

## Calendar of Events

### MONDAY, SEPT. 21

**PPPL Colloquium**

4:15 p.m. ♦ MBG Auditorium  
[Toward a Better Understanding of the Solar Atmosphere: Combining Observations and Numerical Modeling](#)

Dr. Bart De Pontieu, Solar and Astrophysics Laboratory, Lockheed Martin, Inc.

### WEDNESDAY, SEPT. 23

**PPPL Colloquium**

4:15 p.m. ♦ MBG Auditorium  
[Probing the History and Dynamics of the Universe with Polarized Signatures in the Cosmic Microwave Background](#)

Suzanne Staggs, Princeton University

### SATURDAY, SEPT. 26

**Community and Staff Day**

Princeton University

**Family Fun Fest**

3:30 p.m. through halftime ♦ Princeton Stadium Concourse

**Youth Sports Clinic**

3:30-4:30 p.m. ♦ Weaver Track

**Princeton vs. Lehigh Football Game**

5 p.m. ♦ Princeton Stadium

## UPCOMING

### WEDNESDAY, SEPT. 30

**Patent Awareness Program Recognition Dinner**

6-9 p.m. ♦ Prospect House, Princeton University

## INSIDE

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## Cohen details how campus plan will replace aging buildings with modern facilities

By Jeanne Jackson DeVoe

**P**PPPL's ambitious campus plan, which begins its first major phase with the start of the \$25 million Infrastructure Operations Improvement plan, is necessary to replace aging buildings and infrastructure that were built in the 1960s and 1970s with the modern, attractive space necessary to support the Laboratory's mission. The overall Campus Plan has a time horizon of about 10 years, with a price tag of \$130 million.

That was the message of Deputy Director for Operations Adam Cohen when he spoke to physicists, engineers and council members on Sept. 17 about the vision for the campus plan and the start of work under the \$25 million Infrastructure Operations Improvement (IOI) plan, which is the first significant step.

"Our mission needs are currently being met at this campus but they can substantially be improved with upgrades and improvements," Cohen said.

The campus plan gives PPPL a 10-year road map that sets out a vision for the PPPL campus that makes the best possible use of existing space, Cohen said. "The idea is to demolish, renovate, repurpose to the extent possible," he said.



Adam Cohen describes the campus plan at a Sept. 17 meeting.

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## Major renovations start with demolition at C Site motor generator building

By Jeanne Jackson DeVoe

**W**ork has begun to transform the cavernous dusty space of the C Site motor generator building, which once housed the mammoth motor generators that powered experiments like the Poloidal Divertor Experiment (PDX) and the Princeton Large Torus Experiment in the 1980s into modern, centrally-located technical shops.

The work taking place at the site is the first step before major renovations in the \$25 million Infrastructure Operations Inventory (IOI) plan can begin. The rest of the renovation work under the IOI will cost about \$25 million and will be funded through the Department of Energy's Science Laboratory Infrastructure (SLI) funds. It will include renovating the RESA building to create a storage area, renovating the LSB East Annex, and demolishing the Mod VI trailer.

"This is the first significant step along the path of this campus plan," said Deputy Director for Operations Adam Cohen.

The plan is for the Lab to renovate the MG building, which was built in the early 1960s, and make use of 30,000 square feet of space that has been largely empty for decades. The modern technical shops will make use of a crane at the site, Cohen said. It will be energy efficient and will make technicians more accessible to the physicists and engineers who work with them.

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## New Season of Colloquia Begins

By Raphael Rosen

Just as autumn heralds the arrival of students at Princeton University, it also means the beginning of a new season of science colloquia at the Princeton Plasma Physics Laboratory. The talks by invited speakers on various science and engineering subjects take place throughout the school year; the 2015-2016 inaugural lecture will be given on Sept. 23 by Princeton University physics professor Suzanne Staggs, who will present “Probing the History and Dynamics of the Universe with Polarized Signatures in the Cosmic Microwave Background.”

