

At PPPL
THIS WEEK

MONDAY, FEB. 18



★ **President's Day** ★

THURSDAY, FEB. 21

PPPL Colloquium

10:30 a.m.* ♦ MBG Auditorium

The Magnetospheric MultiScale Mission Investigation of Magnetic Reconnection

Roy Torbert, Univ. of New Hampshire

Refreshments at 10:15 a.m. in the LSB Lobby

[Click here for link](#)

* Please note special date & time

FRIDAY, FEB. 22

DOE's NJ Middle School Science Bowl®

9 a.m. ♦ Lab wide

SATURDAY, FEB. 23

DOE's NJ High School Science Bowl®

9:30 a.m. ♦ Lab wide

Please note there is no **SCIENCE ON SATURDAY** on Feb. 23

UPCOMING EVENTS...

Mar. 13
Carebridge Seminar

"Thinking Your Way to Healthy Eating"

11:30 a.m. ♦ H.R. Training Room

Mar. 22
Young Women's Conference in Science, Mathematics, Technology and Engineering at Princeton University

9 a.m. - 2 p.m.

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An interview with Hutch Neilson

"We now have the opportunity to tackle our biggest challenges"

Reprinted from the Feb. 11 issue of the ITER Newsline (#256)

On 10-14 June in San Francisco, the international Symposium on Fusion Engineering (SOFE) will convene for its 25th edition.

We asked the chair of the Symposium's technical program committee, Hutch Neilson, to share his observations in advance of the event on the challenges that today's fusion engineers must confront and, more generally, on the present state of fusion development.

Newsline: Worldwide conferences on fusion are many. What is SOFE's specificity?

Hutch Neilson: SOFE's focus is fusion engineering. Fusion engineers have the crucial task of producing the components and systems needed to advance fusion physics and technology. Progress toward fusion energy systems, both magnetic and inertial, can be measured by the advances in the degree of system integration in fusion research facilities. Today's fusion engineers confront the challenges of large, industrial-scale facilities such as the National Ignition Facility (NIF) and ITER. They use advanced technology to obtain self-consistent solutions to demanding physics requirements, integrating large numbers of components on an unprecedented scale. SOFE attracts leaders from the international fusion research community, providing a venue for a multilateral

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Hutch Neilson
Head of Advanced Projects

Physicist John Schmidt, designer of cutting-edge fusion facilities, dies at 72

By John Greenwald

Physicist John A. Schmidt, whose profound and wide-ranging contributions to PPPL made him a highly respected leader in the worldwide quest for fusion energy, died on Feb. 13 following a brain hemorrhage. He was 72.

Schmidt won wide acclaim for heading the design of cutting-edge facilities for magnetic fusion research during a 36-year career at PPPL, from which he retired in 2005. As interim director in 1996 he led the Laboratory's successful transition from large, fusion power-producing experiments such as the Tokamak Fusion Test Reactor (TFTR) to smaller and less expensive magnetic facilities, including the National Spherical Torus Experiment (NSTX), the major fusion device at PPPL today.

Schmidt's unruffled performance as interim director brought to mind lines from the Rudyard Kipling poem "If," which is addressed to the person "who can keep your head while all about you are losing theirs and blaming it on you." "John's seminal contributions to fusion science and technology can only be described in superlative terms," said Ronald Davidson, who directed PPPL from 1991 to 1996. "His remarkable leadership skills and technical acumen played a critical role in shaping research programs at the Laboratory for several decades. He will be sorely missed by his many friends and colleagues at PPPL and in the Princeton community."

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John A. Schmidt

Save the Date: June 1 tentative date for PPPL Open House



By **JOHN DELOOPER** — PPPL Open House Committee Chair

A new Open House committee has begun meeting to plan for an Open House this year and has tentatively selected June 1 for the event. We are holding the public announcement of this date until the FY13 budget issues are resolved but we are preparing for this event assuming the budget will be supportive.

The Open House committee has a number of subcommittees working out the details of the event (exhibits, food, facilities, etc.). The main focus now is determining what we will be displaying to the public. We want to show off our research activities as well as our support for the community. If you have specific ideas about what should be displayed, please contact Arturo Dominguez (lead on exhibits) at ext. 2568, adomingu@pppl.gov or me, ext. 3047, jdelooper@pppl.gov.

