

At PPPL  
**THIS WEEK**

THURSDAY, AUGUST 29

**"Star Power"**  
**World Premiere Party**  
1 p.m. ♦ LSB Lobby, Auditorium



*PPPL rolls out red carpet for video premiere on Aug. 29*

**Free souvenirs, cake and ice cream for everyone!**

By Jeanne Jackson DeVoe

PPPL is going Hollywood!

Everyone is invited to take part in a star-studded event on Thursday, Aug. 29, at 1 p.m. when the Laboratory premieres its new "Star Power" informational video, followed by a party with cake, ice cream and coffee, free souvenirs and a prize drawing for audience members.

"Star Power" is PPPL's new 10-minute video by videographer Kevin Coughlin that will highlight the importance of PPPL's research into magnetic fusion. It will be shown to the thousands of visitors who come to PPPL on tours and who visit the Lab's website and Facebook page.

continued on page 3

**Summer high school interns opt for research over relaxation**

By Constance Kaita

Summer is a time that many teenagers prefer to spend relaxing and soaking up the sun at the beach, but 10 high school students at PPPL decided instead to spend their summer soaking up plasma physics knowledge and performing hands-on research.

The high school interns started on July 1, taking a three-day introductory course in plasma physics, offered as part of the program for the first time. Following the course, the students scattered throughout the Laboratory with each assigned a mentor.

"The internship grants outstanding high school students an opportunity to work side by side with PPPL scientists and engineers," said Andrew Zwicker, head of the Science Education department. "Here, they can observe firsthand the beauty and the challenges that motivate the research for creating a new source of energy."

**Introductory course in plasma physics**

The internship attracts high school juniors and seniors of varying academic backgrounds who are interested in taking part in a unique research experience.

continued on page 5



*Rising senior Maya Moten from Summit, N.J., left, and mentor Sophia Gershman, a research collaborator in the Science Education department, work on an experiment investigating small bright sparks in gas bubbles inside liquids to better understand the way fluids respond to high voltages.*

**A new experiment in L-Wing**

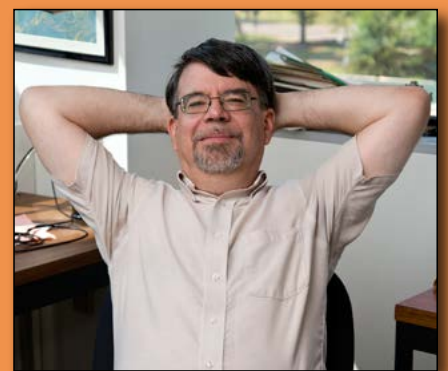


The Site Protection Division is currently investigating the whereabouts of the researchers working on a new experiment in L-Wing known as PTPX (the Princeton Time Portal Experiment).

As always, Site Protection is seeking to work with the PIs to insure that speed limits have not been broken and that parameters in the space-time continuum have not been violated.

The basis of the inquiry is to test Einsteinian concepts and compare them with rival theories. An abstract describing the effort insists that a flux capacitor is not part of the equation. Anyone with any information should contact John DeLooper at [jdelooper@pppl.gov](mailto:jdelooper@pppl.gov).

**J. Randy Wilson retiring**



*J. Randy Wilson, the head of the ITER and Tokamak Department, is retiring from PPPL after 38 years.*

**See story on page 2.**

# Randy Wilson retires after 38 years at PPPL

## Rich Hawryluk will become head of ITER & Tokamak Department

By Jeanne Jackson DeVoe

In his 38 years at PPPL, J. Randy Wilson has worked on pioneering research and has traveled all over the world as head of the ITER & Tokamak Department. Now he is embarking on a new adventure as he retires on Aug. 31.

The department will be headed by Richard Hawryluk, a former deputy director at PPPL. He recently completed a two-year assignment with ITER, the international fusion experiment under construction in Cadarache, France, serving as Deputy Director-General for the ITER Organization and Director of the ITER Administration Department.

Michael Zarnstorff, PPPL's deputy director for research, said Wilson and Hawryluk have both played substantial roles in the Laboratory's involvement with its national and international collaborations. "Rich and Randy are both great managers – they both have been a delight to work with and they have been strongly engaged and they have both demonstrated they are strongly committed to this Laboratory."