But these talks don’t organize themselves. A colloquium committee, newly chosen each year, meets to select the speakers. This year’s committee is composed of Brent Stratton, David Mikkelsen, and Mike Mardenfeld.

Brent Stratton, a physicist and head of PPPL’s diagnostic division, came to the Laboratory in 1985. He has served on the committee twice before – once in the late 1980s and again in the 2005-2006 year. In his role at PPPL Stratton is responsible for National Spherical Torus Experiment-Upgrade (NSTX-U) diagnostics and is intimately involved with diagnostics at ITER. Stratton notes that being on the colloquium committee “keeps you busy, but it’s an opportunity to meet interesting people in other areas of science.” This year Stratton hopes to bring in speakers who aren’t necessarily involved in plasma physics, perhaps scientists who research dark matter or cosmology.

David Mikkelsen is a computational physicist who began working at PPPL in 1977 on the TFTR project. He currently is studying computer programs designed to help fusion physicists understand the transport process within plasma.

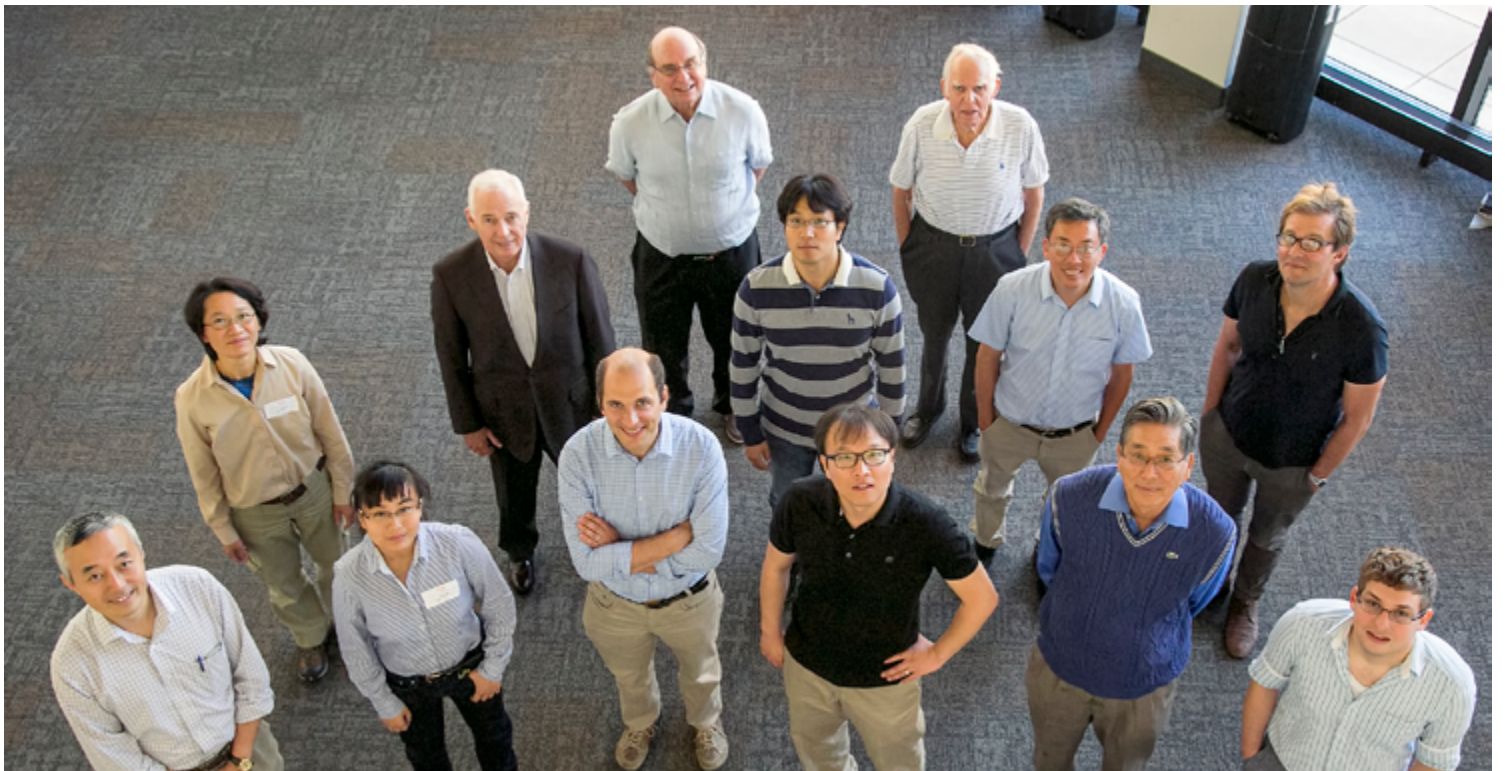


The colloquium committee from left to right: Mike Mardenfeld, David Mikkelsen, Committee Administrator Carol Ann Austin, Brent Stratton

Mikkelsen, too, has served in the past – once about 20 years ago. “I’m looking for speakers who will be intellectually expanding,” said Mikkelsen, noting that scientists engaged in interesting research are not always the best orators. “One of the most difficult parts of the job is finding people who can speak well,” he added.

Mechanical design engineer Mike Mardenfeld has been at PPPL for the shortest amount of time. He began working at the Laboratory in 2009 and since then has been assigned to complex initiatives, including the construction of coils for NSTX-U, collaborating with scientists in Germany working on the Wendelstein 7-X (W7-X) machine, and designing an NSTX-U Langmuir probe. His position at the Laboratory was in fact his first job out of the New Jersey Institute of Technology, from which he holds both bachelor’s and master’s degrees in mechanical engineering. Mardenfeld feels that colloquia are integral features of life at PPPL. “Colloquia are interesting,” he said. “I think that’s a reason why people work at the Lab – they’re interested in science in general.”

