PPPL PRINCETON PLASMA PHYSICS LABORATORY
A Collaborative National Center for Fusion & Plasma Research
U.S. DEPARTMENT OF ENERGY
WEEKLY
APRIL 8, 2013

At PPPL THIS WEEK

THURSDAY, APRIL 11

Hamilton Colloquium Series
4:30 p.m., P.U., Jadwin Hall, A10

Exploring the Mysteries of Plasma Turbulence

Frank Jenko, Max-Planck Institute für Plasmaphysik-Garching

UPCOMING EVENTS...

April 15-19
Lab clean-up for Earth Week

April 16
Laboratory Management Review Meeting

April 18
PPPL Celebrates Earth Day
10:30 a.m. - 1:30 p.m. ◆Lobby

Displays, speakers and prizes and free lunch for audience members

April 28
Communiversity Festival of the Arts
1 - 6 p.m. ◆Downtown Princeton

Volunteers needed. Please contact Jeanne Jackson DeVoe at jjackson@pppl.gov.

Inside...

Conference Challenges Girls To Enter Science & Technology Fields

By Jeanne Jackson DeVoe

A view from above of the Young Women's Conference at Princeton's Frick Chemistry Laboratory, which was attended by 360 seventh to tenth graders from New Jersey and Pennsylvania.

Some 360 young women from seventh to tenth grade spent the day immersed in science and technology at PPPL's Young Women's Conference on March 22 at Princeton University.

The budding scientists, mathematicians and engineers from 40 schools in New Jersey and Pennsylvania took part in hands-on experiments, got a first-hand look at working laboratories at Princeton and talked to female scientists and engineers from PPPL and across the country at the conference, which was based mostly at the Frick Chemistry Laboratory.

Chloe Heller, an eighth grader from Community Middle School in Plainsboro, said she realized she needed more role models when she was asked to name women scientists from history to prepare for the conference and she could only name two. She said it was encouraging to see so many women scientists in one place. "It is interesting to see women doing this," she said. "It's interesting for all kinds of stuff, especially when you get to see what all the people are doing and to see you could do this too," she said.

Ninaad Desai told the students about her experiences as an electrical engineer at PPPL. She described how she uses her love of science and mathematics working on high-voltage equipment on PPPL's NSTX experiment and other large experiments. "That's what motivates me: science and mathematics," she said. "Because everything is a mathematical equation."

Jayatri Das, the chief bioscientist at the Franklin Institute in Philadelphia, spoke about the brain, which will be the focus of a new display at the museum that opens in June. She gave students some demonstrations of how the brain doesn't always perceive things accurately. In one, she showed a video of a group of young people in white shirts tossing a basketball back and forth with people in black shirts. Das

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Conference organizer Aliya Merali, far right, tells young women they are "capable of changing the world through science" before the keynote address at McCosh Hall.

YWC

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asked the students to count how many times the people in white shirts tossed the ball. When the video clip was finished, she asked, "How many people saw the gorilla?" Only half the group raised their hands. When she replayed the video, someone dressed as a gorilla clearly walked in during the middle of the game and tossed the basketball. Half the audience didn't see it because they were so busy counting. "Each of our brains is creating an individual reality and we have no idea how that works," Das said.

More than 40 people from PPPL volunteered at the conference at the registration desk, running hands-on experiments, leading tours and speaking to the teen girls about their work. There were 10 tours of various laboratories at Princeton, including the chemistry laboratories at Frick, the Peyton Hall Astrophysics laboratory, the Icahn Laboratory's molecular biology/genomics laboratory and the geosciences and oceanography laboratories in Guyot Hall.

The conference featured 55 exhibitors giving hands-on demonstrations and conducting experiments on everything from a dust storm to forensic science to FBI techniques. PPPL's display, including the ever popular plasma ball, was a favorite. "I like the static and your hair coming up," said Monae Murphy, a seventh grader at P.J. Hill Elementary School in Trenton.

Another popular exhibit was by Courtney Kaita (the daughter of PPPL's Bob Kaita) who is working on Wall Street, but focused her exhibit on her other love – the cello - to demonstrate the physics of sound. She played the cello herself and let others take a turn. "Music is just organized sound," she told the crowd. "You have ongoing vibrations in the air around you."

After a full day, the students moved to McCosh Hall where they heard a talk by keynote speaker Heather Paul, an engineer who designs space suits and other equipment for NASA and is the lead engineer for a future spacesuit life support system. "I'm an engineer and I'm going to give you this challenge," Paul told the crowd of young women. "I want you to think about how you can engineer your career."

