

Calendar of Events

WEDNESDAY, DEC. 23

PPPL Holiday Party

12 p.m. ♦ LSB Lobby and Cafeteria
**Everyone working at the Lab
is invited!**

Interested in contributing a dessert?
Contact holidaypartycommittee@pppl.gov.

DEC. 24–JAN. 3

Laboratory Closed

UPCOMING

SATURDAY, JAN. 9

Ronald E. Hatcher Science on Saturday Lecture Series

9:30 a.m. ♦ MBG Auditorium

[Starlight Detectives: How
Astronomers, Inventors, and
Eccentrics Discovered the
Modern Universe](#)

Alan Hirshfeld, University of
Massachusetts - Dartmouth

WEDNESDAY, JAN. 13

PPPL Colloquium

4:15 p.m. ♦ MBG Auditorium

[Frontiers in Plasma Science: A
High Energy Density Perspective](#)

Dr. Bruce A. Remington, Lawrence
Livermore National Laboratory

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New PPPL site office manager has wealth of experience at federal agencies

By Jeanne Jackson DeVoe

Pete Johnson, the new U.S. Department of Energy (DOE) site office manager at the Princeton Plasma Physics Laboratory (PPPL), comes to the position with more than 30 years of experience as a senior executive in four different federal agencies, including the DOE.

Johnson's most recent position was managing the Environmental Protection Agency's facility at Research Triangle Park in Durham, North Carolina, the largest research and development complex in the agency. He has also held high-level positions with the federal Defense and Treasury departments.

"I've been fortunate enough to have many different opportunities within the federal government that have given me the ability to see many different places and to see things that work and don't work," Johnson said. "Being mobile across my career has given me the ability to bring those experiences to every new job that I have."

Johnson began the position as a full-time site office manager on Nov. 30, and will manage oversight of the contract between the DOE and Princeton University. The position involves helping Princeton University and PPPL interpret DOE directives and policies, acting as a liaison between DOE headquarters and Princeton on administrative matters, and taking part in DOE assessments in various areas of the Laboratory. "There are several balls in the air at once and it's just making sure that nothing hits the ground and breaks," Johnson said.



Pete Johnson

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Graduate students from two British universities install a critical new diagnostic on NSTX-U

By John Greenwald

A system of antennas similar to those that astrophysicists use to study radio emissions from stars and galaxies will help shed light on fusion experiments at PPPL. Called Synthetic Aperture Microwave Imaging (SAMI), the system aims to provide highly precise time and spatial resolution measurements of the density of current at the edge of fusion plasmas in the National Spherical Torus Experiment-Upgrade (NSTX-U) — the Laboratory's newly upgraded flagship facility that is set to embark on compelling new research programs.

High-resolution measurements of the edge current density are key to understanding instabilities called Edge Localized Modes (ELMs) that can foil experiments in the H-mode regime that marks high-level performance of fusion plasmas. Large ELMs can eject significant amounts of energy that can damage the vacuum vessels of tokamaks that house fusion reactions and generate impurities that can significantly degrade the reactions.

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Ronald E. Hatcher Science on Saturday Lecture Series kicks off Jan. 9

By Jeanne Jackson DeVoe

P PPL will ring in the New Year with the start of its popular Ronald E. Hatcher Science on Saturday Lecture Series on Saturday, Jan. 9 at 9:30 a.m.

For more than 30 years, the lecture series has attracted hundreds of science enthusiasts, from high school students to retirees, who climb out of bed early on cold winter mornings to hear lectures from top scientists from Princeton University and around the country.

The nine-week free lecture series was renamed “The Ronald E. Hatcher Science on Saturday Lecture Series,” last year in honor of the late PPPL engineer who spent 20 years organizing the series and serving as the unofficial master of ceremonies.

“We invite professors and scientists from all over the country to talk about some of their amazing projects and discuss a broad variety of topics from stars to the ocean and in between,” said Deedee Ortiz, the Science Education program administrator, who organizes the series. “There’s a lot to learn from them!”