## MRX-Space Collaboration Workshop



PPPL sponsored a two-day workshop last week on collaboration between researchers working on the Magnetic Reconnection Experiment (MRX) and on space probes, including the Magnetospheric Multiscale mission (MMS) that launched four satellites in March to study magnetic fields that surround the Earth. Back row: Li-Jen Chen, NASA; Jim Burch, principal investigator for the MMS; Martin Goldman, University of Colorado-Boulder; Byungkeun Na, PPPL; Russell Kulsrud, PPPL; Tai-Phan, University of California-Berkeley; Stuart Bale, University of California-Berkeley. Front row: Hantao Ji, distinguished research fellow at PPPL and organizer of this workshop; Shan Wang, graduate student, University of New Hampshire; Vadim Roytershteyn, Space Science Institute; Jongsoo Yoo, PPPL; Masaaki Yamada, principal investigator of the MRX, and Jonathan Jara-Almonte, PPPL.

# Campus plan

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The vision for the plan was to create a safe, efficient, modern and attractive space to carry out PPPL's mission that will attract top scientists from around the world. "Having good infrastructure allows you to do both," Cohen said.

## Substandard or inadequate facilities

PPPL assessed all of its facilities before embarking on the campus plan and found that, "the site infrastructure has huge needs and many buildings have been deemed substandard or inadequate," Cohen said. Most buildings are 21 to 40 years old and the older buildings, including the MG building, are 41 to 60 years old. The assessment found that 30 percent of the buildings were adequate, 20 percent substandard and half were inadequate, Cohen said. That doesn't mean that they are unsafe but "many of our buildings are in much need of work," Cohen said.

Phase I of the Campus Plan, which was funded by Department of Energy General Plant Project (GPP) funds, is largely completed and focused on infrastructure improvements that included a new cooling tower, a new cooling system for the PPPL computer center, and other small projects. In fiscal year 2016, GPP funds will be used to build facilities to house the FLARE experiment, prepare laboratory space for a low-temperature plasma (nano) laboratory in the RF building, and other projects.

