

## At PPPL THIS WEEK

TUESDAY, NOVEMBER 22

**Theory Seminar**  
2 p.m. - 3 p.m. ♦ T-169

Tokamak Equilibria Validation:  
Reconciling Theory and Observation  
via Bayesian Inference and BEAST

Gregory T. von Nessi  
(Australian National University)

WEDNESDAY, NOVEMBER 23

**GFDL Events and Seminars**  
Noon - 1 p.m. ♦ GFDL  
Smagorinsky Seminar Room

Tropical Atlantic Climate for a Coarse  
and a High Resolution Coupled Climate  
Model (GFDL-CM2.1 v.s. CM2.5)

Takeshi Doi (AOS Post Doc)

[www.gfdl.noaa.gov/events](http://www.gfdl.noaa.gov/events)

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

THURSDAY - FRIDAY, NOVEMBER 24 - 25



## PPPL Awards Coil Contract To Pennsylvania Firm

By Kitta MacPherson

PPPL has awarded an \$800,000 contract to a Nazareth, Pa.-based magnet manufacturer that will enable the production of essential components designed for an advanced fusion experiment.

The PPPL-designed components, known as “trim coils”, will be manufactured by Everson Tesla, Incorporated (ETI) of Nazareth, Pa. The barn door-size coils, which fine-tune the shape of the magnetic “bottle” confining the hot ionized gas studied in fusion, will be installed in the Wendelstein 7-X stellarator, also known as W7-X, a fusion research device being constructed at the Max Planck Institute for Plasma Physics (IPP) in Greifswald, Germany.

PPPL scientists are involved with the coil design because they have been collaborating with researchers in Germany’s fusion science and plasma science programs for many years.

“Our experience in copper coil engineering for fusion experiments, and our relationship with suppliers like ETI, enables the U.S. to make a valued contribution to the project, in exchange for which U.S. researchers will be able to lead and participate in experiments on W7-X,” said George “Hutch” Neilson, director of advanced projects at PPPL.

The company will produce five trim coils from copper conductor furnished by PPPL, using an epoxy-like compound to provide strength and maintain the exact shape and dimensions. The company will ship the coils directly to Germany. The first two coils are scheduled to ship in May 2012, with the last to be shipped in January 2013.

“We look forward to another collaboration with PPPL,” said Greg Naumovich, the president of Everson Tesla, one of the remaining large magnet manufacturers in the U.S. where workers have collaborated with PPPL for more than 20 years. The project,

continued on page 2



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**HUTCH NEILSON**

INSIDE...

Art of Science Winners Announced

see page 3



# Coil Contract

continued from page 1

Naumovich said, will ensure the employment of several skilled technicians. "Our country must support technology development and skilled manufacturing facilities to ensure a bright future," he noted.

Lab scientists and engineers began the design effort in January 2011 and concluded that effort with the awarding of the contract. Researchers from PPPL will manage and oversee the ETI contract, making frequent plant visits to monitor progress in the manufacturing and testing processes.

The DOE Office of Science has funded the W7-X collaboration at \$8.8 million to support the trim coils and related research activities. As part of the collaboration, the research team at PPPL is responsible for completing the detailed design, manufacture, and testing of the coil, according to the W7-X project's technical specifications. The basic concept and requirements for the trim coils were established by their collaborators in Germany.

Officials at IPP in Germany are pleased that the main order for the trim coils have now been placed. "The trim coil set is a very important contribution to the experiment, giving us the capability of reaching an optimum balance of the heat loads on the divertor and thereby improving experimental performance," said Thomas Sunn Pederson of IPP Greifswald. "It is an important first milestone in what we hope and expect will be a long and fruitful collaboration with the United States on the scientific exploration of Wendelstein 7-X, which will be the world's largest optimized stellarator when it is completed in 2014."

The main object of fusion research is to develop a power plant that, like the sun, derives energy from the fusion of atomic nuclei. This requires that the fuel — an ionized, low-density gas known as a plasma — be confined in a magnetic "bottle" and then heated to an ignition tempera-

ture of more than 100 million degrees. The W7-X vessel is a stellarator, one of two major configurations for experimental fusion devices. A stellarator confines plasma with a magnetic field that is shaped like a cruller — a spiral wrapped around a circle.

Lab researchers pre-ordered copper from Luvata, a metal supplier based in Finland, in order to ensure that the material would be available when the company began forming the copper, a process known as winding. The Lab also will obtain temperature sensors and other components that will be installed on the coils before they are shipped.

