

At PPPL THIS WEEK

TUESDAY, FEB. 25
PPPL Colloquium

4:15 p.m. ♦ MBG Auditorium

 Quantum Mechanics and Spacetime
Geometry

 Juan Maldacena, Institute for
Advanced Study

WEDNESDAY, FEB. 26
PPPL Colloquium

4:15 p.m. ♦ MBG Auditorium

Genetic Hitchhikers

Gregory Lang, Lehigh University

THURSDAY, FEB. 27
Carebridge Seminar

Noon ♦ Visualization Room, A104

College Planning an Overview

SATURDAY, MAR. 1
Science on Saturday Lecture

9:30 a.m. ♦ MBG Auditorium

 Can Studying Infinite Dimensional
Space Help Us Improve
Healthcare?

Dr. David Scheinker, MIT

UPCOMING EVENTS
Mar. 5
PPPL Colloquium

4:15 p.m. ♦ MBG Auditorium

Nuclear Proliferation

Bruce Blair, Princeton University

Mar. 8
Science on Saturday Lecture

9:30 a.m. ♦ MBG Auditorium

 From MOOC to MIIC: Can Effective
Learning Be Big?

Mung Chiang, Princeton University

PPPL CIO Steve Baumgartner is westbound after retirement

By Jeanne Jackson DeVoe

It's not so much that PPPL's Chief Information Officer Steve Baumgartner wants to retire. It's more that he and his wife want to change their address. To Arizona.

Baumgartner has been at PPPL since 2001 and has been chief information officer since 2005. He served as chair of the National Laboratories Chief Information Officers (NLCIO) group until a few weeks ago.

He will officially retire April 1. But you won't find him at the Lab after March 7 because he and his wife, Kristin, will be packing their belongings a week later to head to Prescott, Ariz., where they are building their dream house.

"It's just something to get off the treadmill a little bit – sort of a freedom," Baumgartner said. "My wife and I have both worked hard for a long time. The goal is not to retire, the goal is to live where we want to live."

Numerous IT contributions at PPPL

Adam Cohen, PPPL's deputy director of operations, said Baumgartner has "performed admirably" and made numerous contributions as PPPL's chief information officer and department head. "He led many changes that have benefited PPPL, from our cyber security program improvements, to our pursuit of cloud solutions, to ensuring continuity of our Internet connections, to upgrading our mid-scale computing, and more," he said. He noted that Baumgartner also "forged great relationships with the IT groups on campus and with his peer CIOs across the DOE complex."

"In the ever-changing field of IT, it was wonderful to have Steve with his knowledge and drive pushing forward to keep us as much as possible at the leading edge of the field," Cohen added. "His dedication to PPPL and support of his staff was always evident. He will be a tough act to follow and he will be missed!"

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Steve Baumgartner

Videographers film APS video at PPPL



Sound technician Paul Alfe, left, set up a camera, while videographer Christopher Landy works on the lights, as Jeanne Jackson DeVoe, center, chats with Amitava Bharcharjee, head of PPPL's Theory and Computation Department, before his interview. **(MORE PHOTOS PAGE 4).**

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Solution to puzzle could lead to more powerful microchips

