference a success and made the whole process function smoothly. A number of "glitches" were handled in a professional and appropriate manner, without detracting from the main aspect of the conference. The success of PAC'07 can be attributed to the efforts of the OC, the SPC, and the LOC chaired by Tsuoyoshi Tajima: Shirley Atencio, Alberto Canabal, Michael Carter, John Eddleman, Sherry Hardage, Robb Kramer, Roberta Lopez, Vangie Martinez, Valerie Miller, Christine Petit-Jean-Genaz, William Roybal, Andrea Sanchez, Rich Sheffield, Hillary Smith, Tamson Smith, Lorraine Stanford and Peggy Vigil, and to all of the volunteers from future and past PACs and from our sister conferences EPAC and APAC, who joined the team during the conference proper. All contributed untiringly to making this conference a success.

Sincere thanks to two special individuals who worked many extra hours and gave up much of their usual lifestyle to ensure that this conference would be an outstanding success. Behind the scenes encouraging everyone on the team was Christine Petit-Jean-Genaz, and up front was Lorraine Stanford [Fig. 2]. Without their support, guidance, encouragement and constant advice, I would not have

been able to perform my role as chair of the conference.

Pictures taken during PAC'07 by an endemic 'most professional group' can be found at the website www.flickr.com/photos/jacow.

Stan Schriber, Chair of PAC'07 can be reached

at schriber@cns.gov; Ilan Ben-Zvi, Chair of the Particle Accelerator Science and Technology Committee, can be reached at Brookhaven National Laboratory, Collider Accelerator Department, MS911B, Upton, NY 11973; Phone: +1 631 344 5143; Fax: +1 631 344-5954; E-mail: benzvi@bnl.gov.

All in the family

Intellectuals are like the Mafia. They only kill their own.

Woody Allen



Figure 1



Figure 2



Figure 3

Cave canem

Never stand between a dog and a lamp-post.

Stanley Baldwin



Figure 4



Figure 5

PAC-PPPS SCIENCE WEEKEND



Sal Portillo
Organizer

Science Weekend was a collaborative effort between the 2007 Particle Accelerator Conference (PAC'07) and PPPS-2007 conference. Sal Portillo was the liaison for the PPPS-2007 Conference and Hillary Smith and Tsuyoshi Yajima were the liaisons for PAC 07. The idea behind the weekend was to give middle school through high school students and their families an opportunity to observe some basic experiments that would capture their imagination and kindle their interest in science. Exhibits included holding a bowling ball with a vacuum, building an electric motor, a demonstration on a non linear dynamic driven system as well as experiments with liquid nitrogen, to name a few.

The Screen Writing Workshop organizers also reached out to the local New Mexico community, inviting Science and English high school teachers to the Workshop. About half of the Workshop attendees were from the New Mexico community.

Members from several institutions con-

tributed to the science experiments and displays, which were set-up in the West Wing of the Albuquerque Convention Center. Volunteers included representatives from Los Alamos National Laboratory, Sandia National Laboratories, the Coalition on Plasma Science, and Princeton Plasma Physics Laboratory. Several undergraduate volunteer interns from various universities helped out as well. Ice cream and punch were served and every student and parent received a Science Weekend T-shirt. The students and their families enjoyed their experience, especially the adults and the grade school and pre school kids - who seemed to delight in the pleasure (and the noise!) of watching a balloon rocket towards the ceiling of the convention center. Perhaps the full import and meaning of Newton's laws of motion was not totally assimilated by the budding experimenters but perhaps a seed was planted. It was indeed a very rewarding experience.

Sal Portillo is with Sandia National Laboratories.

Report on the 2007 REAL TIME CONFERENCE



Margaret Votava
Real Time 2007 Chair

The 15th IEEE NPSS Real Time Conference (RTC) was held at Fermilab from April 29th to May 4th 2007. The conference was chaired by Margaret Votava, from the Computing Division/Experiment Online Support of Fermilab. There were 187 participants, which is about the ideal number for a conference that traditionally has no parallel sessions. There was a large representation from the 4 major CERN experiments, reflecting the exceptional activity associated with the imminent startup of the LHC. There was also a significant increase of plasma related presentations, most of them associated with ITER.

The day before the conference, there was a workshop about the ATCA standard (Advanced Telecom Computing Architecture). This was very well attended, with 87 participants. This standard from the telecom industry is being considered very seriously as a candidate for the next generation of "high availability" control and DAQ instrumentation in physics.

One of the highlights of this conference is the attribution of the CANPS award. This

award is given in recognition to someone who has made a significant contribution to the fields of interest represented by CANPS. In this particular case, it was "for sustained and innovative entrepreneurship in computerized data acquisition and control systems." A plaque and check comprising the award, were presented to Dr. Peter Clout by Dr. Richard Kouzes during the conference dinner. Dr. Peter Clout (see AWARDS section also) has been an innovative leader in the area of real-time computerized data acquisition and control systems for over 35 years. During much of this time, Peter has been an active leader for the IEEE NPSS and for CANPS. He worked on the development and implementation of the CAMAC hardware standard, was project leader at Los Alamos National Laboratory in the 1980s, and served as president of NPSS. At the head of Vista Control Systems, he developed a diverse customer base in the military, research and industrial sectors for his control and data acquisition system product. Peter was also awarded the NPSS Shea Award for service to the Society in 2002.



Jean-Pierre Martin
*CANPS Technical
Committee Chair*

There were also three awards presented for “outstanding student poster or oral papers.” The two best papers receive both a cash award and a certificate. The runner up receives a certificate. The first award was presented to Joel Riendeau, from “Université de Sherbrooke,” for a paper entitled *High Rate Photon Counting CT Using Parallel Digital PET Electronics*. The second award went to Alexander Mann, from the “Technischen Universität München” for a paper entitled *Advanced TCA based Sampling ADC Data Acquisition System*. The third prize was granted to Jose Maria Monzo Ferrer, from “Universidad Politecnica de Valencia,” for a paper entitled Improved digital pulse height estimation for *PET detectors using LMS adaptive filters*.

A large fraction of the CANPS committee members were present at the conference and

Margaret Votava organized the usual CANPS post conference committee meeting. One of the objectives of this meeting is preparation for the next Real Time conference. The committee recommended that the next RT conference (2009) be held in Asia. There were very serious and attractive proposals both from Japan and mainland China. Since it will be the first time the conference will be held in Asia, the committee asked for supplementary information before it takes a final decision about the site. We expect that the final decision will be taken in September.

Jean-Pierre Martin, chair of the Computer Applications in Nuclear and Plasma Science Technical Committee who 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



Alexander Mann



Jose Maria Monzo Ferrer



NPSS GENERAL BUSINESS

PRESIDENT'S REPORT

Longtime NPSS member Dr. Carl E. Baum is a major award winner! Carl was honored last summer in Hawaii with one of IEEE highest prizes, the IEEE Electromagnetics Award.

Carl Baum is presently a Distinguished Research Professor at the University of New Mexico. Carl, an IEEE Fellow, is an active NPSS supporter and is widely credited with starting the IEEE Chapter in Albuquerque. He spent his 40-year career at the Air Force Research Laboratory working on the utilization of high power electromagnetics. He was honored last year with the Antennas and

Propagation Society's Krauss Award for his contributions to high power, transient antennas. Congratulations, Carl!

Within NPSS, there are many talented and accomplished members, yet the Awards committee often has to solicit for nominations. Carl's award prompted me to consider the value of recognition of accomplishment. The acknowledgment of professional achievement by peers is very special tribute and needs to be done more often. We all know some fantastic individuals who don't have the accolades they deserve. IEEE has two distinct, but not mutually exclusive ways to honor individuals:



Jane Lehr
NPSS President

Blunted feelings

Tolerance is a very dull virtue. It is boring. Unlike love, it has always had a bad press. It is negative. It merely means putting up with people, being able to stand things.

E. M. Forster

awards and IEEE membership elevation.

Many different organizations offer various awards, but few carry the worldwide prestige of an IEEE award. For nearly a century, IEEE Awards have paid tribute to technical professionals whose exceptional achievements and outstanding contributions have made a lasting impact on technology, society and the engineering profession. There are various types of IEEE sanctioned awards. Some are given by the IEEE Board of Directors, others by the Society and within NPSS, others by our Technical Committees.

The highest level of IEEE awards are categorized as Medals and Technical Field Awards. Carl Baum's Electromagnetics Award is a Technical Field Award, jointly sponsored by the Electromagnetic Compatibility and the Microwave Theory and Techniques Societies. Information regarding these IEEE awards can be found at the Awards page, www.ieee.org/portal/pages/about/awards/. I urge you to browse this page since each award has a unique mission and criteria. There are awards to honor distinguished colleagues, teachers and corporate leaders. Additional awards are sponsored by IEEE-USA which has links available from the IEEE website.

The Nuclear and Plasma Sciences Society also offers IEEE Awards. These awards are: the NPSS Early Achievement Award, the NPSS Graduate Scholarship Award, the Paul Phelps Continuing Education Grant, the NPSS Merit Award and the Richard Shea Distinguished Member Award. Brief biographies of many of the recent awardees can be found in this issue and the March 2008 issue of the NPSS Newsletter. Information about these society awards can be found on our website and additional information and assistance can be had by contacting NPSS Past President and Chair of the NPSS Awards Committee, Peter Winokur, at p.winokur@ieee.org.

As you know, the NPSS is comprised of 8 Technical Committees. Each Technical Committee organizes at least one conference.

Many of our conferences also have awards. The criteria for these awards are determined by the Technical Committee and AdCom, and endorsed by IEEE. Information regarding these awards can typically be found on the sponsoring conference web-site or by contacting the Technical Committee Chair. Contact information is on the NPSS web-site.

Professional recognition is also gained by nomination for elevation of IEEE membership grade. IEEE has two elevations of membership: Senior Member and Fellow. The elevation to Senior Member requires experience reflecting professional maturity. Nominations information and the electronic application can be found on the IEEE web-site (www.ieee.org/web/membership/). A nominator and two references from the IEEE Senior Member or Fellow grades are required.

A Senior Member may be elevated to the Fellow grade by petition to the IEEE Board of Directors. The Fellow Grade recognizes unusual distinction in the profession. The total number of Fellows recommended per year is limited to one-tenth of one percent of the voting membership on record. The candidate can come from any field in academia, government or industry. The Fellow application has categories which include Researcher, Educator, Technical Leader or the recent addition, Application Engineer/Practitioner. The deadline for submitting IEEE Fellow applications for the Fellow Class of 2009 is March 1, 2008. It is not too early to start!

Imitation may be the sincerest form of flattery, but recognition by one's peers goes down a lot easier! There are many worthy award recipients waiting for a nominator. Nominate a worthy colleague today!

Jane Lehr, IEEE NPSS President, can be reached at Sandia National Laboratories, MS1152, PO Box 5800, Albuquerque, NM 87185-1193; Phone: +1 505 844 8554; E-mail: jmlehr@sandia.gov.