The talks are aimed at high school students but the series attracts many loyal followers of every age. Some have been coming to the lecture series since it began, and faithfully come to Science on Saturday each week. “Folks look forward to this series all year long,” Ortiz said. “I get phone calls in August asking if we’re going to run the series the following year!”

The first lecture in the series by Alan Hirshfeld, “Starlight Detectives: How Astronomers, Inventors, and Eccentrics Discovered the Modern Universe,” will focus on the history of modern astronomy culminating in Edwin Hubble’s 1929 discovery that the Universe is expanding. Hirshfeld, a professor of physics at the University of Massachusetts-Dartmouth and an associate of the Harvard College Observatory, is the author of a book with the same name as the lecture (New York Literary Press, 2014). He has written numerous other books, including “Parallax: The Race to Measure the Cosmos,” (Dover Books on Astronomy, 2013).

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Ronald E. Hatcher Science on Saturday LECTURE SERIES

Jan. 9	Starlight Detectives: How Astronomers, Inventors, and Eccentrics Discovered the Modern Universe Alan Hirshfeld, University of Massachusetts - Dartmouth
Jan. 16	The Wild and Wacky World of Epigenetics Shirley Tilghman, Princeton University
Jan. 23	Using Physics and Chemistry to Understand the Genome Mary Jo Ondrechen, Northeastern University
Jan. 30	Dealing with Iran’s Nuclear Program Frank von Hippel, Princeton University
Feb. 6	Plastic Electronics Lynn Loo, Princeton University
Feb. 13	TBA Edgar Choueiri, Princeton University
Feb. 20	No Science on Saturday due to DOE New Jersey Regional High School Science Bowl
Feb. 27	TBA Coleen Murphy, Princeton University
Mar. 5	Reimagining the Possible: Scientific Transformations Shaping the Path Towards Fusion Energy Ed Synakowski, DOE
Mar. 12	Taking the Universe’s Baby Picture David Spergel, Princeton University

Saturdays at 9:30 a.m., MBG Auditorium

Pete Johnson

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Johnson's appointment represents a change in direction for the site office. For more than a year, Frank Crescenzo oversaw the site offices at both PPPL and the Brookhaven National Laboratory in New York, along with Bob Gordon, the deputy site manager, and a team of managers.

John DeLooper, PPPL's acting deputy director for operations, said Johnson has already become involved in PPPL day-to-day activities. "He is fully engaged," DeLooper said. "This is sort of a fresh start and Pete comes in with a different set of eyes and with independent feedback that will only make the Laboratory better."

A crucial time

Johnson comes to PPPL at a crucial time, with PPPL's major experiment the National Spherical Torus Experiment-Upgrade (NSTX-U) preparing to move into operations shortly. He will also be involved in another major project, the Laboratory's \$25 million Infrastructure and Operations Improvement (IOI) plan, which will begin next year and is funded through the Department of Energy's Science Laboratory Infrastructure (SLI) funds. "Science is the primary reason Princeton is here but you've got to have the foundation to do the mission," Johnson said. "That's one of the biggest challenges – making sure the facilities and infrastructure are attended to."

The job means Johnson and his wife of 20 years, Marjorie, a New Jersey native, can be closer to her family. They live in Monroe Township with their dog Coco, a Maltese poodle.

Johnson grew up in Milford, Massachusetts, but got much of his education in New Jersey. He has a bachelor's degree in electronic engineering from Monmouth University in West Long Branch and a master's degree in electrical engineering from Fairleigh Dickinson University in Teaneck. He also received a master's in national resource strategy from the National Defense University in Washington, D.C. He has five federal certifications in information technology, including one on IT project management from the DOE.

As manager of the EPA's Office of Administration and Resource Management at Research Triangle Park in North Carolina for two years, Johnson oversaw a federal staff of 89

people, a contract staff of 300 and a \$40 million budget. The job entailed managing a 140-acre site that services more than 2,700 federal employees.

Prior to that, Johnson was for several years the associate director and chief information officer for the Bureau of Engraving and Printing in Washington, D.C., which prints money. He said it was a thrill seeing stacks of bills printed and he enjoyed witnessing the bureau's move to a new \$5 bill and a new \$100 bill with enhanced security features. Johnson was in charge of IT for the bureau and managed a staff of more than 250 with a budget of more than \$80 million.