The collaboration between PPPL and their counterparts at the IPP began in 2008 with an invitation from Thomas Klinger, the project head for W7-X. Working with scientists at two other U.S. DOE National Laboratories — Oak Ridge and Los Alamos — researchers at PPPL worked with the German scientists to reach agreement on areas of mutual benefit for a U.S. collaboration. DOE funding for the collaboration began in October 2010.

"The collaboration with W7-X provides an opportunity for U.S. scientists to work on a fusion experiment with capabilities not available in the U.S. and to advance the understanding of stellarator physics, a key goal of the U.S. fusion program and fully in keeping with PPPL's mission," Neilson said. "The U.S. can contribute to the project by virtue of our experience in stellarator physics and engineering."

The trim coils are designed to fine-tune the magnetic configuration of W7-X to help ensure that heat losses are evenly distributed to the high power density target surface inside the device. They are important for optimizing the W7-X performance, and for research goals to better focus plasma control and power handling when the machine goes online in 2014. ■

## Holiday Food Drive

The Mercer Street Friends Food Bank has been at the forefront of the fight to end hunger in the greater Mercer County area, supplying food to nearly 50 pantries, shelters, and soup kitchens for over two decades.

### **COLLECTION: LSB LOBBY — MONDAY, NOVEMBER 28 THROUGH FRIDAY, DECEMBER 16**

Most needed food and home and beauty products: Canned protein (tuna fish, sardines, salmon, chicken), canned fruit (in light syrup or juices), canned vegetables, rice, pasta, pasta sauce, Parmalat or other shelf stable milk, cereals and oatmeal (non-sugar), peanut butter, jelly, dish and laundry soap, soaps and body wash, shampoo, conditioner, deodorant, feminine products.

Send Hunger Packing Program provides school aged children in need with nutritionally sound, easy-to-open meals to get them through the weekend. Items needed include: shelf stable 2% reduced fat milk in 8 oz. single serving size, cereal — individual bowls or boxes, Starkist Tuna to Go or equivalent, Bumble Bee Tuna Salad with Crackers to Go or equivalent, Chef Boyardee Microwaveable Bowls or equivalent, Campbell or Progresso Microwaveable Bowls or equivalent, Hormel Completes Entrees or equivalent, peanut butter — 18 oz., Jif to Go — little peanut butter cups, grape jelly in plastic containers — 14 to 18 oz., Yo On The Go — yogurt smoothie drink in shelf stable brick packs, granola bars, shelf stable pudding cups.

Please note: We cannot accept home-canned food, open packages, expired baby food, or any kind of glass container.

Questions? Call Erin Metro at (609) 258-5144 or email [emetro@princeton.edu](mailto:emetro@princeton.edu). ■

# Art of Science

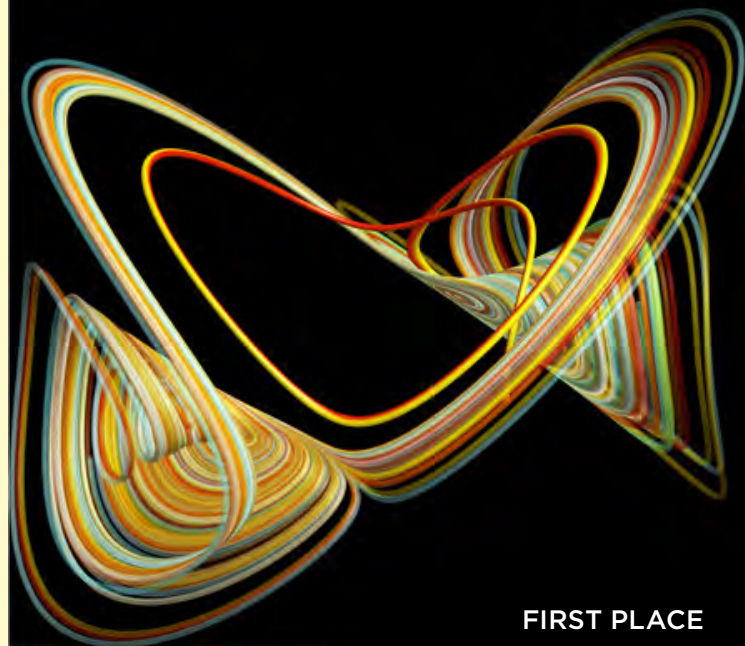
By Patti Wieser and Teresa Riordan

Department of Astrophysical Sciences postdoctoral researcher Christophe Gissinger, who works on the Magnetorotational Instability project at PPPL, took home the top prize at Princeton University's fifth "Art of Science" competition. Gissinger received first place for an image, "Chaos and Geomagnetic Reversals." In addition to Gissinger, three other pieces of art produced by PPPLers are in the 2011 gallery. This year's theme was "intelligent design."