Albe Dawson
Larsen
NPSS Secretary and
Newsletter Editor

SECRETARY'S REPORT

The IEEE NPSS Administrative Committee met in Albuquerque, NM on June 23, 2007, on the weekend between the PPPS conference and the collocated Symposium on Fusion Engineering, and the Particle Accelerator Conference, PAC'07, held the following week. As we met during the Science Weekend, we took a field trip to see

how this event was doing. It was thriving and tremendous fun as well as educational, and a great community contribution. This is something more of our full-week conferences should consider as part of our education and outreach effort.

Our treasurer reminded us that conferences are not closing in a timely way. This is impor-

tant for several reasons, principal among which being the potential loss of not-for-profit status. An easy remedy is to use IEEE's concentration banking and to have IEEE pay outstanding bills left after 3 months. Close your local bank accounts, if any, and turn in to Ed and Tony Lavietes, and then IEEE the best available financials you have, and work with them and IEEE to wrap it all up. It really seems as if most conferences aren't closed out because of some obscure bill or other that the treasurer is waiting to pay. IEEE Conference Services are also working with Ed Lampo and Tony Lavietes on new software that will help facilitate early closing of conference finances. Tony is also working on developing a treasurer's web site that will have a uniform budgeting process for our conferences and that will map into IEEE's reporting requirements. This should create a simplified, more open process that will facilitate approvals and periodic reporting and reviews, deal with different currencies, and help to accelerate closings. Jane Lehr, our President, has appointed Craig Woody to head a committee to look further into these late closing issues.

Tony also reminded us that the IEEE NPSS 'Network Shop' has wireless network systems, computers, LCD projectors, microphones – wireless, hand held, mixers, badge printers with dedicated computers that are available for use by our conferences. Using our own equipment, rather than renting it, generally is significantly less expensive than the rental from hotels or their AV suppliers. Money from the use fee goes into an IEEE concentration banking account and is used to upgrade equipment as it is needed. Some of this money will be used to support upgrades to the conference paper software used by Bo Yu at Brookhaven, through an agreement with the lab.

Ed Lampo expects our 2007 financial returns to be good, but in outlying years this situation will change due to changes in funding indirect infrastructure costs and the move to more open access electronic publications, among other things. CERN is working with IEEE NPSS on a scheme to provide TNS as an open access journal. There are still many hurdles to clear before this becomes reality.

Another issue that affects our off shore conferences is VAT – the value added tax charged by many governments on all sorts of things from hotel rooms to exhibit hall rentals, to exhibitors' fees and conference registrations,

and everything between. Ed Lampo, Uwe Bratzler, Ray Larsen, our conference policy chair, and I went to the Panel of Conference Organizers meeting in Vancouver because this issue, a focus of this workshop, is now being examined by IEEE headquarters, the Technical Activities Department, and Conference Services, since more and more IEEE conferences are being held outside the North American regions, which is appropriate given that close to half our membership comes from these regions. Each conference and society has handled VAT differently. The goal is to find a standard, legal way of dealing with it that will be used across all IEEE-sponsored conferences.

In 2008, NPSS will offer its members free electronic access to our conference proceedings. See Bill Moses' article below.

Conferences held thus far in 2007 – NSREC, Real Time, Pulsed Power and Plasma Science, Fusion Engineering, and PAC have all been highly successful, as has the SCINT conference which we sponsored this year at Wake Forest. See the reports in the preceding sections. All these conferences offer awards for outstanding work, and the AWARDS section details many of these. The June 2007 issue had stories on the Plasma Sciences award winner, Dr. Yitzhak Maron, and the three PAC award winners, Drs Michael Harrison and Satoshi Ozaki, and Dr. Victor Malka. Our Society Awards have been announced and will be covered in the March 2008 Newsletter. The upcoming NSS/MIC conference in Hawaii has already shown record abstract submittals and hotel room pick up. It looks as if it will be another huge success. And, as seen above, plans for 2008 in Dresden are well in hand.

As Peter Clout mentions below in the Communications Committee report, membership gains have been very encouraging. Between the February and June AdCom meetings, 203 new members were added. That growth continued at PAC and we expect a significant number by end of year. A highlight of PPS which contributed to gains at that meeting was a members-only reception. A key issue for us is to discern what benefits our members would like to see. What is important to you? What would encourage your colleagues to participate? Let Peter Clout, Jane Lehr or me know and we'll bring your interests to AdCom.

Hal Flescher reported that the new paradigm for funding IEEE indirect infrastructure costs had been accepted. These are the costs of

Realism too?

Every form of addiction is bad, no matter whether the narcotic be alcohol or morphine or idealism

Carl Jung

Of course

Extremists think "communication" means agreeing with them.

Leo Rosten

Unforeseen consequences

The "Sisterhood" was formed back in the early 70s, when, as part of the Women's Liberation Front, many women started burning their bras. Afterwards they realized they needed to form a group that would offer unconditional support at all times.

*Linda Cullen
(in 24 Hours)*

doing business that are not easily identifiable as belonging to one group or another. As mentioned above, this will impact us financially, but the extent is as yet unknown.

Steve Gitomer, our *Transactions on Plasma Sciences* editor-in-chief, reports that in 2008 there will be 9 special issues of the journal, and that there are now six senior editors in place. Two more are needed for specific topic areas. Steve is working on this. The IEEE Publications Department and our editors are all working to shorten time to publication, and to increase our impact factor. You can help by returning reviews, or returning corrections more rapidly. One of the biggest contributions to slow turnaround has been the time authors take to complete and return their paper modifications.

As ever, Communications (see article below) is always looking for new ideas, and especially for great photos. Keep this in mind and send items to Peter Clout for his archive. The next brochure will be produced for 2009, but if flyers or leaflets for specific things are needed or would be useful, let us know.

Patrick Le Dû, our Transnational Conference Liaison, is working with Ray Larsen and others to develop guidelines for non-North American conferences so we don't reinvent things each time. This is, of course, tied to the work by IEEE mentioned above. One hopes that an integrated protocol that works smoothly in most regions of the world will be developed before too long. The Transnational Committee, also involved with this area, especially with recruiting international membership and through CIO, with promoting our conferences on the international scene, has now made a push to encourage eastern European membership and participation.

The Coalition for Plasma Sciences continues to be active, and participated in the PPPS-PAC Science weekend. They continue their Capitol Hill presentations and K-12 education efforts. They also have a video in the making and have asked for NPSS assistance. Again they will present an award at the National Science Fair, and are looking for help here. Keep up with their web site. They are a vital and important organization.

Allan Johnston, our liaison to IEEE's Women in Engineering, reports that their activities are encouraging and more are becoming involved. They helped to fund the WIE reception held at PPPS.

AdCom Actions:

- It was moved, seconded and passed to authorize expenditure of up to \$75,000.00 (including previous expenditures) for development of web-based conference budgeting tools. Development of web site and associated software is to be done by Cybersense. Progress will be monitored by Anthony Lavietes, with payments released accordingly.
- It was moved, seconded and passed that the deadline for submission of IEEE NPSS awards will be January 31st of each year starting in 2008. Nominations shall be limited to 10 pages.
- The 2008 Megagauss topical conference is to be organized in Novosibirsk, RF by the Lavreyentev Institute of Hydrodynamics and is "technically cosponsored" by the NPSS through the Pulsed Power Science and Technology Committee.
- It was moved, seconded and passed that the NPSS match a grant from the Megagauss Institute Inc, with up to \$5K (NPSS funds) to support publications, publicity and student activities at Megagauss 2008.
- In honor of Dr Arthur Guenther who passed away in spring 2007, it was moved that the NPSS request TAB approval to designate the existing Pulsed Power Student Awards as the "Arthur Guenther Pulsed Power Student Awards."
- AdCom approved the expenditure of up to \$20k for re-drawing of IEEE 325 standard illustrations.
- It was moved, seconded and passed, that AdCom authorize expenditure of up to \$5000 in 2007 for the purchase of plasma equipment for outreach activities.

The next AdCom meeting will be held on November 3, 2007, at the Hilton Hawaiian Village.

Albe Larsen can be reached at amlarsen@slac.stanford.edu.

Fusion Technology Committee Report June 2007

22nd Symposium on Fusion Engineering,
Collocated with PPS
Albuquerque Convention Center,
Albuquerque, NM, June 17-22, 2007

Dennis Youchison, General Chair – Mike Ulrickson, Program Chair

- Number of participants ~130. Losses due to visas of Chinese and Indian participants.
- Fusion Technology Awards were presented to Steve Zinkle (2006) and Farrokh Najmabadi (2007) at the banquet. A new precedent was set to invite the previous award winners (Brad Nelson) as plenary speakers at the following SOFE.
- A student award was presented at the banquet (also a new precedent). Students were pre-screened, four chosen to provide 10-min presentations at the FTC luncheon.
- A policy is needed on no-show 1st authors; does NPSS have a policy?
- The SOFE07 chair will provide additional details on the meeting, including budget.



Dennis Youchison
Chair, 22nd SOFE



Mark Tillack
*Chair, Fusion
Technology Standing
Committee*



23rd Symposium on Fusion Engineering Merged with ICOPS

Omni Hotel, downtown San Diego, CA, June 1-4, 2009

Mark Tillack, General Chair – René Raffray, Program Chair

- All pertinent info available at the web site: <http://cer.ucsd.edu/icopssofe09>
- All key positions have been populated in cooperation with ICOPS.
- First announcement was produced and distributed, and can be found at the web site.
- Initial budget was created in coordination with ICOPS. PSAC approved merging: one budget, one organizing committee, shared space, etc. This is more akin to the 2007 joining of ICOPS and PPS, rather than the co-location of SOFE, except two chairs.
- FTC wants to consider peer review and TPS archive in 2009. Will ICOPS want to join?

24th Symposium on Fusion Engineering

*Charles Neumeyer (PPPL), General Chair
Location and date TBD, 2011*

NUCLEAR MEDICAL AND IMAGING SCIENCES TECHNICAL COMMITTEE



Tom Lewellen
Chair, NMISTC

As is so often the case, my good intentions were a bit lacking in execution – so the slate of candidates for NMISC elections is still not done (only about 2 months late now). The current goal is to have the election slate submitted to IEEE by the end of July. This year we elect 5 members at large and a new vice-chair. At the IEEE NSS/MIC conference in Hawaii I will turn over the NMISC chair to Charles Watson. I want to take this moment to thank all that have served NMISC and supported the many volunteer activities needed to put on the NSS/MIC meeting. And, to repeat a theme I have used often – do spread the word that we are always looking for new volunteers to keep our grand enterprise running. Just have them contact me (tkldog@u.washington.edu) or Charles Watson (Charles.Watson@cpspet.com).

MIC 2007

The meeting, held at the Hilton Hawaii Village, Honolulu, Oct 26-Nov 3, 2007, is almost upon us. The abstract submission rate has once again increased – making the challenge for the 2007 NSS/MIC committee all the more ‘interesting’. Having run one of these meetings, I know that the general chair, Ben Tsui (Johns Hopkins) and his team are in the midst of the ordered chaos that is part of the tradition of the meeting. As one of our IEEE members observed, if you hold the meeting people will come and clearly 2007 is going to be another banner year. To repeat myself, let me again thank Eric Frey (the MIC chair), and Magnus Dahlbom (deputy MIC chair) for their efforts for this year’s meeting.