### A career at PPPL

Wilson has spent his career at PPPL, coming to the Laboratory as a graduate student in plasma physics in 1975, and staying to conduct research on tokamaks that contributed to understanding how radio frequency waves can be used to heat and drive an electric current in fusion plasmas. He first worked on the Princeton Large Torus (PLT), and was at the Laboratory when the PLT produced the first tokamak discharge driven entirely by lower-hybrid radio frequency waves in 1981. He also worked on experiments with the Tokamak Fusion Test Reactor project and later the National Spherical Torus Experiment (NSTX). "I came and I never left," he said.

Scientific research has always been his passion. "For me learning something new is the most exciting thing that happens in an experiment," he said. "When you suddenly see a piece of experimental data that's unexpected and a surprise and you come up with a new idea – that's the most exciting thing in the world."

He continued his research until recently, working on NSTX and on MIT's Alcator C-Mod. "Randy's been a great strength for the Lab and his colleagues," said Zarnstorff. "The loss of his RF leadership is significant and challenging."

As head of the ITER & Tokamak Department working with PPPL's national and international partners, Wilson has traveled around the country and across the globe to Japan, Korea, China, England and Europe. "There are wonderful people in a lot of places and the people I've met both at the Lab and around the world are a wonderful part of the job," he said.

### An avid musician and golf player

A golf enthusiast and avid musician, Wilson plays the trumpet for the Princeton Society of Musical Amateurs. His wife, Beverly, a retired pharmaceutical manager, is a singer who sings at the University Chapel every Sunday. The couple enjoy going into New York for the opera. They live in Princeton, N.J.

Wilson has appeared in many of the holiday skits at PPPL where he has "tootled" on the trumpet and played various roles – appearing recently as Mike Viola, head of the Facilities and Site Services Division, and at one



*Wilson, a pioneering researcher on radio frequency waves, worked on PLT, TFTR and NSTX and collaborated on MIT's Alcator C-Mod and General Atomics DIII-D as well as with PPPL's partners at research facilities around the world.*

time playing former PPPL director and physicist Rob Goldston. Wilson said he may return to join this year's production.

Most of all, Wilson and his wife are looking forward to spending time with their 2-year-old grandson, Matthew, after their daughter, Elizabeth, an anesthesiologist, and her husband, Tom, moved to Bethlehem, Pa. from North Carolina. Their son, Timothy, is a computer scientist in Palo Alto, Calif.

Wilson said he struggled with the decision to retire. "It was a difficult decision to make," he said. "It was hard to put my signature on that piece of paper – harder than I thought it would be - because it's a big change."

But like many retirees at PPPL, Wilson said he will likely come back to the Laboratory. "I don't actually plan on going away," he said. "I'll still be around."

### Hawryluk looking forward to new challenges

Wilson and Hawryluk have had a long partnership and have traded places with each other more than once as head of the ITER & Tokamaks Department. Wilson was the head of the department for five years when Hawryluk was deputy director. He stepped down to act as Hawryluk's deputy when Hawryluk took the position. He stepped back into the position two years ago when Hawryluk began the two-year posting with ITER.

Hawryluk said he is sorry to see Wilson leave but at the same time is looking forward to taking on new challenges. "I'm not happy that Randy is leaving. Randy

*continued on page 3*

## Wilson Retirement

continued from page 2

was doing a very good job. He not only brought a lot of scientific talent to the Department but also excellent interpersonal skills. Knowing the large number of interests that Randy has, I am certain that he will enjoy his retirement," he said. "However, I'm very pleased that Stewart and Mike decided to allow me to continue this work because I think it is important to the Laboratory."

The position involves working with national and international partners on experiments that set the stage for ITER as it begins construction and starts operation, Hawryluk said. "If you look around there will be a lot of experiments that will be done over the next decade before ITER comes into full operation," he said. "Those experiments will improve the operational capability of ITER and train the scientists who actually do the experiments at ITER."

### Connections with international partners

The work PPPL is doing now with its national and international partners will also tie in to research on NSTX-U and those results will connect with ITER, Hawryluk said. The ITER & Tokamaks Department will also work closely with PPPL's Theory Department. "To do a good job we need input from theory and we need to have theorists have the opportunity to advance the planning of experiments around the world to test their ideas," he said.