Doris Koon, a junior at Trenton Central High School, seems to be enjoying a hair-raising experience at PPPL's exhibit.

Andrea Moten looks on as a student examines a plasma ball at the conference. She was one of 39 volunteers from PPPL.

Ninaad Desai, an electrical engineer at PPPL, shows the students a plasma ball as she discusses magnetic fusion and her work at the Laboratory.

Elizabeth Zeitler, left, a graduate student in the Bocarsly Group at the chemistry laboratory, leads students on a tour of the facilities.

She showed photos on the job at the Johnson Space Center in Houston where she plays a number of roles – designing, building and testing space suits and other hardware for the international space station. "I would like to point out I was the team leader," she told the young women. "Who else is on my team? A bunch of boys."

In some of the photos, Paul and others tested out equipment under water to recreate conditions in deep space, and tried out equipment in the desert and in zero gravity. Other photos showed Paul and her team members living in an enclosed space to test out new life support systems during what she jokingly called "a slumber party."

At the end of her talk, Paul showed a photo of two figures in space suits with their faces blank and invited the students to imagine themselves as astronauts. "I want each of you to think about how you can contribute," she said.

Paul's statement echoed the closing remarks of conference organizer Aliya Merali. She noted that 500 people had come together for the conference because they support women in science. "If you have the passion and drive to pursue a certain field, nothing can stop you," Merali told the young women in the crowd. "Each of you is capable of changing the world through your interest in science and don't forget it."

Spotlight on Andrew Zwicker with TED talk and NJTV video

By Jeanne Jackson DeVoe

Andrew Zwicker has been in the limelight recently with a recent TEDx talk on magnetic fusion and an appearance in a video on the "Art of Science," on the New Jersey PBS television station.

Zwicker, head of Science Education at PPPL, gave a TEDx talk on "Creating a Star on Earth: the Path to Fusion Energy," as part of a TEDx talk conference on "Future Utopias" at Saint Peter's University in Jersey City on March 21.

In his 18-minute talk (the limit for all TED talks), Zwicker discussed the limits of current energy sources. A single power plant uses enough coal in a single year to fill 250 trains with 100 cars each, he said. He pointed out that oil supplies are dwindling - but the amount of oil on earth is approximately equivalent to the top one inch of Lake Erie if it was burned in a fusion reactor. While solar and wind energy offer a clean alternative, he said, those energies are limited by weather conditions.

By contrast, Zwicker said, fusion energy is clean, available, compact, affordable and safe and is not subject to the weather. As fusion research moves forward, the challenge is, "to design a magnetic bottle and create a star here on earth," Zwicker told the crowd.

Zwicker noted that today fusion is an international effort as several countries are cooperating to build ITER. "Countries around the world have said we need to make our own star," he said. Eventually, ITER will produce enough energy that it could, in principle, power homes for 500,000 people, Zwicker said.

By 2045, Zwicker predicted, fusion energy will stream on the electric grid and "the world as we know it will change."

"A perfect energy source is not a dream," he concluded, "and we are a very short time from it becoming a reality."

Zwicker's TEDx talk will be posted on the Web sometime over the next few weeks.

Last month, Zwicker also appeared in a video aired on NJ TV, the New Jersey PBS station, on the "Art of Science" exhibit at the Liberty Science Center, which has been extended through mid-September. (The video can be viewed on the NJTV website).