By showing how much it can accomplish with the GPP funding, the Laboratory can make a good case for increased funding for future phases of the campus plan, Cohen said. The Department of Energy has already committed to substantial increases in GPP, which will allow the Laboratory to time the projects based on its research needs, he said.

Phase II of the campus plan includes the \$25 million IOI plan, which will renovate the C Site MG building for tech shops, move storage facilities to the RESA building, renovate the LSB Annex, and demolish the MOD VI trailer. (See C Site MG story.)

The third phase of the plan, which would again be funded with GPP dollars, would renovate the C40 RF and the C42 COB buildings and move some of the smaller experiments from the L Wing to those buildings. Some of these activities have already begun, such as the construction of a new low temperature plasma laboratory.

## Renovations to L Wing

In Phase 4, starting in approximately 2022 and presumably funded by SLI dollars, the L wing would be renovated and an attractive new entrance to the LSB building would be constructed at the lower lot entrance. The theory and administrative wings would be demolished and the façade of the remaining building would be upgraded. "It's not clear what the specific renovations will be," Cohen said. "Right now, this is more of a notional or conceptual idea."

Finally in Phase 5 in 2024, with funding to be determined, a new laboratory building or addition with laboratory space for small and medium-sized experiments may be constructed.

Several staff members had questions about various phases of the campus plan. One staff member asked Cohen where the staff from the LSB Annex would work during construction. Cohen said they would either be placed in temporary office space in a trailer or would use existing office space.

## Additional space for smaller experiments

Richard Majeski, the physicist who is head of the Lithium Tokamak Experiment in the L Wing, asked whether the laboratory space for smaller experiments would be smaller under the campus plan. "We're actually planning the R&D spaces considering that they should be about 50 percent bigger than the current spaces for a given facility," Cohen said, adding that the additional space would be not just for experiments but also for the control rooms, storage, and maintenance.

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Many of PPPL's buildings are considered substandard or inadequate.