Management positions for DOE

Johnson worked in various management positions in IT for the Department of Energy for four years in Washington, D.C. His most recent position for the DOE, in 2006, was working for the Department's chief information officer.

Prior to the DOE, Johnson worked for the Department of Defense. He began his career as a technical manager at Fort Monmouth in Monmouth County, New Jersey. He rose to become product manager for the Global Command and Control System, the Army's IT system supporting commanders during his 12-year career there. He also spent three years at Fort Lee in Prince George County Virginia, where he was the project manager of the Global Combat Support System, and won a Meritorious Civilian Service Award for performance. He went on to become chief information officer for Fort Belvoir in Fairfax County, Virginia.

Having returned to New Jersey almost 20 years after he left, Johnson has found the two-week start of his new position a "whirlwind." But he said everyone at the site office and PPPL has been welcoming and supportive. He added that he hopes to help support the Laboratory's mission of doing research that promotes the development of fusion energy as a clean, safe, and abundant method of generating electricity.

"It's exceptionally challenging but it's an exceptionally high payoff when it works," Johnson said. "To the extent I can support that mission to make fusion a reality, that's job number one." 🗨️

Science on Saturday

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This year's lecture series features several scientists from a variety of science fields at Princeton University. The second lecture on Jan. 16, for example, will feature Princeton University President Emerita Shirley Tilghman. She will discuss "The Wild and Wacky World of Epigenetics." Epigenetics is the study of how genes can be switched on and off by factors in the environment or other external factors rather than an individual's DNA sequence.

Among the other topics is a talk on Iran's nuclear program by Frank von Hippel. A senior research physicist and professor of public and international affairs emeritus, Hippel was assistant director for national security in the White House Office of Science and Technology Policy from 1993 to 1994.

On March 5, Ed Synakowski, the associate director of Science for Fusion Energy Sciences at the U.S. Department of Energy and a former physicist at PPPL, will discuss fusion

energy in his talk "Reimagining the Possible: Scientific Transformations Shaping the Path Towards Fusion Energy."

The lectures begin at 9:30 a.m. and the doors open at 8:15 a.m. with refreshments for early birds. (There is no lecture on Feb. 20 due to the Department of Energy's New Jersey High School Science Bowl®).

Go to <http://www.pppl.gov/education/science-education> for a Science on Saturday schedule. (A complete schedule will be online soon).

You can also watch the lecture series live from home here: https://mediacentral.princeton.edu/id/1_rqmmkznx.

If Science on Saturday is canceled due to inclement weather or other emergency, a message will be left on the Science on Saturday Hotline at (609) 243-2121. 🗨️

SAMI

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The two graduate students, David Thomas of the University of York and Jakob Brunner of Durham University brought the SAMI system, which consists of an array of eight antennas, to PPPL from Britain in November. It was originally installed on the Mega Amp Spherical Tokamak (MAST) at the United Kingdom's Culham Centre for Fusion Energy; MAST is an NSTX-U-like system that is currently shut down for a major upgrade. Now modified to meet NSTX-U requirements, the SAMI plasma diagnostic will start acquiring significant amounts of data during the 2016 NSTX-U research campaign.

The antennas have both passive and active functions. They passively map the conversion of what are called "electron Bernstein waves" inside the plasma to microwave radiation near the edge of the plasma. The image of this microwave emission is characterized by two bright regions and the steepness of the line between these two regions depends on the local plasma current density.

The diagnostic measures microwave emission in a wide range of frequencies that correspond to different locations



David Thomas and Jakob Brunner




Jakob Brunner, left, and David Thomas with advisor Prof. Roddy Vann of the University of York on the screen in the center.

in the edge of the plasma. SAMI can therefore be used to map the profile of current density with much higher resolution than is possible with other plasma diagnostics on NSTX-U.