"In recent years, the phrase 'intelligent design' has taken on a polarizing meaning," said Art of Science co-organizer Andrew Zwicker, who is the head of Science Education at PPPL and a lecturer in the Princeton Writing Program. "But in the broadest sense, beautiful objects, both natural and the manufactured, have an intelligence to their form, their function, and thus, their design."

Second Prize went to Zhen James Xiang, a graduate student in Electrical Engineering for "Tree." Third prize went to Xuening Bai, a graduate student in Astrophysics, and James M. Stone, a professor in Astrophysics, for their "Dust to Dust, to Planets?"

The winners were announced at an opening reception of the physical gallery on November 11 in the Friend Center on the Princeton campus. That gallery is free and open to the public and viewable from 9 a.m. to 5 p.m. Monday through Friday. PPPL co-sponsored the competition. Images can be viewed in an [online gallery](#). ■



FIRST PLACE

## Chaos and Geomagnetic Reversals

Christophe Gissinger (postdoc)

Princeton Univ. Dept. of Astrophysical Sciences/PPPL



## Dusty Cross

Elle Starkman, Joe Caroll, Gary Stark, Andy Carpe, Erik Gilson  
PPPL



## Iron Lotus

Elle Starkman  
PPPL

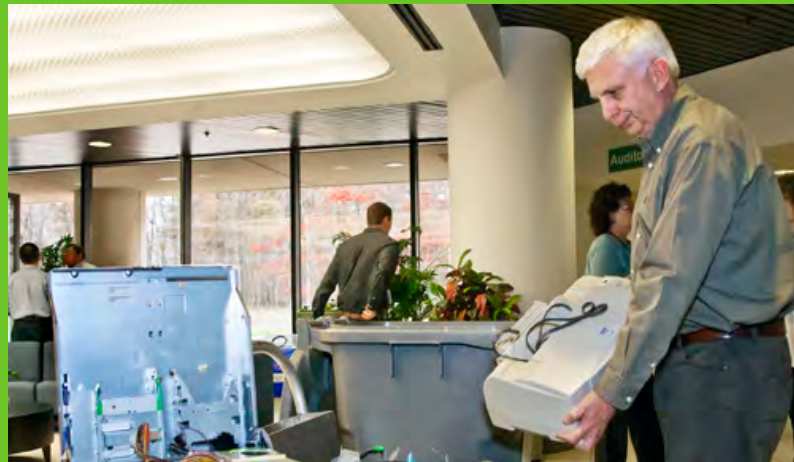
"Lotus" is  
featured  
on CNN.com.



## Balls and Bubbles Without Gravity

Stephanie Wissel  
(postdoc)  
PPPL

# America Recycles Day at PPPL



PPPL'ers went green on November 15 for America Recycles Day (ARD), dropping off electronics for recycling, listening to waste minimization and composting talks, and stopping by the ARD displays in the Lobby. Clockwise from top right are: (from left) PPPL's Margaret King and Matt Lawson, along with a UNICOR representative, collect electronics at the recycling drop-off near the Lab's Warehouse; PPPL's Greg Czechowicz brings an old personal printer from home for recycling to a drop-off location in the Lobby; ARD guest speakers join the Green Team — PPPL'ers who will be assisting other staff in recycling and composting. From left are Joanne Bianco, Kim Tafe, Marilyn Hondorp, Virginia Finley, Leanna Meyer, Sonja Patterson, Ana Pinto, ARD guest speaker Nelson Widell, Margaret King, guest speaker Rob Sheneman, Joanne Savino, Rose Fuchs-Smith, and Ed Jenkins; and PPPL's Sheneman delivers a presentation, "PPPL's Waste Minimization Program Results," in the MBG Auditorium. UNICOR is the trade name for Federal Prison Industries, Inc., and includes a recycling effort.