## Campus plan

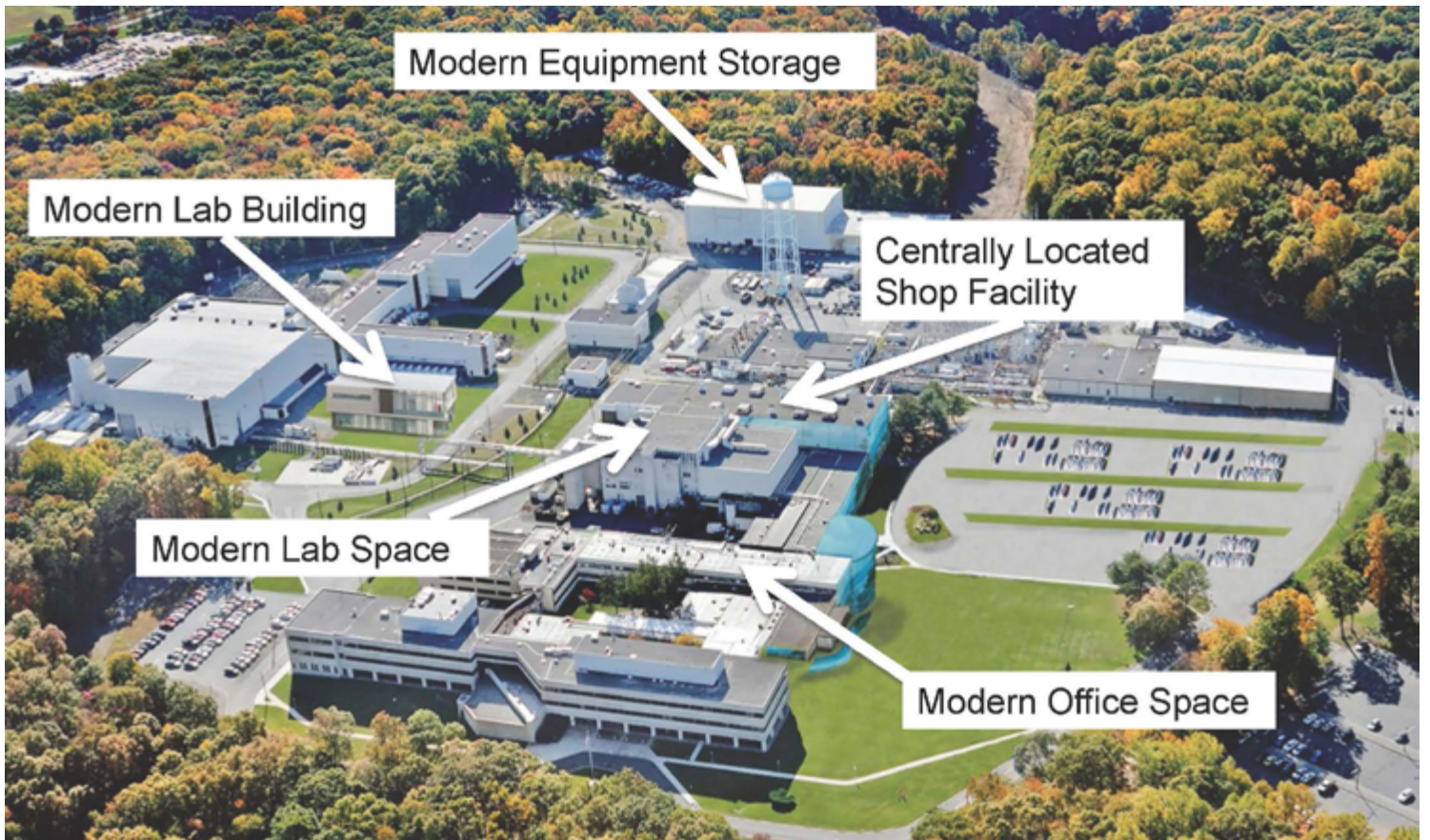
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Majeski also said he was concerned about the timing of the plans because he has just applied for a six-year renewal of a research grant. Moving LTX could delay those plans, he said.

Cohen said the plans and timing for specific facility moves are still flexible. “This is not written in stone and the timing can certainly meet with the research needs,” Cohen said. “There is nothing that says that we have to move out of the L Wing but everything we have heard is that L wing is

inadequate for optimally running the current experiments and for planning the upgrades of those experiments.”

Deputy Director for Research Michael Zarnstorff noted that while the DOE has committed to funding the first phases of the project, PPPL would have to get approval for Phase IV of the plan. “Whether it happens in 2022 or 2024 depends on funding,” Zarnstorff said. “We need to adjust the proposals to fit our evolving vision of what we need.”



An illustration shows how PPPL might look in 2025.

## Lessons Learned: Avoid electrical shocks

Lessons can be learned from a recent incident at another DOE site in which an employee felt an electrical shock in his hand and arm when plugging a light into a 110-volt ground fault circuit interrupter (GFCI) protected extension cord. The GFCI did not trip and investigation showed that it was working properly. It is believed that the worker touched the “hot” prong of the plug while it was partially inserted into the extension cord.

There have been several cases reported of similar shocks. Be sure that your fingers are not in contact with the prongs when handling plugs. Make sure you grasp the plug itself and don’t pull on the cord. Note that GFCIs will not eliminate all electrical shocks but will protect against hazardous shocks above 5 milliamps.

—William Slavin, head of the Safety Division

# C Site renovations

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“We feel that’s very valuable real estate – very close to the center of the facility – and we want to try to repurpose it for this type of facility,” said Martin Donohue, acting head of the Facilities Division, who is working on the demolition part of the MG project.

## A necessary first step

“It’s a necessary first step to make offices available to support the next phase of the project,” said Ron Strykowski, the project manager for the IOI. “We’re going to ultimately have brand new offices for the researchers, have centrally-located shops that are closer to the researchers and modern lab space for the smaller experiments for the researchers. But you’ve got to be thinking first things first.”