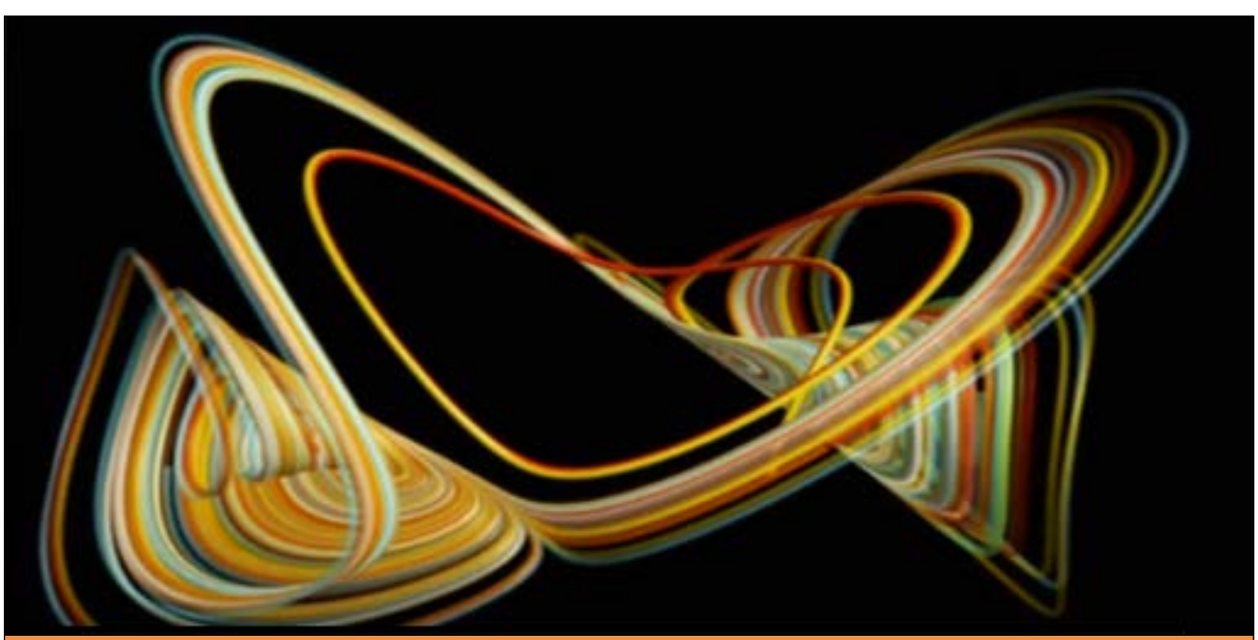
The video highlights some of the 45 science images from the annual competition at Princeton University.

In the video, Zwicker notes that none of the images were intended to be works of art but were instead created through science. "You really don't look at your work, the images you produce, from an aesthetic value, you're really looking at what's its scientific value, so it changes your lens of how you might look at your own work," Zwicker said.

He believes the "Art of Science" is breaking some of the barriers between art and science. "I would love to see this taken further as a way to break down the wall that is perhaps between the scientific community and the artistic community," he said.

The deadline for this year's Art of Science competition on "Connections," was on April 7 and the winning photos will be displayed at a reception on May 10.

Zwicker is one of the organizers of the competition along with Zach Donnell, Department of Molecular Biology; Adam Finkelstein, Department of Computer Science; Theresa Riordan, School of Engineering and Applied Science; and Victoria Sanchez, Department of Chemical and Biological Engineering.



An "Art of Science" photo from the Liberty Science Center exhibit, which was the subject of an NJTV video.

Women @ Energy: Aliya Merali

Aliya Merali, a program leader in Science Education at PPPL, was profiled on the Department of Energy's website in an article on women "who make a difference in science and technology information." In the article Merali discusses her work as a program leader in science education at PPPL and says that her job "allows me to interact with some of the brightest minds on some of the most cutting-edge topics. For me, the most exciting part about this is getting to share it with the public."
In the photo above, which accompanied the article, Merali takes part in a "Weightless Wonder" flight, which was part of a collaboration with NASA. Merali's profile was included in a new feature on the DOE's website (energy.gov) called Women @ energy.

PPPL Celebrates Earth Week April 15 - 19!

Lab-wide Clean Up Week!

April 16: Grounds Clean-up
10: 30 a.m. to noon (Rain Date April 17)

Volunteers Still Needed
Free lunch for volunteers.
Email Joanne Bianco at jbianco@pppl.gov.

April 18: Earth Day at PPPL!
10:30 a.m. to 1:30 p.m.
Displays, prizes, speakers, and a Native American dance performance! Free pizza and drinks for audience members!

DOE Director visits PPPL

Earl Hicks, Director of the Safeguards and Security Division of the DOE Office of Science, at the VPI facility (NCSX site) during a visit to PPPL on March 27 and 28. Hicks also viewed the NSTX test cell, the TFTR test cell, LTX, the Rad Waste Building and CASL and PPPL's emergency services facilities. He met extensively with staff from the Site Protection Division and the Princeton Site Office to discuss recommendations of the DOE Draft Risk Assessment Report. (PHOTO BY DOLORES STEVENSON)

Communiversity Volunteers Needed

Calling all volunteers for Communiversity Festival of the Arts, which is being held on a Sunday afternoon this year on Sunday, April 28 from 1 to 6 p.m. The annual event is sponsored by Princeton University and the Arts Council of Princeton and attracts 40,000 visitors. We need volunteers to help staff the PPPL booth and talk to members of the public about the important work taking place at PPPL.

