

At PPPL THIS WEEK

MONDAY, APRIL 28

Spitzer Lecture
4:30 p.m. ♦ Princeton University
Peyton Hall

Experimental techniques in high-energy astrophysics

Fiona Harrison, Caltech

TUESDAY, APRIL 29

State of the Lab
1:30 p.m. ♦ MBG Auditorium

PPPL Director's annual address

Stewart Prager, PPPL

WEDNESDAY, APRIL 30

PPPL Colloquium
4:15 p.m. ♦ MBG Auditorium

Compressed Air Energy Storage: The Bridge to Our Renewable Energy Future

Al Cavallo, Consultant

Spitzer Lecture
4:30 p.m. ♦ Princeton University
Peyton Hall

The Nuclear Spectroscopic Telescope Array (NuSTAR) High-Energy X-ray Mission: Bringing the High Energy Universe into Focus

Fiona Harrison, Caltech

UPCOMING EVENTS

May 7

PPPL Colloquium
4:15 p.m. ♦ MBG Auditorium

HEDP

Siegfried Glenzer, SLAC National Accelerator Laboratory

Inside...



Earth Day

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Colloquium

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Earth Week features Colloquium on NYC green plan, cleanup and awards

By Jeanne Jackson DeVoe

PPPL celebrated Earth Week last week with a talk by a New York City official about New York's sustainability plan, a Labwide cleanup by a team of industrious volunteers and awards recognizing PPPL staff members who have promoted a greener PPPL.

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Volunteers, from left to right: Virginia Finley, Julia Toth, Bill Davis, Glenn Anderson and Shannon Greco clean up the area outside the LSB building during the Earth Day cleanup at PPPL.

Michael Campanell wins Lawrence Fellowship

By John Greenwald

Graduate student Michael Campanell has won a highly competitive Lawrence Fellowship — a postdoctoral position at Lawrence Livermore National Laboratory that was awarded to just two candidates from a field of 163 applicants for the coming academic year. "I was thrilled to receive this fellowship," Campanell said. "I think it is the best possible fit for me."

Campanell will use the three-year fellowship to investigate a process he discovered at PPPL that could keep material from the walls of a fusion facility from entering and contaminating the plasma. Preventing such contamination will be crucial to the development of magnetic fusion energy.

The Lawrence Fellowship marks a second major honor for Campanell, who last year won a Princeton Environmen-



Michael Campanell

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Michael Campanell

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tal Institute Walbridge Fund Award that provided financial support for research on his dissertation. "Michael has a remarkable ability to understand what's important," said physicist Igor Kaganovich, deputy head of the Theory Department at PPPL and Campanell's thesis adviser. "He's highly sensitive to issues worth spending time on."

Campanell models the influence of electrons that emit from the walls of a plasma. His research indicates that a heavy emission of electrons can prevent the positively charged ions from accelerating to the walls. "Acceleration of ions to the wall sputters contaminating wall atoms into the plasma," Campanell said. "If you can stop the ion acceleration you can mitigate this problem."

Campanell graduated from Temple University with a double major in physics and math and credits Kaganovich with guiding him into his current research. "I probably never would have become a theorist if I had not met Igor," Campanell said. "All my past research going back to college was experimental."

He had planned to base his thesis on research done on the National Spherical Torus Experiment (NSTX). But cancellation of the final run of the NSTX before the facility was upgraded forced Campanell to find a new

topic. "I went to Igor's office for suggestions," Campanell recalled. "He encouraged me to pursue theoretical problems that could be studied with existing particle simulation codes." Guidance came also from physicist Alexander Khrabrov, a Kaganovich collaborator, who taught Campanell how to run simulations on PPPL's high-performance computing cluster.

With his newfound ability to develop and test ideas, Campanell studied the effect of electron emissions on plasma-surface interactions for his thesis project. He has published seven papers, including six on which he was first author, during his graduate career.

At Livermore, Campanell will be free to further his research as part of a magnetic-fusion group with access to high-performance computing resources. The position offers "a lot of collaboration with related disciplines," Campanell said. "The only drawback is that I've really liked PPPL and will have to leave."