We will be requesting support from the Laboratory staff in April and May to help with this important outreach event. We'll be looking for volunteers to staff positions for just one to two hours to allow you time to show off PPPL to your friends and family. ☺



Adam Cohen, left, Deputy Director for Operations, leads a tour during PPPL's 2010 Open House.

PPPL Open House Committee

- | | | |
|-----------------------|------------------|-------------------|
| Daniel Andruczyk | Erik Gilson | Andrea Moten |
| George Ascione | Sue Hill | Deedee Ortiz |
| John DeLooper (chair) | Kathleen Lukazik | Sonja Patterson |
| Jeanne Jackson DeVoe | Mike Mardenfeld | Dolores Stevenson |
| Arturo Dominguez | Kim Mastromarino | Barbara Sobel |
| Lawrence Dudek | Eric Meier | Mike Viola |
| Charles Gentile | Aliya Merali | Al von Halle |

John Schmidt, 1940 - 2013

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Schmidt was known to be as personable as he was scientifically astute. "His calm, steady hand, dry wit and thoroughly considered judgment made him someone people really enjoyed working with," said retired PPPL physicist Dale Meade, whose relationship with Schmidt dated back to the University of Wisconsin-Madison, where both men earned their doctorates.

Former PPPL Director Robert Goldston worked for Schmidt when the Laboratory was looking at designs for various experimental facilities. "As a manager, John brought crisp scientific and engineering insight to every problem—from which we all learned," said Goldston, who headed PPPL from 1997 to 2009. "As a leader, he brought composure and kindness—from which we all benefitted."

Upon arriving at PPPL, Schmidt led the design of controls for the Floating Multipole Experiment, one of the most advanced superconducting plasma confinement systems of its day. He subsequently became the first head of the physics group for TFTR, which set world records for producing plasma heat and fusion power while operating from 1982 to 1997.

Schmidt's accomplishments were felt overseas. As head of the Applied Physics Division at PPPL in the 1980s, he

played a key role on an international team that developed a conceptual design for a fusion power plant called INTOR. While that concept was never built, it laid the foundation for the design of ITER, the huge international fusion facility now under construction in France.

Schmidt later headed the Advanced Projects Department at PPPL, where he nurtured a series of nascent projects through their incubation period. These included NSTX and the National Compact Stellarator Experiment (NCSX), an innovative fusion facility that successfully installed some of the most complex electromagnets ever designed before construction of the project halted in 2009. Also launched on Schmidt's watch was collaboration between the Laboratory and South Korea on the design of K-STAR, an advanced fusion device that began operating in South Korea in 2008.

A native of South Dakota, Schmidt earned his bachelor's degree in physics from the University of South Dakota, and his doctorate from the University of Wisconsin in 1969. When not designing fusion facilities he was enthusiastically engaged in fishing, cross-country skiing, rooting for the New York Yankees and honing his skills as a master cabinet maker. He is survived by his wife, Helen Wise, and his son Michael. ☺

Hutch Neilson

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exchange of information among physicists, technologists, and engineers. The first symposium, held in 1965 in Livermore, Calif., was called "Symposium on Engineering Problems of Controlled Thermonuclear Research." Years ago the name was simplified to "Symposium on Fusion Engineering" and today the series coverage has expanded to include such topics as project management and system integration. But the focus is still very much on fusion's challenging engineering problems and their solutions.

What will be the highlights of this year's 25th edition?

The completion of NIF and ITER's transition from design to construction mark a transition to a new phase of the world fusion enterprise, in which the focus is increasingly on the final steps to fusion's energy goals. SOFE-2013 will not only advance the international technical discussion concerning the engineering of current projects including NIF and ITER but also of next-step programs and facilities on the roadmap to the realization of fusion. Participants will have the opportunity to tour the National Ignition Facility. The symposium will feature plenary talks from China, South Korea, and the European Union, discussing ambitious plans, including new fusion nuclear facilities, aimed at fusion electricity generation by mid-century. ITER will be prominently featured in several of the fifty or so invited papers, as well as in plenary talks by the 2011 Fusion Technology awardee and ITER Deputy Director-General Remmert Haage and by Deputy Director-General Carlos Alejandre. Invited papers from several operating tokamaks and stellarators will emphasize their accomplishments and plans in support of fusion next steps.