Zarnstorff said the ITER & Tokamak Department faces "new opportunities and challenges" with its collaborations with the DIII-D tokamak at General Atomics in San Diego; the Korean Superconducting Tokamak Advanced Research (K-Star); China's Experimental Advanced Superconducting Tokamak (EAST); the JTF-60SA in Japan; and the Joint European Torus or JET in England and especially the mammoth ITER experiment. The Department will lead the charge "to prepare for physics research" at ITER. "This department is how this Laboratory engages with tokamak experiments," Zarnstorff said. "We no longer have our own standard tokamak but nevertheless have substantial activities in research on tokamaks so it's a key part of this activity. Preparing for ITER and managing and cultivating these opportunities is really important for our overall strategy."



*Rich Hawryluk, who recently completed a position as Deputy-Director of ITER's Administration Department, will become the head of the ITER & Tokamak Department.*

As Deputy-Director General of ITER's Administration Department, Hawryluk had wide ranging responsibilities as preliminary work on the site of the six-story ITER began that included everything from information technology to finance and budgeting to human resources. The project is financed by seven international partners, including the United States.

Hawryluk recently received the U.S. Secretary of Energy's Appreciation Award for his work on ITER. A leader in magnetic fusion energy research for more than three decades, he was head of PPPL's Tokamak Fusion Test Reactor experiment from 1991 to 1997 when it produced record-breaking results in the 1990s. He was deputy director of PPPL from 1997 to 2008 and was also a member of the U.S. delegation to the ITER Management Advisory Committee, which reports to the ITER Council.

He and his wife, Mary Katherine, a school psychologist, live in West Windsor Township. They have two grown sons: David, an Apple employee in Los Angeles, and Kevin, a recent graduate from the University of Michigan. ☺

## Video Premiere

continued from page 1

Coughlin filmed dozens of hours of interviews for the video, which features 19 PPPL stars, including Laboratory Director Stewart Prager and a host of scientists, engineers and technicians.

Coughlin is a former newspaper reporter who covered technology at the Newark Star-Ledger for many years and was a Knight Science Journalism Fellow at MIT. He is a well-known videographer who has worked on several projects at Princeton University including a video for PPPL highlighting the Science Ed team's attempt to answer the question "What is a flame?" for the Alan Alda Center for Communicating Science at Stony Brook University. He also is editor of the website [MorristownGreen.com](http://MorristownGreen.com).

The new video is the brainchild of Kitta MacPherson, the Director of Communications, who saw the importance of having a polished, up-to-date and visually appealing vid-

eo that offers a dramatic introduction to PPPL's cutting-edge research.

The video features original music, including "the PPPL Overture;" graphics by animator Suzanne Slattery, and video clips of magnetic fusion in popular culture in addition to numerous interviews.

The Aug. 29 premiere will pay tribute to the 19 "stars" and several "VIPs" at PPPL who were directly involved with the video. Deputy Director for Operations Adam Cohen will serve as the master of ceremonies along with MacPherson to recognize the PPPL stars and VIPs.

The event features a red carpet, introductions of Coughlin, Slattery and all the PPPL stars and VIPs who worked on the video, and of course, a viewing of the "Star Power" video itself. There will be drawings for prizes, free souvenirs, autographs by the stars, ice cream and toppings, coffee and cake for everyone. Please spread the word! ☺

# Students display posters of their achievements

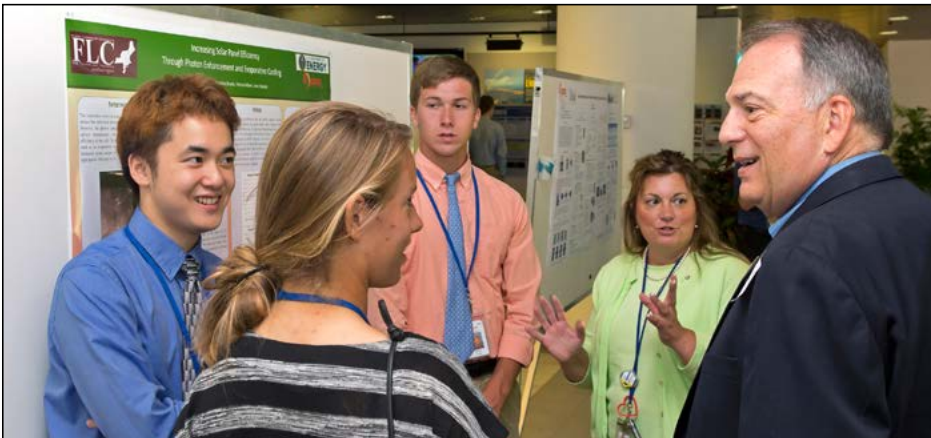
More than 35 high school and college students from local towns and as far away as Texas came to PPPL this summer to do research. They shared their results with physicists and engineers at the Laboratory at a poster session on Wednesday, Aug. 14. 📷



Joshua Bloom, of West Windsor, an incoming freshman at Virginia Tech, talks to N.J. Assemblyman Daniel R. Benson.