MIC 2008

The 2008 committee and general chair Uwe Bratzler have also had their share of work getting ready for the 2008 meeting to be held at the conference center in Dresden. New workshops have been added. Of particular interest to NMISC members will be an after conference workshop on MRI/PET development to be held at the Research Center Juelich (Forschungszentrum Juelich, FZJ), located in the Cologne-Aachen area October 27-28. IEEE is a technical co-sponsor for the meeting (approved at the June AdCom meeting).

MIC 2009

The main committee for the 2009 meeting is now in place. As mentioned in our last newsletter, Richard Lanza is General chair, Ramsey Badawi is the NMISC chair, and I am the local arrangements chair. All the other main positions have also been filled, so the 2009 meeting is off to a good start. The site will be the Hilton at Walt Disney World. We will take over the entire conference area at the hotel and expect to have enough room for all of our functions (and avoid some of the problems we have faced in recent years). The room rate will be \$175 (in 2009 dollars), but we also have commitments for a percentage of our room block to be at federal per diem rates as well as a number of student rate rooms (at \$119/night). In late August (2007) we will begin more detailed planning with the hotel on room layouts and, considering our recent trends in attendance, also begin plans for additional hotel rooms if they are needed. I keep an eye out on the NSS/MIC web site (www.nss-mic.org) for more information.

MIC 2010

As discussed in the last newsletter, the 2010 site is Knoxville. For those who have been to Knoxville, you know it is a most pleasant city with a beautiful countryside. The facilities are first rate and we will be able to offer hotel rooms at ~ \$120/night in 2010 dollars. Ron Keyser is the general chair and is currently working on some fine details with the contract. The meeting will be in the Knoxville convention center with several hotels participating in the NSS/MIC room block for the meeting.

MIC 2011 AND 2012

The site committee is now looking at options for 2011 and 2012. The ongoing discussion of how often the meeting should be held in Europe is still ongoing with the current two options being every four or every three years. This issue must be resolved before we can finalize options for 2011 and 2012. The committee is also reviewing proposals from an organizing group in Spain to hold the meeting in Madrid. So far, this looks like a very strong option, but we have not yet finalized if it would be in 2011 or 2012. Whichever of those two years we are in Europe, the other

Like Pandora's box

After a while you learn that privacy is something you can sell, but you can't buy it back.

Bob Dylan

year will be a West Coast region city. Several sites are now being investigated but it is unlikely any final lists will be ready by the October 2007 NMISC meeting. We will update all via the newsletter and expect to present a final set of locations for consideration at the 2008 NMISC meeting in Dresden.

Tom Lewellen, Chair of the Nuclear Medical and Imaging Sciences Technical Committee, can be reached at the University of Washington, Radiology, Nuclear Medicine, Room 200, Old Fisheries Science Center, PO Box 357897, Seattle, WA 98185, USA; Phone +1 206 543 2365; E-mail: tkldog@u.washington.edu.

NUCLEAR AND SPACE RADIATION EFFECTS NEWS

The IEEE Radiation Effects Committee (REC) held its annual Open Meeting on July 26, 2007 at the Hilton Hawaiian Village, Honolulu, Hawaii during the 2007 Nuclear and Space Radiation Effects Conference (NSREC). The meeting included reports from the chairmen of the 2006 through 2008 NSRECs. Tim Oldham serves as Chairman of the Radiation Effects Steering Group, which oversees the NSREC Conference.

An election was held during the Open Meeting for Junior Member-at-Large to the Radiation Effects Steering Group (RESG). The RESG welcomes Philippe Paillet from CEA as its newly elected Junior Member-at-Large. Philippe joins Wayne Abare from Harris Corporation and Marty Shaneyfelt, Sandia, who are serving as Senior-Member-at-Large and Member-at-Large, respectively.

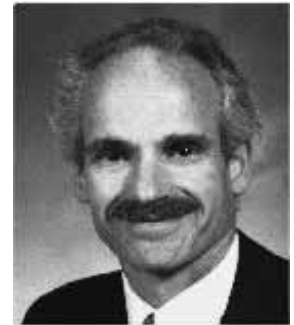
During the Open Meeting, Tim Oldham mentioned the General Chairs of the upcoming NSRECs. Paul Dodd of Sandia National Labs, Mark Hopkins of the Aerospace Corporation, Joe Benedetto of Micro-RDC are the General Chairs of the 2008-2010 NSRECs, respectively.

Janet Barth of NASA GSFC, 2006 Conference General Chairman, recognized each member of her conference committee with an award plaque. Janet and her team organized an outstanding conference in Ponte Vedra Beach. Lloyd Massengill, 2007 Conference General Chair, summarized some statistics from the 2007 conference. A total of 507 people attended the technical sessions, the short course, or both. In addition, 47 were registered for the exhibits, for a grand total of

554 attendees. The technical sessions were very strong, with 151 papers presented during the four-day conference (56 oral presentations, 51 posters, 38 data workshop, and six late news) and four 90-minute presentations during the short course.

Paul Dodd, 2008 Conference General Chairman, announced that the Nuclear and Space Radiation Effects Conference will be held on July 14-18, 2008, at the JW Marriott Starr Pass Resort. The Technical Program Chairman will be Nick van Vonno from Intersil. Jeff Black from Vanderbilt University/ISDE is organizing the tutorial Short Course. Once again, NSREC 2008 is planning a Poster Session (chaired by Jeff Titus of NWSA), a Radiation Effects Data Workshop (chaired by Jim Felix, Sandia) and an Industrial Exhibit (chaired by John Jewell, Sandia). Bill Heidergott, GDIS, is handling local arrangements and assembling the social program. This is the second time NSREC has been held in Tucson! 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.

Tim Oldham, Chair of the Radiation Effects Technical Committee can be reached at Code 561.4, Bldg. 22 Room 048 NASA Goddard Space Flight Center, Greenbelt, MD 20771-0001; Phone: +1 301 286 5489; Fax: +1 301 286 4699; E-mail: toldham@pop500.gsfc.nasa.gov. Teresa Farris, Radiation Effects Chairperson for Publicity can be reached at Aeroflex Corporation; Phone +1 719594 8035; E-mail: teresa.farris@aeroflex.com.



Tim Oldham
Chair, Radiation
Effects Technical
Committee



Teresa Farris
Chairperson for
Publicity



Phillippe Paillet
Radiation Effects
Junior Member-at-
Large

FUNCTIONAL COMMITTEES

AWARDS COMMITTEE

NPSS SOCIETY AWARDS

NEW DATE FOR NOMINATIONS IS JANUARY 31, 2008



Peter Winokur
NPSS Awards
Committee Chair

The Nuclear and Plasma Sciences Society (NPSS) Administrative Committee made two changes to the NPSS Society Awards process at its June meeting. These changes are: (1) beginning in 2008, the deadline date for nominations has been moved from May 15 to January 31 and (2) nominations will be limited to 10 pages in length. All nomination forms and supporting materials must be received by the deadline to be considered.

Before the reasons for these changes are provided, please note that NPSS Society Awards are the Merit Award, Richard F. Shea Distinguished Member Award, Early Achievement Award, and Graduate Scholarship Award. Descriptions and nomination forms for these awards can be found at <http://www.ewh.ieee.org/soc/nps/awards.htm>.

The first change was made to allow the Awards Committee to make its selections by the end of March in a given calendar year. Awardees would then be able to receive their awards and be recognized at the conference of their choosing in the same year that the selection is made. For example, if the winner of the 2008 Merit Award attends the Radiation Effects Conference, he/she could then be recognized at the Nuclear & Space Radiation Effects Conference held in July, 2008. At the present time, the awards selection process isn't compete until the fall. For 2007, many of the winners won't receive their awards until calendar year 2008.

The second change in the Society Awards process limits applications to 10 pages. Simply put, applications have become unwieldy and frequently exceed 30 pages. Some are as long as 80 pages! The awards committee believes that 10 pages are more than adequate to support a nomination. I have been involved in awards selection throughout my career and I'm certain that the length of a nomination does not correlate with its chances of success.

In addition to Society awards, there are Technical Committee Awards that are listed below. The most accurate description of these awards, including the due date for nominations, can be found on NPSS conference web sites. For example,

to see the awards sponsored by the Nuclear Medical and Imaging Sciences and Radiation Instrumentation Technical Committees, go the web site of the 2007 Nuclear Science Symposium and Medical Imaging Conference website at <http://www.nss-mic.org/2007>.

At its June meeting, the NPSS AdCom approved a motion to rename the Outstanding Pulsed Power Student Award in honor of Art Guenther, i.e., the Arthur H. Guenther Pulsed Power Student Award. A listing of all Technical Committee Awards follows.

1. Computer Applications in Nuclear and Plasma Sciences Award;
2. Radiation Effects Award;
3. Radiation Instrumentation Early Career Award;
4. Radiation Instrumentation Outstanding Achievements Award;
5. Fusion Technology Award;
6. Particle Accelerator Science and Technology Award;
7. Plasma Science and Applications Award;
8. Edward J. Hoffman Medical Imaging Scientist Award;
9. Young Investigator Medical Imaging Science Award;
10. Erwin Marx Award;
11. Peter Haas Pulsed Power Award;
12. Arthur H. Guenther Pulsed Power Student Award; and
13. Best Student Paper Awards.

Finally, in addition to Society and Technical Committee Awards, NPSS Sponsored Conferences that have Short Courses solicit nominations for Paul Phelps Continuing Education Grants. These grants are intended either for tuition in NPSS Sponsored Short Courses, or for partial or total travel expenses to attend NPSS Short Courses. These grants are available for outstanding Student Members of NPSS and unemployed members of NPSS who need assistance in changing career directions. Each conference appoints a chairman to handle Phelps travel grants. So, once again, please consult the conference web site.

I'd like to thank this year's NPSS Awards

More often
wrong

In war you don't
have to be nice -
you have only to
be right.

Winston
Churchill

Committee for their hard work. They are Igor Alexeff, Hal Flescher, Steve Gitomer, and Bill Moses. We have a great set of nominations for the 2007 awards. Please keep these nominations coming!

Peter S. Winokur, Chair, NPSS Awards Committee, can be reached at the Defense Nuclear Facilities Safety Board, Washington, DC; Phone: +1 202 694-7090; E-mail: p.winokur@ieee.org.

COMMUNICATIONS COMMITTEE

When one prints close to a ton of paper as brochures and leaflets for use over the next two years, one feels compelled to make it the best job possible. Involving many of the volunteers of NPSS means that the input to the text from the last editions is varied in content and the view taken. In addition, I chose to rearrange the information and add a new section to the brochure – work that only one person could do. In addition, we needed fresh photographs to complete the impact of the pieces and these needed to be of extremely high quality – images of more than two megabytes in JPG format and preferably much more. Coordinating all of this was a real-time deadline job as the finished products had to be ready for the first conference in May, which they were.

The second production job was a new set of banners for the membership booth. These refresh the look as well as giving us more flexibility when meetings are close together in time. For the large meetings we can have both sets in use.

Finally, we get shipped to my company excess copies of our journals to which we attach a “sample” label and send as samples for the membership booth.

Now we settle down to the job of distribu-

tion to conferences and arranging the shipping back of the banners and any other materials of value.