Strykowski said the IOI project is very ambitious and the Laboratory has partnered with Princeton University’s construction department to oversee the project. “This is a very challenging project, not from a technical point of view but from a managerial oversight perspective,” he said.

The \$1.5 million to \$2 million price tag to remove the concrete in the MB building is being paid for by GPP funds, which are designated maintenance funds from the Office of Fusion Energy Sciences. “For the next 10 years, the Lab has a pretty big appetite of things that need fixing that require GPP funding,” said Strykowski.

Renovating the MG building will allow technicians to move from the RESA building, which will be used for long-term storage. Storage trailers on site would then be discarded and the MOD 6 building would be demolished. The LSB annex, which currently houses a mixture of staff, would also be refurbished to create new office and meeting spaces.

The first part of the MG building renovation is to essentially gut the building. Some of the switching systems and other electrical equipment will remain on the third floor mezzanine overlooking the site and other electrical equipment will remain on the other floors as well.

Contractors have been removing electrical wires and old devices from the building. They also removed National Compact Stellarator Experiment (NCSX) vacuum vessels that were stored in the basement, and put them in the C Site high bay. Workers installed enclosures around working electrical



The C Site motor generator building will be renovated to house technical shops.



A map of planned changes in the IOI and campus plan.

equipment to protect it during demolition. They have also removed asbestos from the site. Next, contractors will demolish and remove the bunker-like concrete enclosures of the motor generators in September. The demolition and removal of the concrete will likely continue through January.

Tests of the concrete in the MB building showed that some of the concrete was stained with a material containing PCBs, probably from bearing oil from the motor generators, said Robert Sheneman, head of the Environmental Services Division.

Sheneman said his group has been working with Facilities and AC power to ensure that the stained concrete is properly disposed of while the clean concrete is recycled. The building also has some asbestos materials in pipe insulation that has to be safely removed. Some wall panels on the building are made of transite, a concrete material made of asbestos. Those walls will remain in place because cutting it or removing it would risk making the material airborne, Sheneman said. The building will be thoroughly cleaned in conjunction with the renovation to provide a modern clean shop facility.

## Preliminary designs

While the demolition phase gets started, the architectural firm HDR has been working on preliminary designs with a design review scheduled at the end of October. The final design phase won’t be finished until June of 2016. Construction, which includes installing a new roof, will likely begin next October and be completed by the following spring. The technical shops will move to the building in 2017.

“It’s perfect space for housing shops,” said Cohen. “It’s a good high bay and dry room space and is great for some of the other functions that we need.”

Work on the RESA building is to begin in fiscal year 2017 and be completed in 2018. The RESA building will be converted into an up-to-date storage area with up-to-date easily accessible shelving that will accommodate equipment being stored in trailers all over the PPPL campus. Once the RESA storage space is completed, the trailers currently used for long-term storage will be discarded.

## Renovations of LSB Annex


Meanwhile, another part of the IOI project, the interior of the LSB East Annex would be gutted and replaced with new offices and meeting space. “The LSB office layout right now is old, it’s inefficient and it’s in need of an upgrade,” said Deputy Director Adam Cohen.

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## C Site renovations

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Employees who have offices in the LSB Annex would be temporarily moved to trailers or existing office space on the campus while the three floors of the Annex are refurbished. Once this work is completed, employees who currently have offices in Mod 6 would be moved to the new office spaces and Mod 6 would then be demolished at the end of 2017.

Cohen said the IOI reflects the Lab's most urgent needs to support its mission. "We put together this plan based on the appropriate mission needs," Cohen said. "We think it's a really good one." 



Workers at the MG building.

