PPPL PRINCETON PLASMA PHYSICS LABORATORY
A Collaborative National Center for Fusion & Plasma Research
U.S. DEPARTMENT OF ENERGY
WEEKLY
JULY 15, 2013

PPPL Weekly announces summer schedule

After this issue, the PPPL Weekly will go to a summer schedule and will be published every two weeks from now until September when it will resume the regular weekly schedule. The summer publication schedule will be: July 29, Aug. 12, Aug. 26 and Sept. 9, when The Weekly will resume a weekly schedule. Please submit articles by noon Wednesday before the publication date.

At PPPL THIS WEEK

MON. - FRI., JULY 15 - 19

Plasma Camp for teachers

WEDNESDAY, JULY 17

GFDL Events and Seminars
12 p.m. ◆ Geophysical Fluid Dynamics Laboratory (GFDL)

Smagorinsky Seminar Room

Preindustrial to present-day changes in tropospheric hydroxyl radical and methane lifetime from the Atmospheric Chemistry and Climate Model Intercomparison Project (ACCMIP)

Vaishali Naik, GFDL

www.gfdl.noaa.gov/events

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

WED. - FRI., JULY 17 - 19

Theory and Simulation of Disruptions Workshop

UPCOMING EVENTS

July 23

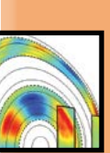
Social Security Pre-Retirement Seminar
11 a.m. ◆ LSB Auditorium

How to plan, calculate, and apply for Social Security benefits

July 26

PPPL Bluefishing Trip
Belmar Marina, Belmar, N.J.

Inside . . .



New PPPL magazine arrives in 85,000 mailboxes

By Jeanne Jackson DeVoe

Quest magazine, a new annual PPPL magazine focusing on the cutting-edge research taking place at the Laboratory, is arriving in the mailboxes of some 85,000 people this summer packaged with the July issue of the Princeton Alumni Weekly (PAW).

The glossy Quest magazine is the first PPPL publication aimed at a large external audience. Science Writer John Greenwald, the editor and main writer for the publication, said it seeks to inform and excite readers about the world-leading science and engineering work done here. "We wanted to create a compelling calling card for the Laboratory so that anyone who wants to know what PPPL is all about can find it in a very accessible way," Greenwald said.

The July issue of Princeton Alumni Weekly, which focuses on reunions and commencement, is a highly anticipated and especially attractive vehicle for distributing Quest that reaches 20,000 more people because it goes to Princeton undergraduate and graduate alumni and the University's faculty and professional staff. Regular issues of PAW are not sent to graduate alumni.

PPPL Director Stewart Prager called Quest a unique venture for PPPL. "To my knowledge, this is the first time we've made such an ambitious and effective magazine for the general public," Prager said. "I think it captures the essence of what the Lab does, it captures it broadly and it conveys it attractively and persuasively to the general reader."

continued on page 2

Guest Corner

Summer Weather Safety

By **Jerry Levine** - Head, PPPL Environment, Safety, Health and Security

A key role of the Environment, Safety, Health and Security (ESH&S) Department is to provide leadership of the Laboratory's ESH&S Programs for preventing occupational injuries and illnesses, minimizing worker exposure to radiation and other workplace hazards, protection of the environment, emergency management and physical security. In fulfillment of this role, the Site Protection and Safety Divisions monitor weather forecasts for our region and issue alerts when conditions warrant.

Among the conditions of concern that could impact our work activities, or our travel to and from the Laboratory, are high heat and/or humidity, severe thunderstorms, and heavy rain and flooding. Last summer, ESH&S issued five alerts to all or portions of the staff on severe heat and storm conditions, and so far in 2013, five separate alerts have already been sent out to warn of forecasted heavy rain, flooding and lightning events. (This doesn't count alerts associated with Superstorm Sandy last year). Please make sure to read these alerts, follow the precautions indicated, and stay aware of developing conditions that could affect your safety.

continued on page 3

Quest

continued from page 1

Kitta MacPherson, the director of Communications at PPPL, first came up with the idea of having a magazine aimed at non-scientists that would give intelligent laypeople a snapshot of the Lab's research.

"I'm really happy with it," MacPherson said. "I think it's beautiful, I think the writing is great and the art is stunning. I'm so happy with the design. What I wanted it to be was something that would tell the outside world about the unbelievable research here and I think it does that."

The magazine is part of a concerted effort to tell the Lab's story, she said. "We have a new website, we have a new research newsmagazine, we have a new e-newsletter for our friends in the fusion community. It's a very exciting time in communications in that we're involved in all these new ventures."