When he arrives at Livermore in September, Campanell will become the second Lawrence Fellow from the Princeton Program in Plasma Physics in recent years. Yuan Ping, who graduated in 2002, joined Livermore as a Lawrence Fellow and is now a staff scientist there. ☐

A fellowship winner reports

By John Greenwald

Paul Schmit became the first plasma physicist to be named a Harry S. Truman Fellow by Sandia National Laboratories when he was chosen for that honor in 2012. Now midway through his three-year fellowship, the Princeton Program in Plasma Physics graduate is part of a team that recently made major news in the inertial confinement fusion (ICF) field.

Schmit's group developed a method to sharply increase the number of fusion reactions achievable on Sandia's Z machine via a concept called Magnetized Liner Inertial Fusion (MagLIF). The device uses powerful electric pulses to create magnetic forces that crush a pencil eraser-sized cylinder that contains hydrogen fuel. Researchers achieved the fusion increase through steps that included the addition of a secondary magnetic field that kept the fastest and hottest ions from escaping the compressed plasma that the primary magnetic forces produced in the hydrogen fuel.

"This was our first test of the new integrated design platform," said Schmit, who modeled the compression of waves in magnetically confined plasmas under Nat Fisch, director of the Princeton Program in Plasma Physics. "This experiment took a trick right out of the tokamak playbook."

Schmit also is researching a method for measuring the strength of magnetic fields in ICF experiments. And he urges any students in the Princeton Program in Plasma Physics who are within a-year-and-a-half of graduation to look into the fellowships at national laboratories such as Sandia, Los Alamos and Lawrence Livermore. "These fellowships provide a great deal of freedom," he said, "and all the labs recognize the quality of Princeton graduates." ☐



Paul Schmit

(Photo: Randy Montoya, Sandia Nat'l Labs)

STATE OF THE LABORATORY ADDRESS



Date: Tuesday, April 29

Time: 1:30 p.m.

Place: MBG Auditorium



After Dr. Drager's presentation, the Kaul Prize and the Distinguished Engineering Fellow Award will be presented.

Refreshments to follow - All Staff are invited to attend

Earth Week

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A group of 41 PPPL volunteers cleaned up the grounds around the Laboratory in honor of Earth Day on April 22. They collected 220 pounds of trash, 40 pounds of recycling, 55 pounds of composting, 78 pounds of scrap metal and 76 pounds of wood. Robert Sheneman, head of the Environmental Services Division, said the effort was so successful that PPPL may join with nearby companies to organize a similar event to clean up the area outside the PPPL campus.

Adam Cohen, PPPL's deputy director for operations, noted during the program on April 23 that PPPL has a weeklong "Earth Week" celebration rather than just marking Earth Day. "At this Laboratory, we take actions to celebrate and protect the earth every day - from the research we do in pursuing fusion to power the world with zero greenhouse gas emissions, to our sustainability and environmental protection programs," Cohen said.

Cohen was one of several PPPLers to receive a "Green Machine award" for his support of recycling and composting at PPPL.

Award for green holiday party organizers

Sheneman praised "the really exceptional job" of Green Machine award winners Sue Hill, Carol Ann Austin, Rich Torraca and Marianne Tyrrell for their efforts in making PPPL's 2013 holiday party a green event. Some 93 percent of the food and paper good refuse from the party were compostable, 6.5 percent was recyclable and only one-half of 1 percent was trash sent to the landfill.

Efforts by the PPPL staff have contributed to PPPL's environmental programs being recognized with several awards, Sheneman said. Last year, for example, the Lab received a special DOE Sustainability Award in 2013 for outstanding progress in meeting federal sustainability goals. "You deserve to give yourselves a lot of credit as a Laboratory," he told audience members.

Sheneman urged PPPLers to continue their efforts to keep PPPL green by trying to cut down on the amount of documents they print and "think before you ink."

Colloquium on NYC sustainability plan

The special Earth Day Colloquium by John Lee, the deputy director for Buildings and Energy Efficiency in New York City's Office of Long Term Planning and Sustainability, focused on how New York City's PlaNYC has mapped out a comprehensive long-term sustainability plan for New York City that seeks to reduce greenhouse gas emissions by 30 percent by 2030. The plan details how the City will cope with an anticipated population increase of 1 million people in the next three decades.