The 2011 SOFE, in Chicago, called for "bolder steps forward" in the realization of commercial fusion energy. In your opinion, have these steps been taken?

Yes, much has happened in this regard since SOFE-2011. For a few examples, the European Fusion Development Agreement has rolled out a roadmap calling for a demonstration fusion power plant to start operation in the early 2040s with the goal of demonstrating net electricity by 2050. China and South Korea are both studying design options for next-step fusion nuclear devices, and are making plans to start construction in the 2020s. And, the International Atomic Energy Agency (IAEA) has launched an annual DEMO Programme Workshop series to foster international collaboration and broaden the international technical discussion on DEMO technical issues. The first of these workshops was held at UCLA in October 2012.

How do you see the DEMO projects developing? And what is the best way, as you wrote in a Newsline column in September 2011, "to tackle the remaining science and technological challenges on the way to a magnetic fusion DEMO"?

Establishing roadmaps and starting to design DEMO facilities, as some countries have done, is a good start. The next step is to carry out the critical DEMO-focused R&D programs needed to establish the technical basis for these projects. Heat exhaust, ma-

terials properties under fusion neutron irradiation, and tritium self-sufficiency are among the technical challenges for which R&D is needed to develop practical solutions. Most importantly, all agree that successful construction and exploitation of ITER is mandatory, not only to understand the properties and control of a burning plasma, but to establish fusion's ability to successfully carry out such a large-scale project. International collaboration was crucial in establishing the ITER project and, in my view, will continue to be indispensable for successfully completing the ITER mission and the remaining steps to DEMO. Going forward, we will continue to experiment to find the best among the many possible models for international collaboration.

You've had a long career in fusion research. How do you assess the progress accomplished over the past 40 years or so?

I have a mixed response to that question. Fusion can take credit for a long list of accomplishments in that period, but I would single out the start of ITER construction as a sort of crowning achievement. Before we could take that step, we had to establish ITER's technical basis (both physics and technology), organize an international enterprise, develop a self-consistent design and schedule, and initiate work through Procurement Arrangements and, finally, contracts. Those accumulated accomplishments have taken fusion across the threshold to a new DEMO-focused era, in which succeeding with ITER will be our first task. But, I have to say that we haven't progressed as rapidly as we foresaw 40 years ago, partly because the technical challenges have proved to be greater than we estimated and partly because for many years the resources were not available to take the large steps needed to accelerate progress. Now, though, with large international commitment to the ITER project, we have the opportunity to tackle some of our biggest challenges. Our community needs to deliver on ITER's promise as rapidly as possible, and thereby make the case for continued support for solving fusion's remaining challenges. I am confident that we will do that.

Harnessing fusion energy and providing mankind with an almost inexhaustible and universally available energy source could change the course of civilization. Do you find that policy makers and public opinion are sufficiently aware of what is at stake in fusion research?

Broadly speaking, yes. I think fusion's potential is broadly understood by the public and policy makers but there is also a generally correct appreciation of the uncertainties, risks, and costs attendant with fusion research. Support for fusion research competes with other public imperatives. Fusion's priority is not always as high as we fusion researchers might wish but the sustained support we've had over several decades and now, the commitment to ITER, indicates that its importance is broadly understood and the glass is at least half full. That said, there are plenty of misconceptions out there, and it behooves fusion researchers to be relentless in their efforts to constantly explain, educate, and deliver a balanced message about fusion's potential to the public. ☺

Science Bowl at PPPL this week

The Department of Energy's New Jersey Science Bowl is coming to PPPL again this week with middle-schoolers from throughout the state competing on Friday, Feb. 22 at 9 a.m. and high school students competing on Saturday, Feb. 23 at 9:30 a.m. There will be 16 middle school teams of about 100 people and 32 high school teams of about 200 people taking part in the competition, in which teams of four to five people answer science questions in rounds of 25 questions and 25 bonus questions in a double elimination format.

The winning teams will travel to nationals at the 4-H center in Maryland to compete against other winning national teams. The final rounds will be held at the National Monuments Building in Washington DC. About 50 to 60 PPPL volunteers will help out with each competition as moderators, science/rules judges and time-score keepers. ☺



Workshop teaches ways to take a few minutes to relax at work



PPPLers learned various relaxation techniques in a workshop last week by Lora Shor, a licensed psychotherapist and employee assistant consultant for Carebridge Corp.