SAMI also uses two antennas in the array to actively probe turbulence in the plasma by launching radar-like waves that bounce off the turbulence that takes the form of filaments called "blobs." On MAST, the system imaged the velocity and size of these blobs to produce the first two-dimensional map of the velocity of the turbulence itself — a critical factor that allows heat to leak from fusion experiments.

Thomas and Brunner, who were at the Lab in November, worked with engineer Bob Ellis, physicist Gary Taylor and technicians to install the system and gave talks on it to NSTX-U staffers. They will return early next year to complete the installation and hook up the turbulence-probing mechanisms.

The work was supported by the DOE Office of Science. 

PPPL Holiday Party Luncheon

Everyone working at the Lab is invited!

- World Famous PPPL Skit in the MBG Auditorium
- Gift Raffle - donations made by PPPL Council
After the Skit - you must be present to win!

Interested in contributing a dessert?
Contact eventscommittee@pppl.gov.



Wednesday, Dec. 23 at 12 p.m. in the LSB Lobby and Cafeteria

PPPL'ers get into the holiday spirit with festive doors

Staff members at PPPL decked their doors with everything from a holiday penguin to a colorful menorah in the annual PPPL holiday door contest. The festive doors were enough to get even the Grinchiest PPPLers into the holiday spirit. Staffers voted for their favorites. Voting closed Friday and the winners will be announced on Dec. 21. 🗳️



Margaret Kevin-King, Building and Grounds supervisor, shows off her door, wrapped in recycled bubble wrap.



Erin Mulryne, Procurement, has some reindeer friends on her door.



A brightly-colored wreath on the Business Computing Systems door.



Penny Neuman, Accounting, shows off the holiday penguin she created with her daughter.



Dana Eckstein, Facilities, decorated her door with a colorful menorah.




Don Howe, Procurement, shows off his brightly wrapped door.



A Christmas tree made of recyclable plastic bags created by Kevin-King.

Review team recommends CD2 approval for IOI project to move ahead

A review team gave PPPL high marks after reviewing major renovations detailed in a \$25 million Infrastructure and Operations Improvement (IOI) plan. The nine-member team made up of experts from national laboratories and the U.S. Department of Energy's Office of Science toured the PPPL campus and heard detailed presentations on the IOI during a two-day assessment Dec. 15 to 16. The tour included the C Site motor generator (MG) building where concrete is being removed to

prepare for the start of construction in early 2016. The positive review is the second step, Critical Decision2, and means that the costs and the scope of the project have been approved and PPPL can move forward with putting out requests for bids for construction once design is completed. Plans include overhauling the MG building to create modern technical shops, as well as converting the RESA building into a storage area, renovating the LSB East Annex, and demolishing the Mod VI trailer. 



The IOI assessment team visits the C Site-MG building. From left to right: Chandler Eason, SLAC National Accelerator Laboratory; Jeffrey Kao, DOE Princeton Site Office; Steve Cannella, Brookhaven National Laboratory; PPPL's Jerry Levine, head of Environment, Safety & Health; Mike Finder, Argonne National Laboratory; John DeLooper, PPPL's acting deputy director for operations; Lori Casarole, Brookhaven National Laboratory; Skip Schoen, PPPL's acting head of Procurement; Paul Collins, Thomas Jefferson National Accelerator Facility; Jim Hawkins, DOE Office of Science; David Michlewicz, DOE Office of Science; Jason Budd, Argonne National Laboratory; Ethan Merrill, DOE Office of Science, chair of the review committee; Gary Bloom, Oak Ridge National Laboratory; Pete Johnson, head of the DOE Princeton Site Office; and Steve Trischman, DOE Office of Science.

New policy on site access during leaves of absence

Effective Dec. 7, HR implemented a new process to help ensure site protection and continuity of operations during an employee's leave.

If an employee is on a full, continuous leave of absence expected to last three weeks or more, the employee's site and system access (e-mail and token) may be deactivated for the duration of the leave. The employee's supervisor will be notified via e-mail, should the deactivation occur. When the employee returns from leave, his/her access will be reactivated within a business day.

Please direct any questions or concerns about the process to Paulette Gangemi in HR.