Michael McNulty, of Hightstown, a second-year student at Mercer County Community College, talks to Assemblyman Benson.



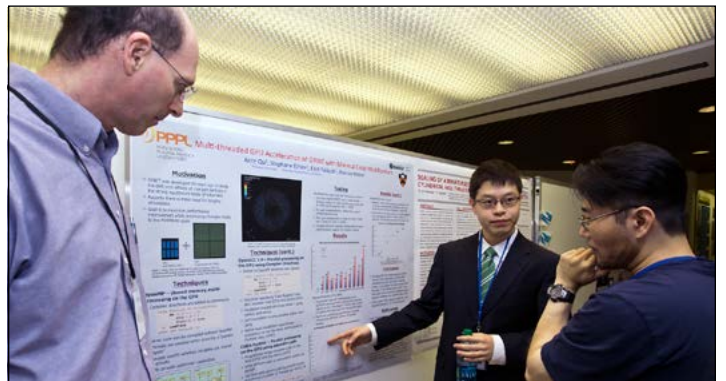
Left to right: Jason Wang, of Princeton Junction, West Windsor-Plainsboro High School North; Caroline Brooks, Plainsboro, of West Windsor-Plainsboro High School South, and Dylan Carpe, Hamilton Township, of the Peddie School (in orange) with Patricia Hillyer, a 7th grade science teacher in the Matawan-Aberdeen School District and Thomas Brown, program manager for the Federal Lab Consortium, which funded the students' research aimed at increasing the efficiency of solar panels.



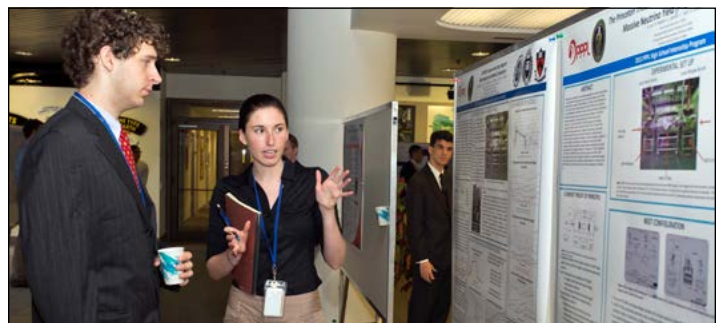
Grant Bodner, a rising senior at the University of Wisconsin-Madison, discusses his work with Susannah Betts, a rising junior at Wesleyan University.



Lesther R. Flores, right, a rising senior at Trenton Central High School, shows off his results to physicist Luis Delgado-Aparicio.



Ante Qu, a rising junior at Princeton University, displays his poster to computational scientist Eliot Feibush, left, and Shigeyuki Kubota, a visiting scientist from the University of California, Los Angeles.



Ann Hopkins, a rising junior at Penn State University, describes her research to Benjamin Horowitz, a rising senior at Yale University.

## Summer interns

continued from page 1

The 10 students were selected for the six-week internship out of a pool of 154 applicants, the highest number of applicants in the history of the program. Most are from New Jersey but three are from out-of-state: one from California, one from Ohio, and one from Boston.

The students were welcomed to PPPL with a brief introductory course in plasma physics taught by Arturo Dominguez, a postdoctoral fellow in the Science Education department. The course covered essential topics including the basics of plasmas, spectroscopy, and DC glow discharge.

Dominguez explained the fundamentals of plasma physics in a clear manner that was understandable and applicable to all the interns. "I wanted to give a relatively strong math foundation to what the concepts we usually encounter in plasma physics are, but in a way that actually enlightens rather than obscures topics," he said.

"He's a great teacher, really entertaining, and he kept everybody's interest well," said Murray Skolnick, a rising senior from the greater Boston area. "Plasma physics is certainly a daunting subject so it was good having someone come in and explain the fundamentals."

Jason Liu, a rising freshman at UC-Berkeley from Pleasanton, Calif., agreed with Skolnick. "Arturo was a really fun teacher," he said.