In the workshop, employees discussed various ways they relax that included exercising, yoga, watching television or doing a word game.

Shor emphasized that it is important to take time for yourself to relax “so you can be the best you,” and to acknowledge your accomplishments rather than thinking of “what I didn’t do or have to do.” She also discussed four different techniques for relaxation: deep breathing, affirmations, visualization and muscle relaxing:

Deep breathing: Take five minutes to relax by doing a short meditation exercise. Concentrate on your breath, breathing in and out rhythmically and letting other thoughts float out of your mind while you focus on your breathing.

Affirmations: Come up with a short, positive sentence to describe yourself and to describe the self you want to be. For example, you might say, “I am a calm and focused person who cares about my family.” By repeating affirmations several times a day, you can focus on a positive vision of yourself.

Visualization: Take a few minutes off by focusing on a place where you are calm and relaxed like a beach or a mountaintop. Close your eyes and picture yourself in that place and envision exactly how it feels to be in that spot.

Muscle Relaxation: Start with your toes and move up your body, tensing each part of the body for a few minutes and then relaxing each part of the body. Next, try making your entire body tight and then feeling your body loosen. Feel where your body is tight and try to relax that part of your body. Feel the tension leave your body.

The next workshop at PPPL on “Thinking Your Way to Healthy Eating,” will be held on March 13 at 11:30 a.m. in the HR training room. ☺

A reminder from ESH&S

Official copies of Lab-wide policies, plans, procedures and manuals are available from the PPPL Employee Home Page. Printed copies of these documents are uncontrolled. Expired hardcopy versions of some documents were identified during the recent ISO-14001 surveillance audit. Employees should always refer to the Employee Home Page for current documents. Old hardcopy versions of controlled documents should be recycled to avoid confusion. ☺

PPPL's new e-newsletter



PPPL's first e-newsletter was sent out last week to PPPL's friends and neighbors in the community and in the larger magnetic fusion community as well as our colleagues at Princeton University and here at PPPL. PPPL News highlights some of the cutting-edge research, interesting people and great public events at the Laboratory featured on our new webpage. We hope you will forward it to your colleagues, friends and neighbors. To subscribe to the PPPL News, please send an email to listserv@princeton.edu and put subscribe `ppplenews` in the body of the email and your name (optional). Thank you! To view the e-newsletter [click here](#).



The PPPL Weekly is looking for your story ideas

Are you working on a brand new concept here at the Laboratory? Are you starting a new program or maybe have a new spin on an old program? Maybe you're someone whose contributions to PPPL are going unsung or you know about someone who has a great story to tell about their work here or their hobbies or pursuits outside PPPL. We'd like to hear your story ideas. Please email Jeanne Jackson DeVoe, jjackson@pppl.gov. Thank you! ☺

2013 Science on Saturday

Princeton University Plasma Physics Laboratory Lecture Series

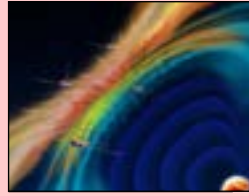
FEB. 23	NO LECTURE — DOE'S NJ HIGH SCHOOL SCIENCE BOWL*
MAR. 2	LIGHT AND NANOTECHNOLOGY — ENGINEERING AND SO MUCH MORE by Prof. Claire Gmachl, Department of Electrical Engineering, Princeton University
MAR. 9	A SHORT HISTORY OF LENGTH by Prof. Joel Langer, Department of Mathematics, Case Western Reserve University
MAR. 16	A ROBOT'S VIEW OF OUR OCEAN PLANET by Josh Kohut, Assistant Professor of Oceanography, Center for Coastal Physical Oceanography, Rutgers University

Free Help With Taxes for Qualified Workers



The United Financial Empowerment Center is providing free tax return help for anyone who earns \$50,000 or less. Certified tax preparers at the Center, which is funded by United Way of Greater Mercer County and the Mercer Alliance to End Homelessness, will complete tax returns for anyone who qualifies and will help them claim tax benefits with the earned income and child tax credits. To make an appointment for free tax help or for help with the Free Application for Federal Student Aid, call 877-652-1148. For more information call 609-896-1912 or visit www.uwgmc.org/money.