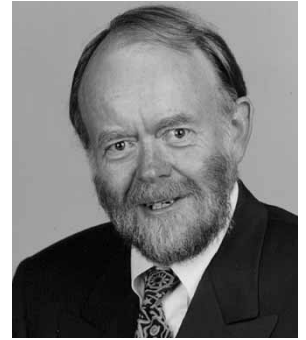
As is reported elsewhere, thanks to the magnificent efforts of the membership booth staff – volunteers who give up a week of time to work the booth at a conference, we have recruited a record number of new members already this year and appear to be on track to recruiting close to a full third of our current membership.

Please check the NPSS 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 there? What are you looking to find that was not there? Of course, I am extremely interested in receiving proposed new pages to add – especially the content for them!

Finally, what other promotional materials would be helpful and what else could we do to promote the activities of the NPSS?

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

Peter Clout, Chair of the NPSS Communications Committee, can be reached at Vista Control Systems, Inc., 176 Central Park Square, Los Alamos, NM 97544-4031; Phone: +1 505 662 2484; Fax: +1 505 662 3956; E-mail: clout@vista-control.com.



Peter Clout
NPSS
Communications
Committee Chair

IEEE FELLOWS COMMITTEE

IEEE FELLOW NOMINATIONS ARE DUE BY MARCH 1, 2008

Encourage you to nominate a deserving colleague for IEEE Fellow and begin the job of preparing the application and lining up references now. It's not too early. Each year, deserving nominations just make the deadline, while others fall short by only a few days. 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.



Peter Winokur
Fellows Evaluation
Committee Chair

Experience pays

The young break rules for fun. The old for profit.

Mason Cooley

A nomination must be supported by at least five, but no more than eight references from active IEEE Fellows. The biggest stumbling point for nominations is getting five references. If possible, nominators should list eight references. That way, if one or two references can't meet the deadline, the nomination still has the required five references. 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) was 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. It is a volunteer support group comprised of a Chair and Case Managers, all of who 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. NPSS has elected many fellows over the years, so it shouldn't be difficult to identify a strong list of references. I suggest that nominators contact the Chairs of NPSS's technical committees for assistance. They can be found on the NPSS web site at http://www.ewh.ieee.org/soc/nps/adcom_officers.html.

IEEE hopes its Electronic Fellow Nomination Process to be fully implemented in 2008, which will make it even easier for you to complete the nomination form. I say "hope" because we expected a fully electronic nomination process three years ago, and it hasn't happened!

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 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.

In 2007, NPSS had 14 Fellow nominations. The quality of these nominations was extremely high. The NPSS Fellow Evaluation Committee has finished its work for the year. All materials in support of NPSS nominees have been forwarded to IEEE. In December, the IEEE Board of Directors will announce the names of nominees that will be elevated to the grade of IEEE Fellow. As always, this is an extremely competitive process – only 0.1% of the total IEEE membership can be elected to the grade of Fellow each year.

I want to thank the members of the FEC for all their efforts. They are Victor Granatstein, Ron Huesman, Osamu Ishihara, Stan Schriber, Jim Schwank, and Peter Turchi. It's always challenging to review these nominations. I hope you can make our job ever more difficult by increasing the number of nominations in 2008.

On behalf of the NPSS Fellows Evaluation Committee, I urge you to consider making an IEEE Fellow nomination next year. March 1, 2008 will be here sooner than you think.

Peter S. Winokur, Chair, NPSS Awards Committee, can be reached at the Defense Nuclear Facilities Safety Board, Washington, DC; Phone: +1 202 694-7090; E-mail: p.winokur@ieee.org.

Visionary?

Keep your eyes wide open before marriage, half shut afterwards.

Benjamin Franklin

MEMBER BENEFITS AND PUBLICATIONS

New Membership Benefit Added— Online Access to Conference Records

We are pleased to announce that there will be a new NPSS membership benefit in 2008. In addition to the existing benefits, the NPSS membership fee will include personal online access to all

NPSS Conference Publications (unreviewed articles published in Conference Records, as opposed to reviewed articles published in *Transactions on Nuclear Science* or *Transactions on Plasma Science*). Thus, in

2008 your \$25 NPSS membership fee will include online access to TNS, TPS, and all NPSS Conference Publications. In the past, the only way to get online access to Conference Publications was through a subscription to all of IEEE's publications (something that is usually only affordable by large institutions) or through Member Digital Library (which costs \$35/month).

The details on how this will be implemented are still being developed. However, it is likely that in order to receive this benefit, you must check a box on your NPSS membership renewal form indicating that you wish to receive it. It is also possible that there will be a nominal fee for this access after 2008. If you have any questions or concerns, please contact Bill Moses (wwmoses@lbl.gov).

AWARDS

Ed. Note: A number of the awards presented at these conferences were reported in detail in the June 2007 IEEE NPSS Newsletter. Please refer back to that issue to see which of your colleagues were honored. In addition, the NPSS Society Awards, Shea, Merit, Young Investigator, and Graduate Scholar awards have been announced. The recipients will be honored in the March 2008 Newsletter.

NUCLEAR AND PLASMA SCIENCES SOCIETY AWARD EARLY ACHIEVEMENT AWARD JOHN LUGINSLAND

John W. Luginsland received a B.S.E., M.S.E., and Ph.D. in nuclear engineering (plasma physics option) from The University of Michigan, Ann Arbor in 1992, 1994, and 1996, respectively.

He joined the Advanced Weapons and Survivability Directorate of the Air Force Phillips Laboratory, Kirtland AFB, NM as a National Research Council Resident Research Associate in 1996, and was a staff member of the Plasma Physics Branch, Directed Energy Directorate, Air Force Research Laboratory from 1998 to 2001. From 2001 to 2003, he worked with Science Applications International Corporation on advanced pulsed power applications. He currently works out of Ithaca, NY for NumerEx, an Albuquerque-based small business. His research interests primarily focus on theoretical and computational plasma physics, electromagnetism, and fluid dynamics with applications to advanced survivability concepts, accelerator schemes, and various types of radiation production. He is especially interested in the application of high performance computing and advanced optimization techniques to create virtual prototyping capabilities in various areas of electromagnetic design. He enjoys collaboration with experimentalists.

John Luginsland's citation reads: *For contributions to the development and application of*

theoretical and computational methods leading to enhanced understanding and improved experimental performance of high current diodes and high power microwave sources.



John Luginsland (right) receiving NPSS Early Achievement Award from Plasma Science TC Chair, Ron Gilgenbach

My punishment

The sole cause of all human misery is the inability of people to sit quietly in their rooms.

Blaise Pascal

Never the twain shall meet

The first half of life consists of the capacity to enjoy without the chance, the last half consists of the chance without the capacity.

Mark Twain

COMPUTER APPLICATIONS IN NUCLEAR AND PLASMA SCIENCES AWARD



Peter Clout (right) receiving award from Richard Kouzes

Peter Clout, the Founder and President of Vista Control Systems, Inc. received the 2007 Computer Applications in Nuclear & Plasma Sciences Award which was presented at the Real Time Conference dinner last May by Dick Kouzes. The citation for the Award was *For sustained and innovative entrepreneurship in computerized data acquisition and control systems.*

Peter's career has been as a technical interpreter – interpreting between the language of physicists, molecular biologists, and engineers and the language of computers and computing in order to bring successful real-time computing systems to bear on experiments, projects, test cells and production plants of all kinds.

Peter started his programming career before going to college working for nine months in 1962 for English Electric in London. After graduating with a Bachelor's degree in Physics from the University of London in 1965, Peter moved to York and the newly-established Physics Department to study for his D.Phil in Atomic Physics. After receiving his D.Phil in 1969, Peter stayed on as a Postdoc to build new experiments to be controlled by computer. All the hardware interfaces and the software was built and developed by Peter and in addition, to provide a virtual machine environment, he modified the computer hardware (which was possible with a wire-wrap gun then!).

In 1972 Peter moved to Daresbury Laboratory near Liverpool where he was responsible for data acquisition systems for Synchrotron Radiation based research. He implemented a system based on CAMAC, Honeywell 316 computers and a fast, parallel data link to an IBM Mainframe computer. He also acted as Deputy Group Leader and assisted the Group Leader in the management of the group and especially in the development of CAMAC standards and modules, developing and writing part of the Serial LAMGrader recommendation for ESONE. He also organized exhibits of CAMAC at conferences and commercial exhibitions.

In 1977 Peter moved to Hamburg, Germany to work at the European Molecular Biology Laboratory Synchrotron Radiation Outstation at DESY. There he was responsible for establishing a data acquisition system for

the experiments at the outstation. The system established was very successful and continued in use for many years. It was based on CAMAC LSI-11 controllers running a real-time Basic-like language and a serial highway connection to a PDP 11/45 acting as the server and analysis computer. At this time Peter was also working on and was latterly chair of the Subroutines for CAMAC ESONE working group.

In 1980 Peter moved to Los Alamos National Laboratory where he was responsible for the hardware and software for the control system for the Proton Storage Ring project (1980-1986). This system used graphics and commercial products in an innovative way in the age before windowing graphics. In addition, the software for the project was developed with an architecture that isolated functions into processes. This software modularity ensured that development schedules were adhered to and the PSR stored first beam on schedule. Individual software modules could be tested independently then integrated with minimal further bugs. The architecture was copied for a military battlefield simulation system, but this time on networked Cray computers! The PSR control system cost was 8% of the project cost, the lowest monitored in a CERN survey of the time which found a range of 8-25%.

The system was based on CAMAC, multiple CAMAC Serial Highways for computer communication and CAMAC access with a VAX computer running VMS for the primary computer and CAMAC-mounted LSI 11/73 computers running RSX-11S for the CAMAC controllers. One German research laboratory, KFA, copied this control system.

Peter was one of the small group that recognized that the Particle Accelerator Conference then did not then provide the right forum for the accelerator controls people to meet, present their work and discuss it. To address this the group in Los Alamos organized the Accelerator Controls Workshop in Los Alamos in October 1985 which he chaired. This then inspired a conference series (ICALEPCS) that has been important in developing the controls community for large experimental physics machines ever since.

In the final battle of the Cold War, SDI,

Closer to home

Instead of loving your enemies, treat your friends a little better.

Ed Howe

Peter was responsible for the Telescope Control System of the Ground Test Accelerator project (1986-1988) This project was considerably smaller than the Proton Storage Ring and the system was developed and fielded in less than a year. With such a short time to deliver a control system, the obvious approach would have been to copy the previous system; however, windowing workstations and routine computer networking had become available, and so it was decided to re-design and develop anew the software of the system based on the same overall concepts of the Proton Storage Ring control system. Out of this project came the basis for Vista Control Systems' products and over 20 Laboratories took copies and half of these developed systems based on the Telescope Control System. The system was based on CAMAC, a CAMAC Serial Highway and a VAXstation II/GPX running VMS. This system was also on-time and distinctly contributed to the success of the Telescope experiment including the testing of control strategies and algorithms both against the physics models and the actual beam in the telescope.

At this same time, Peter was also responsible as Project Leader for the Ground Test Accelerator Control System (1987-1989) The GTA control system was based on a modification of a commercial product used by another group and became EPICS. Peter's role here was political (open-warfare management - do not press this button unless you have some time to spare!) rather than technical.