Rising senior Maya Moten from Summit, N.J. saw firsthand how intimidating plasma physics could be. "The first lesson, I went home and said, 'I'm in way over my head. This is not going to work,'" she said. Dominguez's teaching, though, helped her overcome her worries. "The second and third lessons were a lot more fun. I learned a lot and had a good time."

Dominguez enjoyed teaching the interns as much as they enjoyed learning from him. "Not only have I seen that they're very bright, but they're very interested in really grasping the ideas completely," he said. "They focus in on the right questions and really tackle them until they're satisfied with the answer."

### Different places, different backgrounds

Skolnick came to PPPL to pursue his fascination with plasma physics. "It's stunning how stars work and how they hold the plasma together," he said. He had been performing his own independent research in an informal internship at the Plasma Science and Fusion Center (PSFC) at MIT. Skolnick worked on the computational aspect of plasma physics research by developing simulations of gravitational confinement fusion, the method by which gravitational forces in stars compress matter to incredibly high densities and temperatures at their centers, thereby stimulating consistent fusion reactions.

Liu has been passionate about plasma physics since he attempted to build a fusion reactor for numerous science fairs during his junior year. He went on to work with a lab at Las Positas Community College, which led to a collaboration with the nearby DOE laboratory, Lawrence Livermore National Laboratory in Livermore, Calif. There he learned about PPPL's high school program. "I was considering working at either Livermore or PPPL," Liu said. "The project they offered me at PPPL was more hands-on experimental so I decided to come here."

Moten came into the PPPL program completely new to plasma physics, but with an enthusiasm for science. "I've loved science since I was little," she said. Moten pursues several science-related extracurricular activities, most notably by competing in the science division of the NAACP Afro-Academic, Cultural, Technological,



*Mentor Manfred Bitter, left, a principal research physicist in the Plasma Diagnostics Division, and Jason Liu, a rising freshman at UC-Berkeley from Pleasanton, Calif., work on an experiment designed to improve the efficiency of microwave imaging on tokamaks.*

and Scientific Olympics (ACT-SO) where she competed in both the earth and space science and the physics categories. She is particularly interested in studying the astrophysics applications of plasma physics, such as the natural fusion reactions that occur on stars.

### Summer projects

Skolnick is expanding upon his computational background by working with Doug Darrow in the Diagnostics Division on high-speed camera videos of a plasma probe. Skolnick learned a new programming language, Interactive Data Language (IDL), to sort through this massive amount of data to determine which files should be moved onto the PPPL computer network and wrote software to process individual frames of these files to produce graphs and grids from the image data.

"I'm getting a lot of programming experience," Skolnick said. "I'm learning new languages so I'm getting a really good sense of how computers integrate themselves into this kind of work."

Darrow said he was impressed by how much knowledge Skolnick possessed when he came into the program. "Murray was extremely capable and energetic and had a lot more background than I expected," he said. "I would have thought he was a young graduate student from my interactions with him."

The hands-on research is invaluable for young researchers, Darrow said. "The students get some sense of whether this research life really is for them," he said. "I'm just appreciative of having the program that brings us these good students and how the students add to my research."

Liu spent his summer with Manfred Bitter, a principal research physicist in the Plasma Diagnostics Division, working on an experiment designed to improve the efficiency of microwave imaging on tokamaks. Liu is excited about what he will accomplish this summer at PPPL. "If we get good results, Dr. Bitter said we could submit it in a journal," he said. "But otherwise, I think it's really fun to just be here and do experiments."

Bitter said Liu wants to pursue plasma physics and is already off to a good start. He will likely present his research at the American Physical Society Conference in the fall and may be able to continue his research. "Jason is fantastic," Bitter said. "He is so enthusiastic!" Moten's mentor this summer was Sophia Gershman, a research collaborator in the Science Education department. She is investigating small bright sparks in gas bubbles inside liquids to better understand the way fluids respond to high voltages. "I'm learning a lot from Dr. Gershman," she said.

continued on page 6

# Summer interns

continued from page 4

Gershman compared the internship program to language immersion programs in foreign countries, only here students immerse themselves in physics and find out first-hand how to complete their own research. "They learn the language, they learn the instruments, they learn about safety and they learn the physics," she said.

"They go from being totally lost for that first week to all of a sudden a few weeks later, they own the project," Gershman added. "And it happens naturally."

The students' work culminated in a poster session on their research this summer on Aug. 14. (See photos on page 4.)