## Volunteer for all-girls FIRST Lego League Robotics Team

**Volunteers are still needed for a new all-girl FIRST Lego League Robotics team. The team is being organized by PPPL's Science Education staff in collaboration with the YWCA-Princeton. We are looking for volunteer coaches for a new all-girls FIRST Lego League Robotics team. This level of robotics competitions targets students in grades 4 through 8, and you can be a part of it from the very start of this new team! No experience necessary! The teams will meet throughout the fall semester.**

The FIRST Lego League introduces younger students to real-world engineering challenges by building LEGO-based robots to complete tasks on a thematic playing surface. FLL teams, guided by their imaginations and adult coaches, discover exciting career possibilities and, through the process, learn to make positive contributions to society.

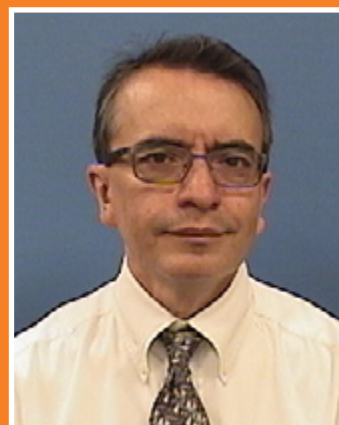
—[From the FIRST website](#)

Please contact Shannon Greco, [sgreco@pppl.gov](mailto:sgreco@pppl.gov), ext. 2208, as soon as possible.

## PPPL Welcomes New Employees!



**DAVID PFEFFERLE**  
Associate research physicist  
Theory



**ADOLFO AMAYA**  
Quality engineer  
Quality Assurance

# Register now for American Red Cross Blood Drive Oct. 2

The need for blood is constant and the gratification is instant.

Your donation is important for maintaining a healthy and reliable blood supply. One pint of donated blood can save up to 3 lives.

The American Red Cross Mobile van will be in the Lower End parking lot On Friday, Oct. 2 from 8 a.m. to 1 p.m. to collect as many units of blood as we can supply. Please give blood. All blood types are needed.

Thank you.

— American Red Cross and OMO Staff

To schedule a donation appointment, please contact the Occupational Medicine Office (OMO) at extension 3200.

# COLLOQUIUM

Toward a Better Understanding of the Solar Atmosphere: Combining Observations and Numerical Modeling

**Dr. Bart De Pontieu**

Solar and Astrophysics Laboratory, Lockheed Martin, Inc.



**Monday, Sept. 21**

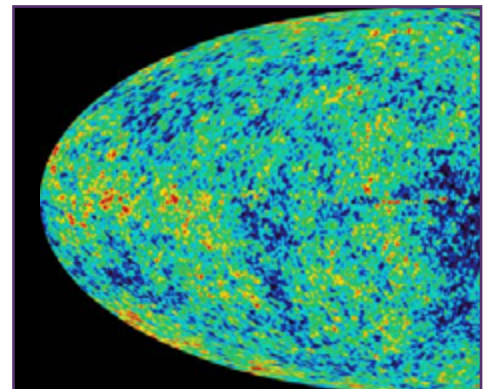
4:15 p.m. (coffee/tea at 4 p.m.)

M.B.G Auditorium, Lyman Spitzer Building

Probing the History and Dynamics of the Universe with Polarized Signatures in the Cosmic Microwave Background

**Professor Suzane Staggs**

Princeton University



**Wednesday, Sept. 23**

4:15 p.m. (coffee/tea at 4 p.m.)

M.B.G Auditorium, Lyman Spitzer Building

# Community and Staff Day Sept. 26

## Community and Staff Day features a day of free activities at Princeton University

PPPL proudly participates in this event each year in Community and Staff Day on Sept. 26 with a table featuring our plasma, light, vacuum and electricity/magnetism demonstrations. If you've never engaged the public with these cool devices, this is a great introduction to the demos and to the rewarding experience of communicating our work to people outside the Lab.