The magazine uses striking color photos by PPPL photographer Elle Starkman, including the cover shot of a lithium-coated material heated to temperatures above 11 million degrees. Among Starkman's other shots are the interior of the National Spherical Torus Experiment and a photo of the advanced centrifuge that PPPL is developing as a possible way to remediate nuclear waste.

Greenwald credits designer Burcu Tezcan-Ruggeri, of Princeton's Digital Print Center, for the eye-catching overall look of the magazine. "The design is extremely good — it's so good that you don't realize at first glance how good it really is," Greenwald said. For example, each section has its own color that makes it stand out from the rest of the magazine.

People outside the Lab have reacted enthusiastically to the new magazine. One Princeton University alumnus wrote: "I received a copy of the premiere issue of Quest with my PAW today and I am just elated. I am a chemical engineer (BSE Princeton '65, PhD Berkeley '69) who has long felt that fusion was the real answer to avoiding the issues presented by burning fossil fuels to generate energy. But it has always been difficult to even outline what it is and how it works to others, as the technology is so unique. But I really think Quest does that."

In addition to the PAW mailing list, Quest will be sent to U.S. Department of Energy officials, national laboratories and members of the fusion community, news media, legislative leaders and local officials. Copies also will go to international fusion facilities.

Many schools and departments at Princeton University have magazines that come out with PAW, including the Woodrow Wilson School, the Athletic Department, the Princeton Environmental Institute and The School of Engineering and Applied Sciences.

Quest took some inspiration from The School of Engineering and Applied Science's EQuad News, which is published twice yearly and which MacPherson calls "the gold standard" for such publications. She noted that Steven Schultz, the School of Engineering's director of communications, offered his advice and help when Quest was getting started.

Greenwald wanted Quest to be as readable and accessible as the EQuad news. "That publication shows that engineering can be a surprisingly interesting and compelling subject and we wanted Quest to have that same impact," he said.

Greenwald was able to use his skills from previous positions as a senior writer and editor at Time magazine, where he worked for nearly 20 years, and as the editor of NJBIZ, a weekly business magazine in New Jersey, where he spent five years after that. "It was fun," he said of crafting Quest. "It gave me a chance to use what I've learned throughout my career in journalism."

Science Writer John Greenwald wrote and edited Quest, PPPL's first external magazine, which was sent out to thousands of people along with the PAW this summer.

It took several months for Greenwald and MacPherson to work out the basic components of the magazine — everything from its shape, look and paper stock to what stories to include. Greenwald spent months writing and editing the material and working with photographer Starkman on photos. The design of the magazine also took several months and the final product had input from many people, including the Laboratory's directors.

Greenwald reshaped many of the stories he had written over the past year and grouped the pieces thematically. A story about the $94 million upgrade of the National Spherical Torus Experiment (NSTX), for example, is grouped with a piece about PPPL's lithium research under the "New Paths to Fusion Energy" section.

Also included are stories about PPPL launching a new nanotechnology laboratory and two separate research projects — one dedicated to finding ways to dispose of radioactive waste using a plasma mass filter and another using an advanced centrifuge to accomplish the same task. These stories are under the section "Advancing Plasma Science." Other features cover numerous subjects from PPPL's contribution to ITER to the Lab's Science on Saturday program.

Correction

Among the PPPL inventors honored at the June 24 recognition dinner were, left to right: Adam Cohen, Manfred Bitter, Kenneth Hill and Frank Jones. Jones was incorrectly identified in some issues of the July 1 Weekly.

Summer Safety

continued from page 1

Data from the National Weather Service (NWS) shows that lightning strikes are fatal in approximately 10 percent of strike victims. Another 70 percent of survivors suffer serious long-term effects. Outdoors is the most dangerous place to be during a lightning storm. Because lightning can travel sideways for up to 10 miles, blue skies are not a sign of safety. If you hear thunder, take cover. The NWS has issued the following lightning safety guidelines. Please use them to stay safe this summer!

Lightning: What You Need to Know

- NO PLACE outside is safe when thunderstorms are in the area!!
- If you hear thunder, lightning is close enough to strike you.
- When you hear thunder, immediately move to safe shelter: a substantial building with electricity or plumbing or an enclosed, metal-topped vehicle with windows up.
- Stay in safe shelter at least 30 minutes after you hear the last sound of thunder.

Indoor Lightning Safety

- Stay off corded phones, computers and other electrical equipment that put you in direct contact with electricity.
- Avoid plumbing, including sinks, baths and faucets.
- Stay away from windows and doors and stay off porches.
- Do not lie on concrete floors and do not lean against concrete walls.