The plan also seeks to anticipate the effects of climate change such as severe storms, particularly after parts of



John Lee, the deputy director for Buildings and Energy Efficiency in New York City's Office of Long Term Planning and Sustainability, gives a special Earth Day colloquium on New York City's sustainability plan and climate change.

the City experienced severe flooding during Hurricane Sandy in 2012.

A "Bluebelt" to protect coastal area

The City has worked to improve the waterways that surround the City, Lee said. He noted that the City's "Bluebelt" program to use wetlands and other natural areas in Staten Island to absorb storm water runoff is an integral part of the system. It not only protects the waterways from pollution but also helps protect the coastline.

Many of the places that flooded the worst during the storm were areas that had expanded the original footprint of the five boroughs through landfills, Lee noted.

The growing population has put a strain on the City's electrical system, Lee said, which often faces peak demands during the summer. "Every year we set new records for peak demands," Lee said. "There are limits to the capability if we're not able to keep that in check."

The City's extensive public transportation system means most of the City's carbon emissions come from heating buildings and electrical use, Lee said. The City has challenged universities and hospitals as well as large corporations to reduce their emissions by 30 percent by 2017. The City also has a Greener Greater Buildings plan outlining energy conservation measures. It has required the owners of the City's largest buildings to change to green lighting by 2025. New regulations have gradually phased out some of the heaviest fuel oils that create the most pollution, Lee said.

Goal to reduce waste by 75 percent

The City's goal is to reduce the amount of waste it sends to landfills by 75 percent. So far, it has cut 30 percent of the waste it transports by rail or barge, Lee said. And a Food Waste Challenge to over 100 restaurants will encourage more composting.

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Felton Walker from Multifacet, Inc. shows Dana Eckstein some biodegradable cleaning products.

Earth Week

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Recognizing that “despite the moves by government, it ultimately comes down to people and their behavior,” the City has a public education campaign that is aimed at “a fundamental cultural shift” among the City’s residents on using LED and fluorescent lights, composting, recycling and other sustainable practices, Lee said.

The City has already succeeded in reducing greenhouse gas emissions by 19 percent, Lee said, but more effort is needed not only in New York but also in the surrounding suburbs in New York, Connecticut and New Jersey. One lasting lesson of Hurricane Sandy, he said, is that New York and its neighbors must join together when it comes to sustainability plans. “It’s more than just us, it’s everyone,” he said. “We have to come to solutions to this problem together. I hope that New York City can be the exemplar of how to get there.”

The audience at the morning colloquium gave Lee a warm round of applause. Audience members enjoyed a pizza lunch following the talk.

Environmental displays

In the morning, several groups included Sustainable Princeton, the Mercer County Improvement Authority and Americorps, as well as PPPL vendors with sustainable products, showed off their wares and gave out seeds, calendars and other goodies at displays in the LSB lobby before the Earth Day Colloquium.

Other Green Machine recipients

Other Green Machine recipients include: Deedee Ortiz and Kathleen Lukazik, who were recognized for ensuring that Science on Saturday was a zero waste event by making all the food and coffee served compostable; Kim Mastromarino for organizing a bake sale for America Recycles Day; Elle Starkman and Rosemarie Fuchs-Smith for their continued support of recycling and composting; and Ana Pinto, Mark Kijek, and Michael Bernardo for coming up with energy efficiencies that not only saved energy but also helped reduce costs. 🌱



Irena and Jay Johnson sign up for the Earth Day raffle.



Robert Sheneman, head of the Environmental Services Division, said PPPL staff efforts to reduce waste, recycle and compost contributed to PPPL being recognized with several awards.



Staff members who received Green Machine awards for helping to make PPPL green from left to right: Rich Torraca, Rosemarie Fuchs-Smith, Kim Mastromarino, Carol Ann Austin, Marianne Tyrell, Sue Hill, Deedee Ortiz, Kathleen Lukazik, Elle Starkman, and Adam Cohen.

