

PRINCETON PLASMA PHYSICS LABORATORY

At PPPL This week

WEDNESDAY, FEBRUARY 1

PPPL Colloquium 4:15 p.m. • M.B. Gottlieb Auditorium

Machine Learning, Reasoning, and Natural Language Processing

Dan Roth (University of Illinois at Urbana-Champaign)

CLICK HERE FOR ABSTRACT

THURSDAY, FEBRUARY 2

GFDL Events and Seminars 2 p.m. - 3:15 p.m. ◆ GFDL Smagorinsky Seminar Room

Aerosol Effects on Cloud Thermodynamic Phase

Trude Storelvmo (Yale) www.gfdl.noaa.gov/events

(Gov't, Univ. or 2 other forms of I.D. needed)

FRIDAY, FEBRUARY 3

PPPL Super Bowl Party 2 p.m. • LSB Lobby

SATURDAY, FEBRUARY 4

Science on Saturday 9:30 a.m. M.B. Gottlieb Auditorium

Cooperation and Conflict in the Natural World

Suzanne Alonzo (Yale University)



What's Happening on the Princeton University Campus?

CLICK HERE www.princeton.edu/main/news/events/

page **1** of 3

Where There's a Will There's a Weld

By John Greenwald

aboratory engineers faced a potentially sticky problem over a critical component of the NSTX upgrade. They needed a superstrong weld for the final link between the reactor's toroidal magnetic coils and the upgraded center column or "stack." This involved connecting an extra-hard copper plate called a "lead extension" to the stack, which is made of a softer copper alloy. The trick was to seamlessly fuse the two types of copper without weakening the material. "Normally when you do welding you bring down the strength," said James Chrzanowski, a member of the engineering and scientific staff at PPPL who oversees design and fabrication of the center stack.

Engineers found the answer in a novel process called "friction stir welding," which heats the pieces to be joined to some 900 degrees Celsius, making them wax-like and fusing them. The resulting



James Chrzanowski displays the seamless bond that friction stir welding created between two dissimilar types of copper plate.

bond "is beautiful," Chrzanowski said of the welded material that came back from the Edison Welding Institute (EWI) in Columbus, Ohio. EWI is a non-profit engineering and technology organization dedicated to the science of welding and materials joining. It is considered one of the leading institutions in North America for advancing the science of joining materials. Staff members of EWI prepared the sample that Chrzanowski keeps in his office and will work with PPPL as part of the upgrade.

While friction welding has been around for some 20 years, the upgrade marks the first time that the process will be used to join two dissimilar types of material, Chrzanowski said. Employing this process shows that "we have extraordinary technological capability to take the ideas in our physicists' heads and turn them into hardware," said Ronald Strykowsky, project manager at PPPL for the NSTX upgrade. That's no easy task, he adds, since "their ideas can be challenging." From the PPPL Site Protection Division

Traffic Reminders

Il motorists are to observe posted speed limits at PPPL. Where the speed limit is not posted, the maximum speed shall be 15 MPH. Care should be taken when approaching curves, as there are many pedestrian crossings and several curves with obstructed views. Extra caution should be used in the absence of daylight and in severe weather. Remember, pedestrians have the right of way.

Bicycle riders (cyclists) have the same rights and responsibilities as automobile drivers and are subject to the same rules and regulations as any other vehicle on the road. Please be courteous to all cyclists.

There should be no passing on PPPL roads unless a vehicle or bicycle is pulled off on the shoulder and stopped; then passing should be conducted slowly and safely.

The PPPL Parking and Traffic Regulations may be found on the Employee Home Page: http://wwwlocal.pppl.gov/pdf/parking_traffic.pdf.



Let's keep all PPPLers and visitors safe — obey the road laws and be alert to all traffic around you.

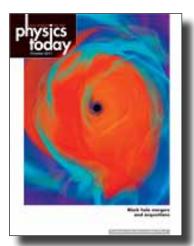
Safety at PPPL Noted

A former postdoctoral researcher the Laboratory lauds safety at PPPL in a letter to the editor at *PHYSICS TODAY*.

The letter is reprinted below.

Two letters regarding laboratory safety, especially in academic environments, have caught my eye (PHYS-ICS TODAY, August 2011, page 9; October 2011, page 11).

When I was a postdoctoral researcher, I learned a great deal about safety and safety management in a laboratory environment at the Princeton Plasma Physics Laboratory. I find myself introducing ideas about safety management and referring to PPPL's safety



manual frequently in my current university environment.

The manual, online at http://www.pppl.gov/ eshis/ESHD_MAN-UAL/sm.html, is a wonderful resource for those concerned about laboratory safety.

Mark Nornberg University of Wisconsin –Madison

Science on Saturday

David Goldberg, a professor in the department of physics at Drexel University in Philadelphia, discussed, "What is the Universe Expanding Into? And Other Perfectly Reasonable Questions" during the January 14 Science-on-Saturday lecture at PPPL. Goldberg's talk was the second in the 2012 wintertime series, which includes nine free talks on several Saturdays through March 10. Topics range from probing the brain to superconductivity.



MENU SUBJECT TO CHANGE WITHOUT NOTICE

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FRIDAY, FEB. 3