Lightning Safety at Work

- Stay off and away from anything tall or high, including rooftops, scaffolding, utility poles and ladders.
- Stay off and away from large equipment such as bulldozers, cranes, backhoes, track loaders and tractors.
- Do not touch materials or surfaces that can conduct electricity, including metal scaffolding, metal equipment, utility lines, water, water pipes and plumbing.

Last Resort Outdoor Risk Reduction Tips

If you are caught outside with no safe shelter anywhere nearby, the following actions may reduce your risk:

- Immediately get off elevated areas such as hills, mountain ridges or peaks.
- Never lie flat on the ground.
- Never shelter under an isolated tree.
- Never use a cliff or rocky overhang for shelter.
- Immediately get out and away from ponds, lakes and other bodies of water.
- Stay away from objects that conduct electricity (barbed wire fences, power lines, windmills, etc.).

SOCIAL SECURITY

Social Security Pre-Retirement Seminar

David Vinokurov, District Manager of the Trenton Social Security Office and Carl Robinson, Public Affairs Specialist for Social Security will present a Social Security Pre-Retirement Seminar on July 23 at 11:00 a.m. in the LSB Auditorium.

The discussion will include how to plan, calculate, and apply for Social Security benefits. Please join Vinokurov and Robinson and feel free to ask any questions you may have. It is never too early to plan!

PPPL on Princeton Journal Watch

New imaging technique provides improved insight into controlling the plasma in fusion experiments

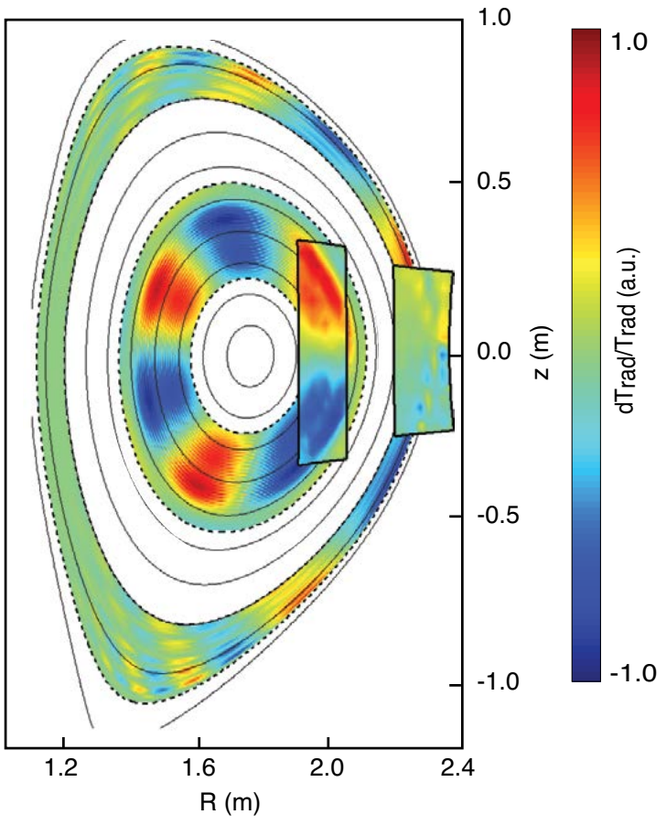
By John Greenwald

A key issue for the development of fusion energy to generate electricity is the ability to confine the superhot, charged plasma gas that fuels fusion reactions in magnetic devices called tokamaks. This gas is subject to instabilities that cause it to leak from the magnetic fields and halt fusion reactions.

Now a recently developed imaging technique can help researchers improve their control of instabilities. The new technique, developed by physicists at the U.S. Department of Energy's Princeton Plasma Physics Laboratory (PPPL), the University of California-Davis and General Atomics in San Diego, provides new insight into how the instabilities respond to externally applied magnetic fields.

This technique, called Electron Cyclotron Emission Imaging (ECEI) and successfully tested on the DIII-D tokamak at General Atomics, uses an array of detectors to produce a 2D profile of fluctuating electron temperatures within the plasma. Standard methods for diagnosing plasma temperature have long relied on a single line of sight, providing only a 1D profile. Results of the ECEI technique, recently reported in the journal Plasma Physics and Controlled Fusion, could enable researchers to better model the response of confined plasma to external magnetic perturbations that are applied to improve plasma stability and fusion performance.

PPPL associate research physicist Benjamin Tobias was first author on the paper. Read the abstract: http://iopscience.iop.org/0741-3335/55/9/095006/



Graphic representation of 2D images of fluctuating electron temperatures in a cross-section of a confined fusion plasma.