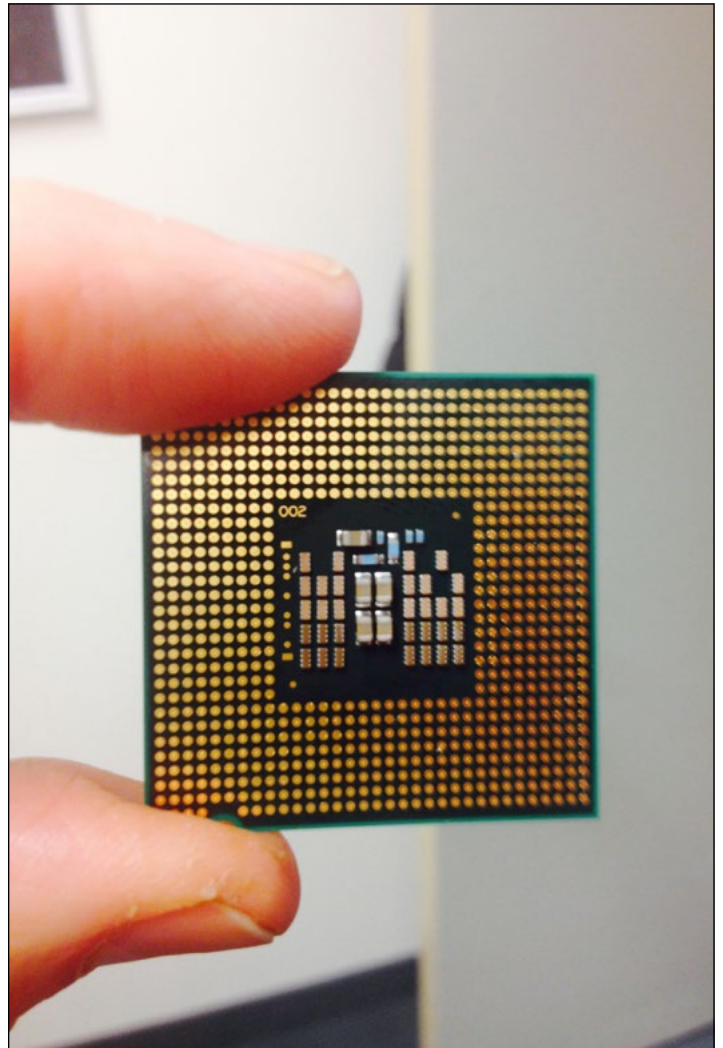
By John Greenwald

Research conducted by PPPL physicist Igor Kaganovich in collaboration with Dmytro Sydorenko of the University of Alberta provides a key step toward the development of ever-more powerful computer chips. The researchers discovered the physics behind a mysterious process that gives chipmakers unprecedented control of a recent plasma-based technique for etching transistors on integrated circuits, or chips. This discovery could help to maintain Moore's Law, which observes that the number of transistors on integrated circuits doubles nearly every two years.

The recent technique utilizes electron beams to reach and harden the surface of the masks that are used for printing microchip circuits. More importantly, the beam creates a population of "suprathermal" electrons that produce the plasma chemistry necessary to protect the mask. The energy of these electrons is greater than simple thermal heating could produce — hence the name "suprathermal." But how the beam electrons transform themselves into this suprathermal population has been a puzzle.

The PPPL and University of Alberta researchers used a computer simulation to solve the puzzle. The simulation revealed that the electron beam generates intense plasma waves that move through the plasma like ripples in water. And these waves lead to the generation of the crucial suprathermal electrons.

This discovery could bring still-greater control of the plasma-surface interactions and further increase the number of transistors on integrated circuits. Insights from both numerical simulations and experiments related to beam-plasma instabilities thus portend the development of new plasma sources and the fabrication of increasingly advanced chips. 📷



An integrated-circuit microchip with 456 million transistors.
(Photo by John Greenwald)

Windows® XP

computers are being upgraded to

Windows® 7.

*After March 20, Windows XP will no longer be supported by PPPL
(there will be loss of network connectivity.)*



Baumgartner

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Marc Cohen, who was recently named head of IT's User Support and Operations, said Baumgartner helped shepherd technological changes such as the switch to Google apps, which they worked on together. "I think Steve did an awesome job," Cohen said. "He's one of these people that never looked for recognition, who did an amazing job but wasn't necessarily looking for fanfare."

Cohen said Baumgartner also has a quiet but effective management style. "I've learned from him," he said. "He's very good at absorbing information and being fair and listening to both sides."

Before coming to PPPL in 2001, Baumgartner had been an accountant and held several positions in accounting and finance for W.R. Grace & Co. at divisions in New York, Reno, Nev.; Chicago, and Somerville, N.J. He was a software consultant for EPICOR software from 1993 until he came to PPPL.

He arrived at PPPL in 2001 to implement a new business software system. He recalled that when he took the reins as CIO in 2005, PPPL's IT system was much smaller. "In 2005, our scientific computing power was 20 PCs in the Fusion Computing Center and now we have a cluster that's well over 2,000 nodes," he said.

Upgrading PPPL's cyber security

There were also far fewer cyber security requirements a decade ago. Many requirements were added after 9-11. In Baumgartner's first year on the job as CIO, the DOE sent around teams to assess whether laboratories were complying with the Federal Information Security Management Act of 2002 (FISMA). The team rated PPPL in the bottom third of all the national laboratories for cyber security based on the team's first assessment in 2005. But by the time the DOE did another assessment three years later, PPPL had made enough improvements for the DOE to rate it in the top third.

"We, of course, will miss him tremendously," said Jim Hirsch, PPPL's Cyber Security Officer. "He made very significant contributions in so many ways. Without his leadership, commitment and guidance, the cyber security program would not be what it is today."

Another challenge has been updating the Lab to accommodate rapidly growing use of smart phones and iPads, Baumgartner said. The IT Department was able to improve web access throughout PPPL and PPPL's grounds after the Site Protection Division obtained a \$190,000 grant to install a Wi-Fi system. It allows ESU officers to use the DOE's security software program called "Night Owl," which gives them access to a virtual map of the Laboratory's 88-acre campus on their iPads.

Finding new ways to accommodate staff members' smart phones and other mobile devices, while also maintaining PPPL's security and meeting DOE's requirements will continue to be one of the IT Department's greatest challenges in the future, Baumgartner predicted.

It's not always easy to implement changes at PPPL because there are so many variations in the type of personal computers staff members use, and they can be quite opinionated about their preferences, Baumgartner said. "From that standpoint it brings out different qualities," he said. "You can't afford to look at something with blinders on. You have to look at what the implications are Lab-wide."

Resigns from DOE's National Labs' CIO group

In addition to leaving his job at PPPL, Baumgartner also stepped down as chairman of the National Laboratories Chief Information Officers group, which is made up of chief information officers from the Department of Ener-



Steve & Kristin Baumgartner, shown here hiking in the Mingus Mountains near Jerome, Ariz., plan to spend plenty of time hiking after they retire.

gy's 17 national laboratories. He held that position for one year and resigned before he could become past chair.