In 1988 it was increasingly clear that the political situation in the Division where he worked in Los Alamos was untenable and, on the other hand, there was excellent acceptance of the Telescope Control System externally.

From this the plans to form a company and license the software developed and in 1989 Peter founded and led the company. He is the primary sales person for the product, Vsystem. Vista Control Systems sells a software kit for building control and SCADA systems for research, military, utilities and Industry. Plants that use Vsystem process a major fraction of the steel and aluminum made in North America, producing many tens of billions of dollars of finished product per year as well as creating the basic feed-stock for the plastics industry. In addition, research groups that use Vsystem are successful with much lower staff costs than groups using noncommercial software.

Peter has held many positions in NPSS and TAB including NPSS President (1995-6). Since 2001 he has been the Chairman of the NPSS Communications Committee responsible for providing the promotional material for our Society activities and membership including a membership booth. In addition, along with a colleague at Vista Control Systems, he is responsible for shipping literature and the booth to meetings and arranging the annual membership mailing ahead of the IEEE membership renewal drive.

The major lessons learned by Peter are:

- It is infinitely more likely that one has too little data to solve a problem rather than too much.
- There are many fascinating problems waiting to be solved in industry and for some of them the managers recognize that they need addressing!
- One should sometimes let go of security and explore!

See Jean-Pierre Martin's article about the CANPS technical committee and Real Time Conference for Peter's citation.

Forget history??

You can never plan the future by the past.

Edmund Burke

FUSION TECHNOLOGY AWARDS

2006

STEVEN J. ZINKLE

Steven Zinkle, Director of the Materials Science and Technology Division at Oak Ridge National Laboratory, Oak Ridge, TN, was awarded the 2006 IEEE/NPSS Fusion Technology Award *For his outstanding contributions to the understanding of radiation effects in materials and his exceptional leadership in the U.S. fusion materials program.*

Following graduation in 1985 from the University of Wisconsin (Ph.D. Nuclear Engineering, MS Materials Science), Steve joined Oak Ridge National Laboratory as a Eugene P. Wigner fellow. He became an ORNL Corporate Fellow in 2004 and was leader of the Nuclear Materials Science & Technology Group within the Metals and



Steven J. Zinkle
2006 Fusion
Technology Award
Recipient

Ceramics Division from 2001 until February 1, 2006. He is currently Director of the Materials Science and Technology Division that was formed from the Metals & Ceramics and Condensed Matter Sciences Divisions in March 2006. His research is focused on physical metallurgy of structural materials and investigation of radiation effects in ceramics and metallic alloys for fusion and fission (terrestrial and space reactor) systems. He is the author or coauthor of more than 210 peer-reviewed publications, and is a fellow of the

American Ceramic Society, ASM International, and American Nuclear Society. Steve was recently honored with the DOE Ernest Orlando Lawrence Memorial Award (Nuclear Technology, 2006), and the Mishima Award for Outstanding R&D on Nuclear Fuels and Materials, American Nuclear Society (2007).

Steven Zinkle can be reached at Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6132; Phone: +1 865-574-4065; Fax: +1 865-574-4066; E-mail: zinklesj@ornl.gov; Web: <https://www.mst.ornl.gov/zinkle.shtml>.

2007

FARROKH NAJMABADI



Farrokh Najmabadi
2007 Fusion
Technology Award
Recipient

Farrokh Najmabadi, Professor of Electrical and Computer Engineering and Director of the Center for Energy Research at University of California, San Diego, CA, was awarded the 2007 IEEE/NPSS Fusion Technology Award *“For his outstanding and innovative technical leadership in the development of fusion energy, for his contributions to the merging of physics and engineering considerations into the development of attractive fusion reactor concepts, and for his many years of service to the fusion energy sciences community.”*

Najmabadi received his Ph.D. from UC Berkeley in 1982. He worked at UCLA as a Research Scientist at Institute of Plasma and Fusion Research during 1982-1994. He then joined UC San Diego in 1995. His research interests include plasma physics, fusion engineering, laser/matter and laser/plasma interaction. He has received David Rose Award of Excellence in Fusion Engineering (1995), UC San Diego Outstanding Engineering Professor (2003), American Nuclear Society Fusion

Energy Division Outstanding Achievement Award (2002), Fusion Power Associates Award of Leadership in Fusion Research (2004). He is also a member of APS, ANS, Tau Beta Pi, and Eta Kappa Nu.

Najmabadi is a Senior Member of IEEE and has served as a member of the Fusion Technology Standing Committee, the Nuclear and Plasma Science Society (NPSS) Administrative Committee, the IEEE Power Engineering Society Working Group on Advanced Sources of Energy, and the Fusion Working Group of the Energy Development Subcommittee. In 1997 he was the General Chair of the 17th IEEE/NPSS Symposium on Fusion Engineering. He currently serves as a Distinguished Lecturer in the IEEE Nuclear and Plasma Science Society.

Farrokh Najmabadi can be reached at the University of California – San Diego, 460 Engineering Bldg Unit li, La Jolla, CA 92093-0417; Phone: +1 858 534 7869; Fax: +1 858 822 2120; E-mail: Najmabadi@fusion.ucsd.edu.



Brandon M. Smith
Best Fusion Student
Paper Awardee

Brandon M. Smith, a graduate student at the University of Wisconsin, Madison, WI, was awarded the 22nd SOFE Best Student Paper Award for a paper entitled *3-D Neutronics Analysis of the ITER First Wall/Shield Module 13*.

Brandon recently finished his first year of graduate school at the University of Wisconsin in the Nuclear Engineering and

Engineering Physics Department. Currently he is performing neutronics calculations for ITER while investigating the coupling of CAD and Monte Carlo radiation transport. Brandon completed B.S. degrees in Physics and Nuclear Engineering at Penn State while serving as president of Tau Phi Delta fraternity. In his spare time, he enjoys fly fishing and music.

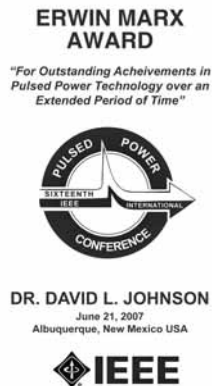
BEST STUDENT PAPER BRANDON M. SMITH

PULSED POWER AWARDS

ERWIN MARX AWARD

DAVID L. JOHNSON

David Johnson was born and raised in Minneapolis, Minnesota. He graduated from the University of Minnesota in 1966 with the degree of Bachelor's of Electrical Engineering. He joined Sandia National Laboratories on a work/study program. In 1968 he received a Master's of Science in Electrical Engineering from the University of New Mexico. His arrival at Sandia was only about 6 months after the formation a small pulsed power group headed by Tom Martin who was tasked with developing flash X-ray sources for Sandia's weapons program. The limited staff and the newness of the field offered an excellent environment to participate



in all areas in the research and development of Sandia's pulsed power facilities. Dave retired in 2000, after 34 years at Sandia, and joined Maxwell Laboratories/Titan Pulsed Sciences/L-3 Communications but continued at Sandia under contract. He considers himself lucky to have been in a field that was new, exciting, and had a tremendous growth during his career. "I haven't fully retired, yet, because pulsed power is still fun for me."

David Johnson's award citation reads: *For Outstanding Contributions to Pulsed Power Technology in Developing Programs of Research, Education and Information Exchange.*

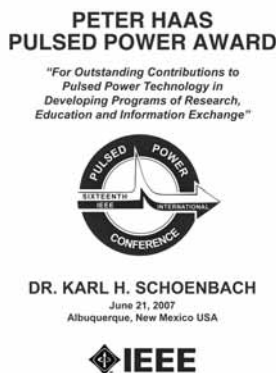


David L. Johnson
Erwin Marx Award
Recipient

PETER HAAS AWARD

KARL H. SCHOENBACH

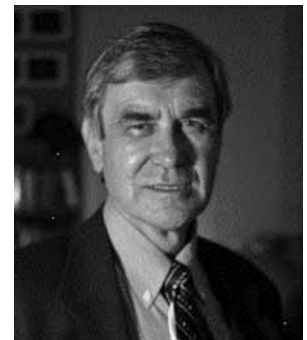
Karl H. Schoenbach received his Dr.rer.nat. degree in physics in 1970 from the Technische Hochschule Darmstadt (THD), Germany. From 1970 to 1978, he worked at the THD in the area of high pressure gas discharge physics and on the dense plasma focus. From 1979 to 1985, Karl Schoenbach held a faculty position at Texas Tech University, where he was involved in research on fast opening switches. In 1985, he joined the faculty at Old Dominion University (ODU) in Norfolk, VA, where he now holds the Batten Endowed Chair in Bioelectric Engineering. Until 1993, Karl Schoenbach was active in research on photoconductive, solid state switches, and since then he has concentrated his research efforts on high pressure microdischarges, electrical discharges in liquids, and on environmental and medical applications of pulsed power and plasma technology. He was elected Fellow of the IEEE in 1994 for "contributions to the research and development of very-high-power electronic devices." Karl Schoenbach has chaired a number of workshops and conferences, among them, the 1991 IEEE



International Conference on Plasma Science, and the first International Symposium on "Nonthermal Medical/Biological Treatments Using Electromagnetic Fields and Ionized Gases" (ElectroMed) in 1999. For the past 12 years, he has added a touch of cell-biology - pulsed electric field effects on biological cells and tissue - to his favorite research topics of pulsed power and plasma science. Karl Schoenbach is the director of the Frank Reidy

Research Center for Bioelectrics at ODU, an interdisciplinary research center established in 2002. At the center, he works with pulsed power and plasma scientists, as well as with biologists and biophysicists, to connect plasma science, pulsed power science and technology and cell-biology in a new field of research: "bio-electrics." The goal of this work is to gain a better understanding of the effects of nanosecond electrical pulses on cells and tissue, and to explore their potential for medical applications.

Dr. Schoenbach's citation reads: *For Outstanding Contributions to Pulsed Power Technology in Developing Programs of Research, Education and Information Exchange.*



Karl H. Schoenbach
Peter Haas Award
Recipient



David A. Wetz
2006 Outstanding
Pulsed Power Student



Gregory F. Edmiston
2007 Outstanding
Pulsed Power Student



Craig Donaldson
Best Student
Presentation



Siqi Luo
Best Student
Presentation

2007 OUTSTANDING PULSED POWER STUDENT AWARDS

In recognition of outstanding contributions as a student in pulsed power engineering, science or technology.

2006 - DAVID A. WETZ, JR

David A. Wetz Jr. (S'1998, M'2006) was born in El Paso, TX on August 3, 1982. He received the B.S. degree in electrical engineering, the B.S. degree in computer science, the M.S. degree in electrical engineering, and the Ph.D. degree in electrical engineering from Texas Tech University,

Lubbock, Texas in 2003, 2004, and 2006 respectively. He is currently employed as a Research Associate at the Institute for Advanced Technology (IAT) at the University of Texas at Austin where he performs research in the pulsed power field with the main focus being on electromagnetic launch technology.