COLLOQUIUM



The Magnetospheric Multi-Scale Mission Investigation of Magnetic Reconnection

ROY TORBERT
University of New Hampshire

SPECIAL DAY • Thursday, February 21 • SPECIAL TIME

10:30 a.m. (Coffee/Tea at 10:15 a.m.)
M.B.G Auditorium, Lyman Spitzer Building

Plasma Hutch is open

Kim Mastromarino, left, displays some of the items for sale at the Plasma Hutch, including a new long-sleeved fleece jacket. The Plasma Hutch is open on Fridays from 11:30 a.m. to noon. You can also pick up an order form or download one from the HR website at hr.pppl.gov and send it via email to Kim at kmastrom@pppl.gov.



PLASMA HUTCH Price List

	S-XL	2X-3X
Fleece Vest.....	\$30	\$32
Polo Shirt.....	\$20	\$24
Fleece Jacket.....	\$35	\$37
Zippered Sweatshirt (Hooded) ...	\$32	
Pullover Sweatshirt (Hooded)	\$28	
Crew Sweatshirts.....	\$20	
Long Sleeve T-Shirts.....	\$15	
T-Shirt	\$12	
Hat.....	\$12	
Travel Mug.....	\$10	
Ceramic Mug.....	\$7	
Tumbler.....	\$5	
Lanyard.....	\$3	
Pen.....	\$1	
Ornament.....	\$1	

Café at PPPL Menu

BREAKFAST 7 a.m. • 10 a.m.
CONTINENTAL BREAKFAST 10 a.m. • 11:30 a.m.
LUNCH 11:30 a.m. • 1:30 p.m.
SNACK SERVICE until 2:30 p.m.

Mark Gazo, Chef Manager

COMMAND PERFORMANCE
CHEF'S FEATURE

	MONDAY FEB. 18	MONDAY FEB. 19	WEDNESDAY FEB. 20	THURSDAY FEB. 21	FRIDAY FEB. 22
	3 CHEESE LASAGNA 🍅	ARROZ CON POLLO	CHICKEN PARMESAN W/ PASTA MARINARA	BEEF TACOS	TILAPIA WITH ORANGE & TOMATO
EARLY RISER	Bacon, Tomato & Onion Omelet	Blueberry Pancakes	Potato Knish with 2 Eggs any style	Breakfast Pita Pizza	Broccoli, Cheddar and Bacon Wrap
COUNTRY KETTLE	Cream of Broccoli with Cheddar	Black Bean with Bacon and Cilantro	Cream of Cauliflower	Roasted Corn, Pepper & Tomato Chowder	Cream of Celery
GRILLE SPECIAL	Meatball Parm Torpedo served with Fries	Bacon, Mushroom & Cheddar Cheesesteak with Onion Rings	Pepper and Egg Torpedo with Potatoes 🍅	Texas Tommy Hot Dog with Bacon & Cheddar, Onion Rings	Veggie Burger with Guacamole & Salsa with Chips
DELI SPECIAL	Turkey, Bacon & Cheddar Wrap	Classic Ham & Cheese Hoagie	Chicken Caesar Salad Wrap	Salami, Capicola, Provolone, Roasted Pepper & Pesto Torpedo	Bologna and American Cheese on a Kaiser Roll
PANINI	Chipolte Pork & Avocado Wrap	Portobello, Provolone, Roast Pepper & Provolone Ciabatta 🍅	Chicken, Spinach, Feta and Kalamata Olive Ciabatta	Grilled Cheddar, Apple & Spinach on Multigrain Roll 🍅	Vegetarian Quesadilla 🍅

MENU SUBJECT TO CHANGE WITHOUT NOTICE

[CLICK HERE FOR A PRINTABLE WEEKLY MENU](#)

WEEKLY

Editor: **Jeanne Jackson DeVoe** ♦ Layout and graphic design: **Gregory J. Czechowicz**
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The PPPL WEEKLY is published by the PPPL Office of Communications on Mondays throughout the year except for holidays. Deadline for calendar item submissions is noon on Thursday. Other stories should be submitted no later than noon on Wednesday. Comments: commteam@pppl.gov ♦ PPPL WEEKLY is archived on the web at: <http://www.pppl.gov/ppplweekly.cfm>