Please contact Jeanne Jackson DeVoe, jjackson@pppl.gov, ext. 2757 to volunteer. More information is available at the Arts Council of Princeton website.

JUST BREATHE

Mindfulness Series

Mindfulness is the practice of purposely focusing your attention on the present without drifting into concerns about the past or future.

Fridays: 4/26, 5/10, 5/24, 6/7
12-12:30 p.m. Furth Plasma Physics Library

FOR PPPL STUDENTS, FACULTY, AND STAFF

Drop in as often as you can! No registration is required

Learn to quiet the mind and ease physical distress. This mindfulness series will provide an opportunity to slow down in this fast-paced setting, and to experience balance and a sense of calm.

Facilitated by Shefalika Gandhi, LCSW, University Health Services. Sponsored by Princeton Plasma Physics Laboratory (PPPL). Email mgonzalez@pppl.gov for more information.

COLLOQUIUM

The Promise of Urban Science

STEVEN S. KOONIN
New York University

Next week • Tuesday, April 16

4:15 p.m. (Coffee/Tea at 4 p.m.)
M.B.G Auditorium, Lyman Spitzer Building

unicor We're life changing.

YOU MAY BRING THE FOLLOWING ITEMS FROM HOME FOR RECYCLING ON APRIL 18, 2013

All Electronic Equipment Including:

Electronic Gadgets:	**Household Equipment:**	**Computer Equipment:**
Camera	Televisions	Laptops
Camcorder	DVR's	Desktop Tower
MP3 Players	Cable Boxes	Modems
Gaming System	Copiers/Printers/Faxes	Keyboard
(Handheld & TV Systems)	Telephone System	Mouse
Calculators		Monitors (CRT & LCD)
Microscope		Printers
Telescopes		Computer Wires
PDAs		Hard Drives
		DVD/Tape
		Circuit Boards Drivers

**Reminder - Please delete all sensitive material from cell phones and desktops.*

All items will be collected at the C Site Lower End Parking Lot, Warehouse Access Door Area from 7:30 a.m. – 10 a.m.
Do not bring items to the lobby. Any questions please contact Kyron Jones at x3326 or Margaret King x3652

COLLOQUIUM

Fundamental Physics and the LHC: A Progress Report

NIMA ARKANI-HAMED
The Institute for Advanced Study

Next week • Wednesday, April 17

4:15 p.m. (Coffee/Tea at 4 p.m.)
M.B.G Auditorium, Lyman Spitzer Building

Brock 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

	MONDAY APRIL 8	**TUESDAY** APRIL 9	**WEDNESDAY** APRIL 10	**THURSDAY** APRIL 11	**FRIDAY** APRIL 12
					
COMMAND PERFORMANCE CHEF'S FEATURE	MEXICAN CHICKEN OVER RICE AND BEANS	ROASTED TOMATO BEEF GOULASH	STUFFED PORK LOIN & ROASTED POTATOES	CHICKEN PARMESAN WITH PASTA	SHRIMP FLORENTINE PASTA V
EARLY RISER	Cinnamon Raisin French Toast	Pancakes with Turkey Sausage	Chicken, & Sausage Gumbo V	Pear Pancakes V	Honey Custard French Toast with Walnuts V
COUNTRY KETTLE	Tuscan White Bean with Chicken	Split Pea V	Chicken Noodle	Beef Noodle	Tomato Soup V
GRILLE SPECIAL	Turkey Reuben with Coleslaw	Chicken Cutlet with Lettuce & Tomato served with Fries	Peppers, Eggs and Potato Torpedo V	Bratwurst & Sauerkraut Torpedo with Fries	California Turkey Burger on Wheat Roll with Pasta Salad
DELI SPECIAL	Three Cheese Hoagie V	Roasted Asparagus, Peppers, Zucchini & Feta Wrap V	Buffalo Chicken Salad Wrap	Roast Beef, Swiss, Arugula, Roasted Peppers & Horseradish	Turkey, Ham, Swiss & Bacon on Sourdough Bread Club
PANINI	Italian Chicken Panini	Buffalo Popcorn Shrimp Wrap V	Mushroom, Swiss & Onion Burger Panini	Chicken Cutlet, Gorgonzola and Roasted Pepper Quesadilla	BBQ Pulled Pork Panini

MENU SUBJECT TO CHANGE WITHOUT NOTICE

CLICK HERE FOR A PRINTABLE WEEKLY MENU

WEEKLY

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Comments: commteam@pppl.gov ◆ **PPPL WEEKLY** is archived on the web at: http://www.pppl.gov/ppplweekly.cfm