**To volunteer, please contact Shannon Greco ([sgreco@pppl.gov](mailto:sgreco@pppl.gov)) or Deedee Ortiz ([dortiz@pppl.gov](mailto:dortiz@pppl.gov)) in Science Education!**

## The Community and Staff Day schedule includes:

- Princeton Tigers football game versus Lehigh University. Kickoff is at 5 p.m. Get your free tickets online at [www.GoPrincetonTigers.com/tickets](http://www.GoPrincetonTigers.com/tickets) or visit Human Resources at B172 from 10 a.m. to 3 p.m.
- Youth Sports Clinics for children ages 5 to 12, 3:30 to 4:30 p.m., Weaver Track
- Family Fun Fest: 3:30 p.m. through halftime - Games and activities from local non-profits and University departments.
- Postgame fireworks after the game.

**For more info on the event, please call 609-258-5144 or go to**

**<http://www.princeton.edu/community/happenings/special/community-staff-day/>**

**BROCK**

**MARK GAZO**  
Chef Manager



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 September 21	Tuesday September 22	Wednesday September 23	Thursday September 24	Friday September 25
<b>COMMAND PERFORMANCE Chef's Feature</b>	<b>Fried Chicken</b> served with Cheesy Mashed Potatoes	<b>Spinach &amp; Cheese Ravioli in a Puttanesca Sauce</b> with Capers, Olives & Tomato	<b>COMMAND PERFORMANCE Szechuan Beef &amp; Noodles</b>	<b>Carved Roast Turkey</b> with Garlic Mashed Potatoes & Brussel Sprouts	<b>Salmon Piccata</b> with Roasted Asparagus & Rice Pilaf
Early Riser	<b>Huevos Ranchero Burrito</b>	<b>French Toast</b> with Glazed Apples	<b>Grilled Vegetable Quesadilla</b> with Spinach, Peppers, Onions, Tomatoes & Cheddar Cheese	<b>Chocolate Banana Pancakes</b>	<b>Steak, Egg &amp; Cheese Burrito</b>
Country Kettle	<b>Chicken Noodle</b>	<b>Tomato Spinach Lentil</b>	<b>Stuffed Cabbage Soup</b>	<b>Cheddar Cheese &amp; Broccoli</b>	<b>Beef Mushroom Barley</b>
Grille Special	<b>Grilled California BLT Burger</b> with Caramelized Chipotle Onions	<b>Turkey Reuben</b> with Swiss Cheese, Sauerkraut & Russian Dressing On Rye	<b>Salmon Burger</b> with Lettuce & Tomato on a Whole Wheat Roll	<b>Italian Sausage &amp; Peppers</b>	<b>Broccoli Cheddar Stromboli</b>
Deli Special	<b>Fresh Mozzarella, Tomato &amp; Basil</b> on Ciabatta with Orange Honey Balsamic Drizzle	<b>Baked Glazed Ham &amp; Cheddar</b> on Ciabatta with Dijon Mustard	<b>Chicken Caesar Salad</b> Wrapped in a Tomato Tortilla	<b>Seafood Salad Pita Pocket</b> with Cilantro & Feta Cheese	<b>Pork Carnita Soft Taco</b> with Red Cabbage Slaw, Avocado & Lime Sour Cream
Panini	<b>Buffalo Chicken &amp; Mushroom Quesadilla</b> with Bleu Cheese	<b>Parisian Tuna Salad</b> with Tomato, Onion, Artichokes, Olives, Arugula & Olive Oil Dressing on Ciabatta Bread	<b>BBQ Chicken, Bacon &amp; Balsamic Onions</b> with Provolone on Ciabatta Bread	<b>Roasted Pesto Vegetables</b> with Fresh Mozzarella on Ciabatta Bread	<b>Italian Meatball Parmesan Torpedo</b>

MENU SUBJECT TO CHANGE WITHOUT NOTICE

VEGETARIAN OPTION

**WEEKLY**

Editor: **Jeanne Jackson DeVoe** ♦ Layout and graphic design: **Kyle Palmer**

Photography: **Elle Starkman** ♦ Science Editor: **John Greenwald** ♦ Webmaster: **Chris Cane**

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 WEDNESDAY. Other stories should be submitted no later than noon on TUESDAY.**

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