2007 - GREGORY F. EDMISTON

Also the Recipient of a Best Student Presentation Award

Gregory F. Edmiston (S'00) was born in Oklahoma City, OK. He received the B.S.E.E. and M.S.E.E. degrees from Texas Tech University in Lubbock, TX in 2004 and 2005, respectively. He is currently pursuing his Ph.D. in electrical engineering at Texas Tech. His research inter-

ests include surface flashover physics, high-power microwaves, explosively driven pulsed power, and compact pulsed power systems. He has worked as a Research Assistant at the Center for Pulsed Power and Power Electronics at Texas Tech University since 2004.

BEST STUDENT PRESENTATION AWARDS CRAIG DONALDSON

Craig Donaldson was born in Aberdeen, UK, in 1982. He received the B.Sc. degree (Honours) in Physics in 2004 and the M.Sc. in High Power Radio

Frequency Science and Engineering in 2005 from the University of Strathclyde, Glasgow, UK. He is now currently undertaking a Ph.D in the Department of Physics, University of Strathclyde.

SIQI LUO

Siqi Luo (M'2005) received the M.S. degree in Advanced Materials in the Singapore-MIT Alliance (SMA) program at the National University of Singapore, 2003. He was awarded the Singapore government scholarship and Institute of Materials Research & Engineering (IMRE) Award for Best Student for his M.S. work. He received the B.S. degree in materials science at Shanghai Jiao Tong University in 2001.

His industrial experience includes a graduate

research internship at the Institute of Microelectronics (IME) of Singapore in 2003 and an engineer position at Semiconductor Manufacturing International Corporation (SMIC) in Shanghai, China in 2001.

He is currently a Ph.D. student in the Department of Electrical and Computer Engineering at the University of Wisconsin-Madison. His research work focuses on experimental and computational study of the RF, microwave and laser plasma technologies.

OLIVER PRINZ

Oliver Prinz was born in Karlsruhe, Germany, in 1978. He received the Dipl.-Ing. degree in electrical engineering in 2004 from the University of Karlsruhe (TH), Germany. Currently he is working towards his Ph.D.

Since 2002 he has been with the gyrotron group at the Research Center Karlsruhe, Forschungszentrum Karlsruhe

(FZK). First he was working on diagnostic systems for high-power gyrotrons. From 2004 onwards his research interests have been quasi-optical mode converters and multi-frequency gyrotrons.

Oliver Prinz won the IEEE Region 8 student paper contest in 2005 and is currently chairman of the IEEE student branch Karlsruhe, Germany.



Oliver Prinz
Best Student
Presentation

RADIATION EFFECTS AWARDS

RENO HARBOE SORENSEN RECEIVES THE 2007 NSREC RADIATION EFFECTS AWARD

Reno Harboe Sorensen started his space career in 1970 when he joined the components laboratory of the European Space Research Organisation (ESRO) where he performed Scanning Electron Microscopy (SEM) on semiconductors, X-ray analysis and supported other failure analysis work and evaluation activities. By 1975, when ESRO was integrated into the newly founded European Space Agency (ESA), Reno had started to turn his interest to radiation effects and employed the SEM as a micro radiation source and characterized device behavior under X-ray influence. In the following years, together with the late Len Adams, Reno developed a profound know-how on radiation effects and increased the awareness about radiation effects in ESA projects. Since that time he has planned, per-

formed and reported hundreds of radiation test campaigns and initiated numerous studies on basic mechanisms and novel test approaches. In the process, Reno has become a widely recognized expert with a particular focus on Single Event Effects. His involvement in the development and improvement of European test facilities for radiation effects studies, such as the PIF, HIF and RADEF has been of crucial importance. Reno's contribution to the space radiation effects community is impressively documented through his publications at NSREC and RADECS, through his forming influence on many of his young peers and through his constructive involvement in the RADECS Association. His citation reads: *For contributions to the dissemination and advancement of radiation effects research associated with hardened systems for space applications.*



Reno Harboe
Sorensen
2007 Radiation Effects
Award Recipient

PHELPS GRANTS

The 2007 Paul Phelps Continuing Education Grant was awarded to two student members from the radiation

effects community. On behalf of NPSS, we are proud to announce two recipients for the 2007 Paul Phelps Continuing Education Grant.

ANUPAMA BALASUBRAMANIAN

Anupama Balasubramanian is pursuing her Ph.D. in the area of radiation effects on deep submicron technologies at Vanderbilt University. Anupama has presented papers at NSREC, IRPS, SEE symposium and at the IEEE Sensor conference. Her PhD project deals with the development of radiation hardened by design (RHBD) approaches that address error mitigation for

deep sub-micron technologies. Specifically, she has developed circuit designs that mitigate the effects of SET pulses in combinational logic without significant area, power or speed penalties. She has designed radiation hardened storage cells that do not upset even in the case where charge sharing occurs between storage nodes. She has been consulted multiple times by industry personnel regarding



Anupama
Balasubramanian
Phelps Grant
Recipient

these designs for incorporation into their products. Anupama has authored or co-authored 7 publications. She plans to com-

plete her PhD in May 2008. Her advisor, Dr. Bharat Bhuva, Associate Professor of EECS, nominated her.

MARC GAILLARDIN



Marc Gaillardin
*Phelps Grant
Recipient*

Marc Gaillardin, was born in Bagnolet, France, in 1980. He received the Electronics Engineering degree from the Formation d'Ingénieurs de l'Université Paris Sud Orsay (FIUPSO) and the M.Sc. degree in nanoelectronics from the University of Orsay, France. He is currently pursuing his Ph.D. degree with the Institut de Microélectronique Electromagnétisme et Photonique (IMEP) and the Institut National Polytechnique de Grenoble (INPG), France, in collaboration with the Commissariat à l'Energie Atomique (CEA), Bruyères-Le-

Châtel, France. He is involved in the study of the sensitivity to radiation of planar and non-planar nano-electronic devices based on Silicon-On-Insulator (SOI) technology. His research areas focus on experiments, simulations and modelling of permanent and transient effects of radiation on advanced devices based on SOI technologies, in particular multiple gate MOS transistors. Marc has authored or co-authored 7 publications, including the NSREC 2006 Outstanding Paper Award. He expects to receive his PhD in end of 2007. He was nominated by Dr. Philippe Paillet of CEA.

At the opening of the NSREC technical sessions (July 2007), both students were presented with the Phelps Grant. The grants included tuition for the short course and a check for \$500.

It should be noted that both students have submitted papers for publication in the December 2007 issue of the Transactions on Nuclear Science. Both are members of IEEE and NPSS.

The purpose of the Phelps Grant is to promote continuing education and encourage membership in the Nuclear and Plasma Sciences Society (NPSS).

The basis for judging is exceptional promise as a graduate student working in the fields of the NPSS, "exceptionally good work" in those fields, and an expectation that attendance at an NPSS-sponsored short course will result in an improved possibility of obtaining a job.

Professors should consider nominating their most promising students before May 15, 2008. Forms can be found on the NSREC web site (www.nsrec.com).

OTHER BUSINESS

HAROLD L. FLESCHER

IEEE Fellow

Candidate for TAB Vice-President Elect



Harold L. Flescher

MY IEEE BACKGROUND

I won't bore you with a long biographical list of things I've done for IEEE. They are available to you on my web site <http://web.mac.com/halflescher/iWeb/Site/Welcome.html>

Here are a few strong points pertinent to my candidacy.

Conferences - My first involvement with IEEE and with NPS after grad school was serving on a committee of the Nuclear and Space Radiation Effects Conference (NSREC) in 1966. I served on or chaired several other committees of this conference as well as serving several terms on the Radiation Effects

Steering Committee of NPSS. I was General Chairman of the NSREC in 1980. I was Technical Chairman of a technically allied classified conference, HEART, in 1985. I understand our conferences and the desires of the volunteers that make them so successful.

Publishing - My first technical paper was published in *Transactions on Nuclear Science* in the mid-1960s. I still remember the thrill of my paper being accepted after passing through our IEEE peer review process. I understand our authors' desires to publish promptly in a renowned peer reviewed journal, and our society's desire to have well-respected and profitable journals.

IEEE Management – I was President of NPS in the early 1990s. I know our technical committees and the things that they need to be successful. Since then I have served on the IEEE Board of Directors and more importantly served two terms as TAB Treasurer. I understand the issues IEEE faces today and have a strong understanding of the issues we are facing in the future. In the last few years I developed and got IEEE Board approval for changes to IEEE policies that make our technical societies better able to survive and thrive, and for the other Operating Units (OUs) of IEEE to also survive and thrive. The IEEE and our technical societies are today far better positioned for the future as a result of my work. During my two terms as TAB Treasurer, I created the spending rule that permits Societies to budget up to 3% of their reserves for new initiatives, and created the rule which permits societies and OUs to spend up to 50% of the previous year's operational surplus (the difference between our budget and actual performance). Both rules give us more money to spend and less that must go into reserves. I created and still lead the team that developed the policy that all of the costs of running IEEE (the indirect infrastructure expenses) will be paid for out of package product revenues with agreement that these costs will be capped at a maximum of 20% of this revenue stream, and that a reserve will be built up to pay for expensive one-time projects rather than have them charged to the income producing OUs (like technical societies) as expenses. I supported the policy that will fund the IEEE Foundation, the IEEE History Center and the IEEE Awards program out of income on investments rather than being directly paid for primarily by the technical societies. We all today have more funds to spend for our initiatives and will, in the future, also have more funds for these tasks.

WHY I WANT TO SERVE AS VP OF TECHNICAL ACTIVITIES

My experiences in industry and throughout IEEE give me a unique understanding of our technical activities needs. Our Technical Societies and Technical Councils produce excellence in conferences and publications; each are successful businesses that collectively produce over three-quarters of IEEE's revenues.

IEEE is entering a difficult time where large-scale change will be not a choice but will happen whether we like it or not. I am the right person to help lead us through this change in a manner that best preserves the functioning of our principal IEEE income-producing businesses – the IEEE Societies/Councils.

WE HAVE A PROBLEM WITH MEMBERSHIP.

Full price IEEE memberships and society memberships are slowly declining. Today's easy electronic access to journals and the steadily increasing cost of membership are significantly responsible. We need to lower the cost of membership by instituting a menu or package approach to dues – buy what you want to use for a reasonable price, rather than the whole lot whether or not you want the whole lot for a lot more money. From our society's perspective, in order to add value to our cost of membership, NPS is giving electronic subscriptions to both of our journals and conference publications with membership next year. We must continue to increase the value of membership as well as lower the overall costs.

OUR CONFERENCES ARE GREAT

The more than 350 technical conferences that IEEE runs each year are second to none in quality. Our conference publications receive as many on-line hits as our technical journals. Conference organizers must have the freedom to manage their conferences without burdensome oversight, and IEEE must facilitate this. I know first hand that our organizational volunteers cherish their independence in running our conferences, and in spite of the requirements of our auditors, IEEE needs to preserve as much of this independence as possible.

OUR PUBLICATIONS ARE OUTSTANDING

Above all we must keep the quality of our journals outstanding. The multi-governmental push for "open access" threatens our publication income. We must make our electronic product, IEL, sufficiently valuable that it is worth buying even if open access becomes universal.