(Photo by Dana Eckstein).

COLLOQUIUM

Site Protection Division • TIP • OF • THE • WEEK •

Employees are first line of defense for PPPL security

Safety and security require a team effort at PPPL, and our employees are our first line of defense. Please promptly report any suspicious activities that you may observe to the Site Protection Division. Remember, if something doesn't look or seem right, it probably isn't.

When reporting suspicious activity, it is helpful to give the most accurate description possible, including: a brief description of the activity; the date, time and location of the activity; a physical description of anyone you observed; a description of vehicles; information about where people involved in suspicious activities may have gone; and your name and contact information.

Contact the Site Protection Division (Ext. 2536) with questions or to report any unusual incidents.

Remember, if you see something, say something!

COMPRESSED AIR ENERGY STORAGE: THE BRIDGE TO OUR RENEWABLE ENERGY FUTURE

AL CAVALLO, CONSULTANT

Wednesday, April 30

4:15 p.m. (Coffee/Tea at 4 p.m.) • MBG Auditorium

Girl Scout STEM Fair Volunteers Needed!

Many volunteers are still needed to help make the Girl Scout STEM Fair at PPPL on May 17 from 8 a.m. to 4 p.m. a success. Please volunteer an hour or two of your time. Contact Theresa Gillars, tgillars@pppl.gov, ext. 3512 if you can help out.

Volunteers are needed for the check-in/info desk, registration, snack/lunch helpers, younger Scout group leaders, older Scout workshop volunteers, group escorts, tour guides and the Plasma Hutch.

Thank you!



COLLOQUIUM



HEDP

SIEGFRIED GLENZER
SLAC NATIONAL ACCELERATOR LABORATORY

Wednesday, May 7

4:15 p.m. (Coffee/Tea at 4 p.m.) • MBG Auditorium

BROCK Café 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

EARLY
RISER

COUNTRY
KETTLE

GRILLE
SPECIAL

DELI
SPECIAL

PANINI

MON. 28
APR.



**Chicken Parmesan with
Pasta Marinara & Italian-
Style Zucchini**

Spicy Breakfast Soft Taco

Broccoli Cheddar

Fat Cat Chicken Tenders, Steak,
Fries & Cheese on a Torpedo

Grilled Vegetables on a Torpedo
Roll with Olives, Capers, Basil

Salami, Ham, Pepper Jack, Banana
Peppers & Chipotle Mayo Griller

TUE. 29
APR.

National
Shrimp Scampi
Day



**Shrimp Scampi Day!
Served with Rice &
Asparagus**

Pork Roll, Egg, Potato, Pepperjack,
Onion & Pepper Wrap

Italian Wedding Soup

Pepperoni & Provolone Chicken
Cheesesteak with Fries

Greek Gyro

Fried Flounder with Tartar Sauce,
Tomato & Cheddar

WED. 30
APR.



**Grilled Moroccan
Beef Kefta Steak with
Cucumber Salad**

Croque Madame

Vegetarian Chili

Chipotle Shrimp Taco with Avocado
& Salsa Verde

Italian Hoagie Cut from 3-Footer

Grilled Chicken, Broccoli Rabe and
Aged Provolone on French Bread

THU. 1
MAY



**Roast Pork with Stuffing,
Gravy and Steamed
Veggie**

Fiesta Vegetable Scrambler with
Home Fries

Chicken Cacciatore Soup

Turkey Burger Reuben with
Sauerkraut, Swiss Cheese

Krabby Cake Sandwich
on a Kaiser Roll

Spinach Pie served
with Greek Salad

FRI. 2
MAY



**Steamed Pesto Salmon
& Potatoes**

Breakfast Burger

Tomato Rice

Veggie Burger with Salsa,
Guacamole, Lettuce & Tomato

Grilled Chicken Cobb Salad Wrap

Texas Roadhouse Griller-Roast Beef,
Cheddar, Onion, Tomato & BBQ Sauce

MENU SUBJECT TO CHANGE WITHOUT NOTICE

VEGETARIAN OPTION

CLICK HERE FOR A PRINTABLE WEEKLY MENU

WEEKLY

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