## NEW CONTEST

### A New 'Tagline' for PPPL

The Office of Communications is sponsoring a lab-wide contest for a new tagline.

**WHAT IS A TAGLINE?** It is a memorable statement that succinctly conveys the essence of the Lab and its purpose.

The winning tagline would be displayed prominently in all Lab promotional materials.

Here are examples of other Labs' taglines:

**Argonne National Lab:** *For a Brighter Future*

**Jefferson Lab:** *Exploring the Nature of Matter*

**Los Alamos National Lab:** *National Security Science*

**Lawrence Berkeley National Lab:** *Bringing Science Solutions to the World*

**Idaho National Lab:** *The Energy of Innovation*

**TRIUMF:** *Canada's National Laboratory for Particle and Nuclear Physics*

Please send submissions to [commteam@pppl.gov](mailto:commteam@pppl.gov).

Contest ends: Dec. 5

Winner will receive a prize — a \$25 gift certificate to the Plasma Hutch — and accolades! ■

## Submitting Items to the Laboratory Calendar

Anyone who has items to be included on the Laboratory Calendar managed by the Director's Office should submit them to Barbara Sobel at [bsobel@pppl.gov](mailto:bsobel@pppl.gov).

### The Director's Office

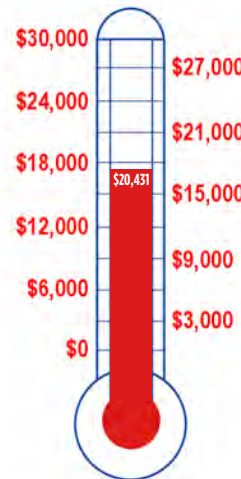
DOE Princeton University's Plasma Physics Laboratory

*Creating Innovations to make Fusion Power a Practical Reality...*

#### Laboratory Calendar

Today ← → November 2011 ↕

Sun Mon Tue Wed



Thank You for Your  
**UNITED WAY**  
Donations

**Our Goal: \$30,000**

**Donated so far: \$20,431**



## Brock PPPL CAFÉ MENU

MONDAY, NOV. 21

TUESDAY, NOV. 22

WEDNESDAY, NOV. 23

THURSDAY, NOV. 24

FRIDAY, NOV. 25

COMMAND PERFORMANCE  
CHEF'S FEATURE



**Sweet & Sour Chicken Breast/Rice & Veg.**



**Turkey Taco Salad with All the Fixings**



**Thanksgiving Dinner**



**EARLY RISER**  
Blueberry Pancakes with Bacon

**FRENCH TOAST**  
French Toast with Strawberries and Bananas

**SAUSAGE, BACON, EGG AND CHEESE QUESADILLA**  
Sausage, Bacon, Egg and Cheese Quesadilla

**COUNTRY KETTLE**  
Chicken Rice

**CREAM OF CHICKEN**  
Cream of Chicken

**BEEF BARLEY**  
Beef Barley

**GRILLE SPECIAL**  
Pastrami Reuben

**PIZZA STEAK SANDWICH WITH FRIES**  
Pizza Steak Sandwich with Fries

**CLASSIC PATTY MELT ON RYE WITH SWISS CHEESE**  
Classic Patty Melt on Rye with Swiss Cheese

**DELI SPECIAL**  
Muffaletta with Ham, Salami, and Swiss Cheese

**PASTRAMI, SWISS CHEESE AND TOMATO ON RYE**  
Pastrami, Swiss Cheese and Tomato on Rye

**LOUISIANA SHRIMP SALAD WRAP**  
Louisiana Shrimp Salad Wrap

**PANINI**  
3 Cheese and Tomato

**SOUTHERN REUBEN**  
Southern Reuben

**EGGPLANT, MOZZARELLA AND ROASTED RED PEPPERS**  
Eggplant, Mozzarella and Roasted Red Peppers

MENU SUBJECT TO CHANGE WITHOUT NOTICE

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

## WEEKLY

Editor: **Patti Wieser** ♦ Copy Editor /Graphic Design: **Gregory Czechowicz**  
Photography: **Elle Starkman** ♦ Web: **Chris Cane**

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.

Send to: [pwieser@pppl.gov](mailto:pwieser@pppl.gov) ♦ Comments: [commteam@pppl.gov](mailto:commteam@pppl.gov)

PPPL WEEKLY is archived on the web at: <http://www.pppl.gov/ppplweekly.cfm>