This story appeared in Princeton Journal Watch last week. Go to blogs.princeton.edu/research/

2013 PPPL Bluefishing Trip

Aboard the 120'

Miss Belmar Princess

Date: Friday July 26, 2013

Departure: 5 p.m. SHARP!!!

Location: Belmar Marina,
Hwy. 35, Belmar, N.J.

Cost: $75 per person All inclusive

Money due by July 19. NO REFUNDS.

Cost includes everything.
Rods, bait, fish cleaning, food, beverages etc.

ALL YOU NEED TO DO IS SHOW UP!

CONTACT:

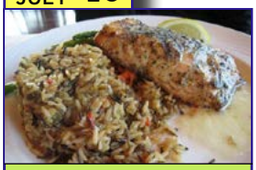
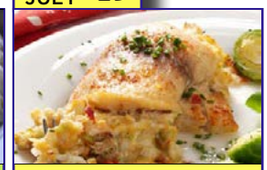
Andy Carpe ext. 2118 acarpe@pppl.gov

Bob Tucker Jr. ext. 3190 rltucker@pppl.gov

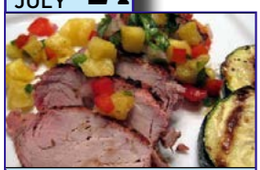
Café at PPPL Menu

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

	MON. 15 JULY	TUE. 16 JULY	WED. 17 JULY	THU. 18 JULY	FRI. 19 JULY
COMMAND PERFORMANCE CHEF'S FEATURE	 ZESTY ORANGE CHICKEN AND RICE	 GRILLED SALMON WITH WILD RICE	 CHICKEN MARSALA	 STUFFED SHELLS IN ALFREDO SAUCE	 STUFFED TILAPIA WITH VEGETABLE
EARLY RISER	California Eggs Benedict	Blueberry French Toast	Apple Raisin Pancakes	Turkey Omelet	Spanish Omelet
COUNTRY KETTLE	Cream of Mushroom	Split Pea	Vegetable Vegetarian	Cream Of Chicken	Spinach & Sausage Soup
GRILLE SPECIAL	Grilled Peanut Butter, Bacon & Banana	Cajun Chicken Breast with Peppers, Onions	Popcorn Shrimp Po' Boy	Italian Hot Dog	Italian Grilled Cheese
DELI SPECIAL	Zucchini, Hummus, Feta Cheese & Spinach Pita	New Orleans Muffaletta	Grilled Vegetable Dagwood	Asian Chicken Wrap	Liverwurst & Onion on Rye
PANINI	Chicken Satay Sammie	Chicken Parmesan Sandwich	Bacon, American Cheese & Tomato on Ciabatta Bread	BBQ Beef with Roasted Onions on Ciabatta Bread	BBQ Pulled Pork Sandwich

NEXT WEEK

	MON. 22 JULY	TUE. 23 JULY	WED. 24 JULY	THU. 25 JULY	FRI. 26 JULY
COMMAND PERFORMANCE CHEF'S FEATURE	 PORK MARSALA WITH RICE PILAF	 CHICKEN FRIED CHICKEN	 ADOBO MARINATED PORK	 CHEESE MANICOTTI w/ MARINARA SAUCE	 BREAKFAST FOR LUNCH
EARLY RISER	Grits, Eggs & Bacon	Banana Walnut Pancakes	Cheese Steak Omelet	Veggie Pancakes	Western Omelet
COUNTRY KETTLE	Zesty Meatball Noodle Soup	Minestrone	Sausage Chicken Gumbo	French Onion	Seafood Bisque
GRILLE SPECIAL	Swedish Meatball Torpedo	Fish Fillet Sandwich	Pizza Burger	Cheesesteak Hoagie	Grilled Caponata Salad with Grilled Flatbreads
DELI SPECIAL	Grilled Vegetable & Feta Cheese Sandwich	Turkey Avocado Wrap	Tofu Taco	Classic Turkey Club	Turkey Pastrami, Swiss & Coleslaw on Rye
PANINI	Seafood Newburg over Puff Pastry	Corned Beef Reuben	BBQ Meatloaf & Cheddar on a Kaiser Roll	Pork Roll, Cheese, Peppers & Onions on Ciabatta Bread	Eggplant Parmesan Panini

MENU SUBJECT TO CHANGE WITHOUT NOTICE

VEGETARIAN OPTION

CLICK HERE FOR A PRINTABLE WEEKLY MENU

WEEKLY

Editor: **Jeanne Jackson DeVoe** ◇ Layout and graphic design: **Gregory J. Czechowicz**
Photography: **Elle Starkman** ◇ Web: **Chris Cane** ◇ Admin. support: **Pamela Hampton**

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

The next PPPL WEEKLY will be published on July 29.