SUMMARY

I know our technical societies and their activities from the perspective of a "doer" rather than as an observer. I also know and value the work of the other parts of IEEE that makes us unique from other strictly technical societies. I commit to performing as TAB V-P as well as I have in every job you and IEEE has thrown at me. I want to be involved in solving the problems currently on our collective table, but I need your vote to do so. If you believe that I am the best person to do this job, I would very much appreciate both your vote and you asking your peers to vote for me.

Hal Flescher can be reached by E-mail at h.flescher@ieee.org

One of life's pleasures

I love being married. It's so great to find the one special person you want to annoy for the rest of your life.

Rita Rudner

The way to longevity

He is so unpopular, if he became a funeral director, people would stop dying.

*Lord Stratford
(on John Major)*

ELECTRON COOLING OF RHIC

By Ilan Ben-Zvi



Ilan Ben Zvi

Discoveries at the Relativistic Heavy Ion Collider (RHIC) have captured world-wide attention. They've also raised compelling new questions about the theory that describes the interactions of the smallest known components of the atomic nucleus. To address these questions, we need to study rare processes and thus to increase the collider's luminosity, or the rate at which ions collide inside the accelerator. The BNL Collider-Accelerator Department is pursuing various upgrades, including the investigation of a luminosity upgrade through electron cooling of RHIC.

The electron cooled RHIC, known as RHIC-II, would use low emittance (read cool), energetic and high charge bunches of electrons to cool the ion bunches. This would increase the ion bunch density and lead to a higher luminosity. Achieving the necessary electron bunch characteristics will require advanced accelerator techniques, such as a high-brightness, high-current energy recovery linac. Such a linac may have other applications in eRHIC (energetic electron ion collider at RHIC) and future light sources.

As RHIC operates, the luminosity goes down. This is due mostly to Intra Beam Scattering (IBS) which causes the gold ion bunches to increase their longitudinal emittance and, through dispersion, also their transverse emittance, thus "heat" up and become more diffuse. Emittance growth can be induced by a variety of mechanisms besides IBS, including instabilities of the ions' motion, mechanical vibration of the magnets, and the collisions themselves. More diffuse beams produce lower luminosity and fewer collisions. To improve luminosity, RHIC accelerator physicists aim to eliminate or reduce the buildup of heat within bunches through a process called electron cooling.

Electron cooling was invented in Russia by Gersh Itzkovich Budker of the Institute of Nuclear Physics in Novosibirsk in 1966 and since has been applied at numerous storage rings around the world. The idea behind electron cooling is very intuitive - bring cold electrons into contact with the ions so that heat can flow from the warmer ions to the colder electrons. The cold electrons are produced by an

Tell me

[Gossip is] hearing something you like about someone you don't.

Earl Wilson

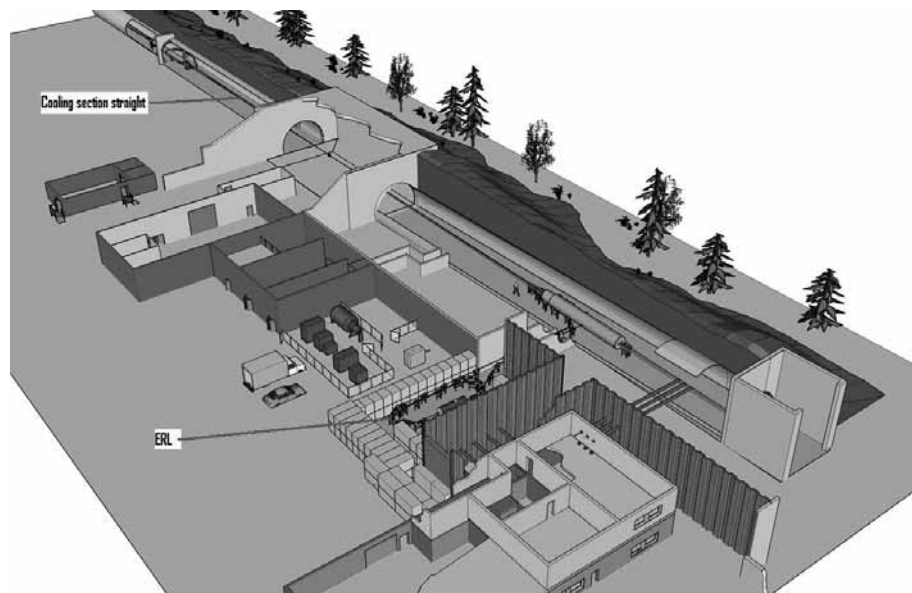


Fig. 1. A graphic showing a possible layout of the electron cooler of RHIC at the 2 O'clock IP. The cooling will take place in a 100 meter straight section located in the RHIC tunnel between two superconducting RHIC quadrupoles. The electron beam, generated by a 54 MeV superconducting RF Energy Recovery Linac (shown below the center of the graphic) will travel first with the Yellow (Counter-clockwise) Ring beam, then loop back and travel with the Blue (clockwise) Ring beam, to cool both rings.

electron source, then accelerated to match precisely the speed of the ions in a straight section of the ring. There the two beams would overlap and have a chance to exchange heat. The electrons would be discarded after one pass and replaced by fresh electrons to continue the cooling process. In RHIC, which has a circumference of 3800 m per ring, this straight section will be over a 100 meters long. There are other differences between RHIC and previous electron cooled rings. RHIC will be the first collider to be cooled during collisions, and will be the first cooler to use bunched electron beams.

To gain confidence in the calculated performance of the RHIC electron cooler, a large effort was made to develop dependable simulation techniques and benchmark them in experiments. It is beyond the scope of this article to cover this work even in minimal detail, but perhaps this is a good opportunity to thank the many institutes that helped us in this challenge: The Budker Institute at Novosibirsk, The Joint Institute of Nuclear Research, Tech-X Corporation, Jefferson Laboratory, Fermi National Accelerator Laboratory, and the Svedberg Laboratory. The last two institutes also helped in benchmarking experiments on their electron cooler.

One of the big challenges in cooling RHIC is its high energy — about ten times higher than any previous electron cooler (54 MeV electron energy for RHIC’s 100 GeV per nucleon gold ions). This slows down the electron cooling, since the cooling time is proportional approximately to the energy cubed, thus requiring an electron beam that has a high energy, a high current and must cool over a long straight section. So the conventional DC electron accelerator cannot be used for cooling RHIC. Thus we adopted an Energy Recovery Linac (ERL) electron accelerator to produce high-charge (about

5 nC) electron bunches with a low emittance, under 3 micrometer normalized rms, and high energy of 54 MeV. Precisely matching the electrons to the ions in position, speed and angular deviation is another challenge. Figure 1 shows a possible layout of an electron cooler at RHIC.

Even more difficult is the task of producing such low-emittance and high charge bunches (or high-brightness) electrons. The Brookhaven team is now working on a laser-photocathode superconducting radiofrequency source to continuously produce a high-brightness electron beam, capable of about 0.1 ampere (the design aims at 0.5 ampere continuous average current). To make the ERL work without beam breakup, a superconducting accelerator cavity was developed, capable of a very high current ERL (over 3 amperes without beam-breakup) as well as other technologies for accelerating a very high current very efficiently.

Following several years of intensive R&D, we are confident that these techniques will increase the luminosity at RHIC according to our calculations, allowing more sensitive, precision studies of the substructure of matter. Figure 2 shows an ERL superconducting cavity and the results of a cooling simulation.

The accelerator technologies that we are developing may also have applications at Brookhaven beyond the RHIC-II upgrade, for example, in the eRHIC upgrade, which would add electrons from an Energy Recovery Linac to collide with the ion beams of RHIC, and possibly also at future “light source” facilities using very high brightness X-rays to study the properties of materials and biological samples.

More information about the Collider-Accelerator Department’s electron cooling group can be found on the web at <http://www.bnl.gov/cad/ecooling>.

Solo mio!

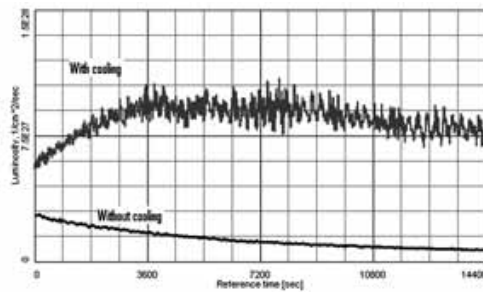
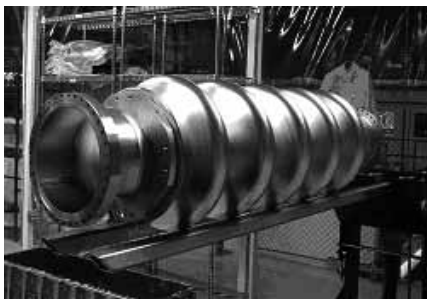
Great souls have wills, feeble souls have wishes.

Chinese saying

Going in circles

When you go far enough to the right, you end up meeting the same idiots coming from the extreme left.

Clint Eastwood



A photograph of the 703.75 MHz ampere-class ERL superconducting cavity, and a plot of a simulation of the luminosity of gold-gold collisions at 100 GeV/A per beam over a 4 hours store, shown without and with electron cooling. The 5-cell cavity, developed by C-AD and built by local industry (Advanced Energy Systems) is the first dedicated ERL cavity to be developed. It will serve at the RHIC II electron cooler, at eRHIC and various other applications. The cavity, which has undergone chemistry and testing at Jefferson Laboratory, demonstrated 20 MeV acceleration at low power investment, and represents one aspect of BNL’s entries into the area of Superconducting RF particle accelerators.

Filling the Gaps Left by the Energy Policy Act of 2005

FROM TODAY'S ENGINEER, A PUBLICATION OF IEEE-USA

BY PATRICK E. MEYER

Check this

Not everything that can be counted counts, and not everything that counts can be counted.

Albert Einstein

Right it is!

If you are afraid of being lonely, don't try to be right.

Jules Renard

In January 2007, a diverse bipartisan group of senators (Reid, Bingaman, Boxer, Schumer, Lieberman, Lautenberg, Cantwell, Leahy, Stabenow, Webb, Salazar, and Menendez) introduced the National Energy and Environment Security Act of 2007 (S. 6), which seeks to reduce national dependence on foreign oil and expand non-petroleum transportation options. Among other components, "the bill proposes increased biofuel production, a commitment to energy efficiency measures, rolling back incentives which sponsor the oil industry, and promoting alternative forms of energy, such as wind and solar."¹

Given that it has not even been two years since the passing of the Energy Policy Act of 2005 (EPAcT), one may wonder why such an act is even necessary. EPAcT was the first national energy policy in more than ten years — shouldn't it have included such measures? For better or worse, it is becoming increasingly apparent that EPAcT's mandates fall short in many areas. As a result, Members of Congress have begun to propose new legislation which will fill the gaps left by the Act. More importantly, many progressive states have concluded that the best opportunities for progress in energy and environmental issues are through state-level policy. Thus, many states have enacted or are progressing on new legislation which includes mandates even more strict than those outlined in federal-level policy. This article will briefly discuss a handful of recent advancements in national and state level energy and environmental policy which fill the gaps left by EPAcT.