Announcing a new opportunity for undergraduates, graduate students and postdocs: Princeton Research Day

Juniors, seniors, graduate students and postdoctoral researchers are encouraged to present at the inaugural Princeton Research Day, a celebration of research and creative works to be held **May 5, 2016** at Frist Campus Center. Presenters will gain valuable experience in communicating across disciplines to a nonspecialist audience. Resources — including workshops, practice sessions and technical help — will be available to help presenters prepare for the event. Types of presentations include posters, talks, performances, exhibitions and videos. See researchday.princeton.edu for more information and to apply.

Applications will be accepted through Feb. 5, 2016

Holiday outreach programs at Princeton University and in the community

Princeton University has several programs that collect food, toys, and other items to help make the season bright for those in need. For a complete list of programs, go to <http://www.princeton.edu/community/happenings/service/outreach/>.

Flu Vaccines Are Here!

Influenza is a contagious disease caused by a virus. It can be spread by coughing, sneezing or nasal secretions.

By getting the flu vaccine, you can protect yourself from influenza and may also avoid spreading this illness to others.

Please call the OMO at extension 3200 to make an appointment.

Thank you.

—The OMO Staff



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.

	Monday December 21	Tuesday December 22	Wednesday December 23	Thursday December 24	Friday December 25
COMMAND PERFORMANCE Chef's Feature	Spaghetti & Meatballs	Fish & Chips	Happy Holidays!		
Early Riser	Blueberry Pancakes	Mushroom Cheese Omelet			
Country Kettle	Creamy Vegetable	Tomato			
Grille Special	Bacon Cheese Burger	Chicken Breast with Peppers, Onions & Cheese on a Kaiser			
Deli Special	Salami, Ham & Provolone Hoagie	Tuna Hoagie			
Panini	Turkey Melt with Peppers, Onions & Cheese on Ciabatta	Ham, Turkey & Cheddar Ciabatta			

	Monday January 4	Tuesday January 5	Wednesday January 6	Thursday January 7	Friday January 8
COMMAND PERFORMANCE Chef's Feature	Baked Ziti served with Garlic Bread	Chicken Picatta served with Rice Pilaf	Swiss Steak served with Mashed Potatoes	Cheese Ravioli with Grilled Chicken & Marinara Sauce & Garlic Bread	Eggplant Parmesan
Early Riser	Steak & Egg Cheese Quesadilla	Egg & Hash Browns Taco with Beans, Onions, Cheese, Avocado & Cilantro	Corned Beef Hash & 2 Eggs any Style	Cranberry Pancakes	Ham, Egg & Cheese Croissant
Country Kettle	Tomato	Chicken Rice	Vegetable	Turkey Corn Chowder	White Bean & Ham
Grille Special	Cheeseburger with Pork Roll & American Cheese	Kielbasa & Kraut Torpedo with Fried Pierogies	Blackened Tilapia Caesar Salad with Mango	Pierogies served with Sour Cream & Apple Sauce	Grilled Cheddar Cheese & Apple on Raisin Bread
Deli Special	Ham & Cheddar Melt with Peppers & Onions Sandwich	BBQ Chicken Salad Wrap	Ham Salad on a Croissant with Lettuce & Tomato	Grilled Tuna Nicoise Salad with Olives, Potatoes, Green Beans & Hard-Cooked Egg	Turkey & Cheddar Melt
Panini	Popcorn Shrimp Po' Boy	Open-Faced Crab Bread with Cheddar Cheese	The Cubano	Sausage & Peppers Torpedo	Italian Meatball Sub with Provolone

MENU SUBJECT TO CHANGE WITHOUT NOTICE

VEGETARIAN OPTION

WEEKLY

Editor: **Jeanne Jackson DeVoe** ♦ Layout and graphic design: **Kyle Palmer**
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DEADLINE for calendar item submissions is noon on WEDNESDAY. Other stories should be submitted no later than noon on TUESDAY.

Comments: commteam@pppl.gov ♦ PPPL WEEKLY is archived on the web at: <http://w3.pppl.gov/communications/weekly/>.