Mentor Doug Darrow, left, a principal research physicist in the Diagnostics Division, and Murray Skolnick, a rising senior from the greater Boston area, work on a software program to sort through data from high-speed camera videos of a plasma probe.

## 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

COMMAND PERFORMANCE  
CHEF'S FEATURE

	MON. 26 AUG.	TUE. 27 AUG.	WED. 28 AUG.	THU. 29 AUG.	NAT'L MORE HERBS LESS SALT DAY	FRI. 30 AUG.
<b>CHEF'S FEATURE</b>	 <b>ZESTY ORANGE CHICKEN &amp; RICE</b>	 <b>GRILLED SALMON</b>	 <b>STUFFED SHELLS</b>	 <b>CHICKEN PICCATA</b>		 <b>STUFFED TILAPIA WITH VEGETABLE</b>
<b>EARLY RISER</b>	California Eggs Benedict	Blueberry French Toast	Apple Raisin Pancakes	Turkey Omelet		Spanish Omelet
<b>COUNTRY KETTLE</b>	Cream of Mushroom	Split Pea	Vegetable Vegetarian	Cream of Chicken		Spinach & Sausage Soup
<b>GRILLE SPECIAL</b>	Grilled Peanut Butter, Bacon and Banana	Cajun Chicken Breast With Peppers and Onions	<b>Outdoor BBQ Fill Your Plate (Burgers, Hot Dogs, Pulled Pork)</b>	Popcorn Shrimp Po' Boy		Italian Hot Dog
<b>DELI SPECIAL</b>	Zucchini, Hummus, Feta Cheese and Spinach Pita	New Orleans Muffaletta	Cheese Combo Sub	Pepperoni & Provolone Sub		Liverwurst & Onion on Rye
<b>PANINI</b>	Roast Beef, Fresh Mozzarella, Lettuce, Peppers	Chicken Parmesan Sandwich	Bacon, American Cheese & Tomato on Ciabatta Bread	BBQ Chicken with Roasted Onions on Ciabatta Bread		Chicken Cordon Bleu with Ham, Swiss and Dijonnaise
<b>BROCK VALUE MEAL ★\$6.25</b>	½ Sandwich, Small Soup or Salad, Chips, 12oz. Soda	2 Slices Pizza, Bag of Chips, 12 oz. Soda	Cheeseburger, French Fries, 12 oz. Soda	2 Hot Dogs, French Fries, 12 oz. Soda		Meatball Sandwich, Potato Chips, 12 oz. Soda

### NEXT WEEK

COMMAND PERFORMANCE  
CHEF'S FEATURE

	MON. 2 SEPT. LABOR DAY	TUE. 3 SEPT.	WED. 4 SEPT.	THU. 5 SEPT. ROSH HASHANAH	FRI. 6 SEPT.
<b>CHEF'S FEATURE</b>	 <b>HOMESTYLE MEATLOAF</b>	 <b>BAKED SALMON</b>	 <b>BRISKET OF BEEF AU JUS</b>	 <b>FRIED TILAPIA WITH RICE PILAF</b>	
<b>EARLY RISER</b>	Garden Omelet	Pancakes with choice of Breakfast Meat	Israeli Omelet (Tomato, Onion, Peppers, Garlic, Herbs)	Chocolate Chip Pancakes	
<b>COUNTRY KETTLE</b>	Minestrone	Sausage Chicken Gumbo	Matzo Ball Soup	Tomato Bisque	
<b>GRILLE SPECIAL</b>	Fish Fillet Sandwich	Double Decker Mushroom Swiss Burger	Cheesesteak Hoagie	French Onion Grilled Cheese	
<b>DELI SPECIAL</b>	Cheese Combo Sub	Egg Salad Club Sandwich	Classic Turkey Club	Turkey Pastrami, Swiss & Coleslaw on Rye	
<b>PANINI</b>	Corned Beef Reuben	BBQ Meatloaf & Cheddar on a Kaiser Roll	Portobello, Chicken, Mozzarella and Roasted Peppers Ciabatta	Vegetable Panini	
<b>BROCK VALUE MEAL ★\$6.25</b>	To Be Announced	To Be Announced	To Be Announced	To Be Announced	To Be Announced

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**  
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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](mailto:commteam@pppl.gov) ♦ **PPPL WEEKLY** is archived on the web at: <http://www.pppl.gov/ppplweekly.cfm>

The **PPPL WEEKLY** is currently on a biweekly summer schedule. The next issue will be published on August 26.