The National Energy and Environment Security Act of 2007 is designed to fill many of the gaps left by EPAcT through five distinct goals: (1) to reduce dependence on foreign and unsustainable energy sources by increasing automobile efficiency, expanding biofuels, and further developing new automobile technologies such as plug-in hybrid vehicles; (2) to reduce national exposure to the risks of global warming by reducing carbon dioxide emissions; (3) to diversify energy sources by developing new energy technologies; (4) to reduce burdens on consumers of rising energy prices through implementation of low-income home energy assistance programs; and (5) to eliminate tax giveaways and prevent energy price gouging and manipulation.² Of course, as Bingaman states, "all of this is a tall order for Congress."

Indeed, how can the Act's supporters even think that their act will be any more successful in these areas than EPAcT was (or wasn't)? Bingaman suggests that these issues be tackled through a series of smaller energy bills which have a greater chance of properly addressing the issues at hand. Since its conception, EPAcT has been criticized by some as being so all-encompassing that it does not mandate the incremental steps that are necessary for true progress. Addressing specific issues through small, precise legislation will likely be a more successful approach.

Although EPAcT includes mandates for the expansion of alternative fuels and research and development on alternative fuel technologies, it again does not address many of the incremental steps involving the development of technologies or markets in which the technologies can thrive. For example, EPAcT mandates that the Environmental Protection Agency (EPA) develop guidance for the development of advanced diesel engines and fuel, but implementation has fallen short in multiple areas.

Federal regulations mandating cleaner diesel engines in new trucks and school buses went into effect in January 2007.³ Specifically, the legislation mandates the utilization of ultra low sulfur diesel (ULSD), which, as of October 2006, has been promoted by the Environmental Protection Agency (EPA) as the new diesel standard. ULSD is considerably cleaner than conventional diesel fuel, and has a maximum sulfur content of only 15 parts per million (ppm), whereas conventional diesel has a much greater sulfur content of 500 ppm.⁴ The environmental benefits of switching to the new fuel are expected to be considerable. According to the Diesel Technology Forum, new engines and fuel in combination could reduce emissions of particulate matter by up to 98 percent over the previous generation. Furthermore, nitrogen-oxide emissions will be reduced by 50 percent. The ULSD policy is still in early stages of implementation; not all retail outlets are required to offer the fuel until the end of 2010. California is the only state to have fully completed the transition to ULSD by September 2006.

The ULSD program is promising, but in reality, fuel labeled as ULSD may accumulate more than the mandated limit of 15 ppm of sulfur when transported through multiple pipelines, tanks and trucks to the final point of

sale.⁵ Furthermore, fuel distributors and retailers may be taking delivery of fuel labeled ULSD without having a practical means for verifying the actual sulfur content. In other words, EPart does not include the necessary legislation to ensure that the ULSD program actually works.

Recognizing that further research and development is needed to ensure that ULSD does indeed meet the mandated sulfur content, Rep. Bart Gordon introduced the Advanced Fuels Infrastructure Research and Development Act (H.R. 547) in January 2007. The Act aims to establish a research, development and demonstration program on low-cost, portable and accurate methods and technologies for testing of sulfur content in ULSD fuel. With such a testing method, mandates which require the utilization of ULSD can be upheld to their true intention. (H.R. 547 passed in the House and was referred to the Committee on Environment and Public Works in the Senate.)

In many situations, states have realized that they must take energy policy formulation and implementation into their own hands for there to be substantial progress. Renewable portfolio standards (RPS) is one such area. RPS requires that electricity providers include a specified amount of renewable energy as part of its portfolio of generating fuels. There are a number of RPS enacted by states across the nation, which vary greatly in terms of requirements. The quantity of renewable energy development required, and the date by which such development must occur, often differ among states. Furthermore, different states have very different definitions of “renewable” and “non-renewable” sources. For example, some states include hydropower as a renewable energy source while other states do not. Other discrepancies exist with technology used to generate electricity; Maine, for example, includes cogeneration — whether from renewable sources or not — as an RPS source, whereas most other states do not.⁶

As of June 2007, 20 states and the District of Columbia had enacted a Renewable Portfolio Standard (RPS). Together, these states account for more than 42 percent of the electricity sales in the United States.⁷ Since the passing of EPart and the realization that a national-level RPS will not be developed in the immediate future, there has been a flurry of activity among state-level energy policy makers. The most recent state to enact a RPS is Minnesota, which in February 2007 set some of the most stringent standards known in the United States: 30 percent renewable energy from the state’s largest utility, Xcel Energy⁸, by 2020, and 25 percent by 2025 for all other utilities operating

in the state. Additionally, other states recently enacted an RPS: Arizona (15 percent renewable by 2025, enacted November 2006), Delaware (10 percent renewable by 2019, enacted July 2005), Washington D.C. (11 percent renewable by 2022, enacted April 2005), Maryland (9.5 percent renewable by 2022, updated legislation effective July 2007), Montana (15 percent renewable by 2015, enacted June 2006), Nevada (20 percent renewable by 2015, enacted February 2006), and Washington (15 percent renewable by 2020, enacted November 2006). (For the full list of RPS throughout the nation, go to the DSIRE database.)

Many states have taken the initiative to enact their own renewable energy incentive programs which go a level above the incentives included in EPart. For example, as of March 2007, Colorado state legislation mandates a mandatory green-power option for large municipal utilities. Under the legislation, municipal electric utilities serving more than 40,000 customers in Colorado must offer a green-power program that gives retail customers the option of supporting emerging renewable technologies.⁹

In April 2007, Massachusetts enacted an energy reduction plan for state buildings, which mandates that all agencies involved in construction and major renovation projects of over 20,000 square feet to meet the Leadership in Energy and Environmental Design (LEED) standards which ensure high-performance, energy efficient and more sustainable building design.¹⁰ Also in April 2007, Vermont enacted a similar energy reduction plan for state buildings which aims to reduce non-renewable energy purchases and increase overall energy savings. Specifically, the plan mandates that all state agencies and institutions constructing state-owned facilities over 5,000 gross square feet be designed and constructed consistent with state-formulated standards at least as stringent as LEED.

It has become clear that the Energy Policy Act of 2005 alone will not achieve the nation’s energy objectives. But, with progressive new federal policy aimed at tackling each issue one at a time, and progressive state policies aimed at mandating renewable energy development or outlining incentive programs, the gaps left by EPart are being filled. EPart was useful in establishing many baselines and over-arching policy initiatives; now, smaller, issue-specific federal or state policy can effect real change in energy and environmental policy. Indeed, the most memorable legacy of EPart will likely not be the act itself, but the windows it has opened for a new generation of incremental progressive policies.

Try again

I’ve had a perfectly wonderful evening. But this wasn’t it.

Groucho Marx

The road to knowledge

Education: the path from cocky ignorance to miserable uncertainty.

Mark Twain

Scientific precision

Only two things are infinite, the universe and human stupidity, and I'm not sure about the former.

Albert Einstein

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OBITUARIES

Once again our community has lost outstanding leaders. Both Jay Forster and Art Guenther provided outstanding technical contributions to their communities and major volunteer contributions as well

JULIAN FORSTER



Jay Forster with his wife, Frieda



Jay Forster

Julian (Jay) Forster, an early recruit by General Electric Company in 1956 to work on the development, engineering and construction of commercial nuclear power plants, died in his home in San Jose, California on May 29, 2007. He is survived by his wife, Frieda, their two children, Jeffrey Forster of Monte Sereno, CA and Laura Gherman of Pebble Beach, CA and granddaughter, Melissa Gherman.

In 1956, while taking a class for the US Navy in San Francisco, Jay saw an ad seeking a physicist at General Electric's Nuclear Power Division located in San Jose. He applied and was awarded this position, and came to California with his family. He worked for GE until his retirement in 1980. He continued to consult in the power industry for Quadrex Corporation until being recruited again by GE in 1990.

Born in 1918 in New York City, the son of Rose and Meyer Kivitz, he graduated from the City College of New York in 1940 with a BS in physics. He married Frieda in 1941; she remained his loving wife for 66 years.

An active member of the Institute of Electrical and Electronic Engineers (the IEEE), Jay was elected Fellow, and then became Life Fellow, for his more than 30 years in creating standards for the nuclear power industry, and for making essential contributions to the growth and success of commercial nuclear power through the use of computers in plant operation and safety. In 2004 he received the IEEE Charles Steinmetz award for his contributions to standards development.

Not content with just being an engineer or physicist, Jay was active in his local community and served San Jose as Fine Arts Commissioner for eight years. He was elected as a Distinguished Citizen of San Jose, and was also President of Temple Emanuel. He loved music, wine, golf and the fine arts.

Jay will be missed not only by his family, but by the whole NPSS community where he served not only as a developer of standards and liaison to the standards board, but also as liaison to the Professional Activities and Continuing Education Committees, and an elected member of the Radiation Instrumentation Technical Committee.

ARTHUR H. GUENTHER

Arthur H. Guenther (Art), a long-time resident of Albuquerque, passed away April 21, 2007, at the age of 76. Art was born on April 20, 1931, in Hoboken, NJ, to Florence and George Guenther. As a child (and throughout his life), he loved the outdoors and became New Jersey's youngest Eagle Scout. After earning a B.S. in Chemistry at Rutgers, he married his high school sweetheart Joan and went on to Penn State earning a Ph.D. in Chemistry/Physics. Art is survived by his wife of 52 1/2 years, Joan; daughter, Tracie (TK) O'Geary and husband, Dan; daughter, Wendy Gallegos and husband, Ralph; grandchildren, Chelsea and Cassy Gallegos; sister, Palmeria Crawford; and sister and brother-in-law, Florence and Ray Reinertsen. Art was preceded in death by his son, Gregory.

Guenther served in the USAF ROTC while at Rutgers and, after graduation from Penn State, the Air Force assigned him to KAFB in 1957. He then transferred to civil service, spending 15 of his 31 Air Force years as Chief Scientist of the USAF Weapons Lab. Art also served as the Science Advisor for three different New Mexico Governors and held positions at Los Alamos and Sandia National Laboratories. An internationally recognized scientist, government advisor, and consultant, Art served many roles in long-range planning, science and tech-

nology policy, technical education, technology commercialization, and research and development. Art made an international impact, received many awards including one from President Reagan and two New Mexico Public Service Awards, and had more than 350 publications. Art liked bringing people and organizations together. He once said "I just try to help people, meet people, and put people together. When good people meet, good things happen."

The Pulsed Power Science and Technology Committee recommended to AdCom, and AdCom unanimously approved, that the annual "Outstanding Pulsed Power Student Award" be renamed the "Arthur H. Guenther Pulsed Power Student Award." Art was a key founder, and remained an active supporter for almost three decades, of the highly-successful series of International Pulsed Power Conferences which started in 1976 and became biennial in 1979. He was the Technical Program Chair of PPC1979, the Conference Chair of PPC1981, the recipient of the second IEEE Peter Haas Pulsed Power Award in 1989, and continued as an active participant on the IEEE Pulsed Power Awards Committee through PPC2003. Dr. Magne (Kris) Kristiansen and Dr. Donald Wunsch presented a wonderful tribute to Art at the beginning of an Extended Plenary Session for the Peter Haas Award Address at PPPS2007.



Arthur H. Guenther

Neat trick

If Lincoln were alive today, he'd roll over in his grave.

Gerald Ford

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