The decision to move to Arizona has not been a sudden one, Baumgartner said. He and his wife bought property in a golf community in Prescott, Ariz. in 2004 and have been traveling there once a year ever since.

The Baumgartner's new home in Prescott is in a community called Talking Rock Ranch, which has a golf course, tennis court and fitness center and is located one mile above sea level. The community takes its name from ancient petroglyphs in a canyon on land owned by the Yavapai Indians.

Baumgartner delights in recounting the history of Prescott, which was the territory capital in the 19th century before Arizona became a state. Doc Holiday and Wyatt Earp both came through Prescott. The town still boasts an old saloon called "the Palace," which has swinging wooden doors and the original bar that patrons saved from a fire.

The Baumgartners will live in a rented home in Talking Rock Ranch, while their home is being built on a street called "Johnny Guitar Road," which was named for an old cowboy movie set in Arizona. They'll have plenty of time to socialize with the many friends they've made in the area over their years of vacationing there.

Time for golfing and hiking

Baumgartner is so enthusiastic about his future home state that his email address is "Steve4az." His wife and he are both huge golf enthusiasts and they love hiking. He said he's looking forward to hiking the Grand Canyon, which is just two hours away, and rafting down the Colorado River, which is also a few hours from Prescott. "Those are the types of things we want to do and we just need more time to do them," he said.

But Baumgartner said he has a twinge of regret he won't be at PPPL to oversee numerous future projects such as moving many IT systems onto the cloud and replacing systems that were installed under his watch several years ago. "You do those things every day and you're not going to be part of the next thing happening," he said. "But it will never end. There's always going to be some project to be done. You just have to say it's time for me to go and someone will carry on and take things over." ☐

APS Videographers at PPPL

A team of videographers was at PPPL on Tuesday, Feb. 18, to film a five-minute video about PPPL for the American Physical Society Conference, which will be held in Denver from March 3 to 7. The video is being produced by WebsEdge, a video production company based in London and Washington D.C. that specializes in producing videos for Conference TV and online TV channels at conferences. The company has produced numerous videos for universities and government and non-profit groups. Among them: “We Put Molecules to Work,” about MIT’s Department of Chemical Engineering, and a video on the South Asian Network for Development and Environmental Economics, or SANDEE. (http://www.websedge.com/about_us/).

Videographer Chris Landy and sound technician Paul Alfe spent the day at PPPL where they interviewed physicist Steve Sabbagh in the NSTX-U Control Room, Amitava Bhattacharjee, the head of the Theory Department, in the Vis Wall Room; physicist Angie Capece in the Surface Science and Technology Laboratory; graduate student Jeff Parker in the Vis Wall Room, and Director Stewart Prager at the NSTX-U test cell. They also filmed “B roll” at the Lithium Tokamak Experiment and the Magnetic Reconnection Experiment and at the coil winding facility. 📹



The videographers interviewed PPPL Director Stewart Prager in the NSTX test cell, where they were hosted by John DeLooper, head of Best Practices and Outreach. From left to right: DeLooper, videographer Landy, Prager, and sound technician Alfe. (Photo by Steve Raftopolous).



From left to right: Landy, Sabbagh, Jackson DeVoe and Alfe, prior to Sabbagh’s interview in the NSTX Control Room.

Now available at Signature Sandwiches



THE CARBONARA

Chicken, Bacon, Mozzarella Cheese, Mushrooms, Alfredo Sauce on French Bread

\$5.50



THE STELLARATOR

Chicken, Mozzarella Cheese, Cucumbers, Kalamata Olives, Tomato, Banana Peppers, Lettuce, Tzaziki Sauce on a Pita

\$4.95



THE PLASMA

Chicken, Bacon, Swiss Cheese, Lettuce, Tomato, Ranch Dressing on French Bread

\$5.25

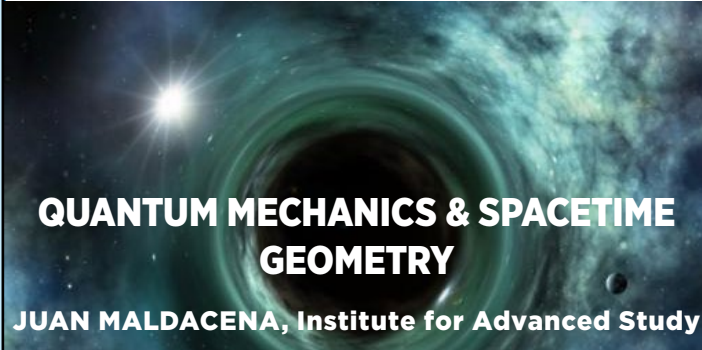


THE TOKAMAK

Turkey, Cheddar Cheese, Lettuce, Tomato, Chipotle Mayo on French Bread

\$5.25

COLLOQUIUM



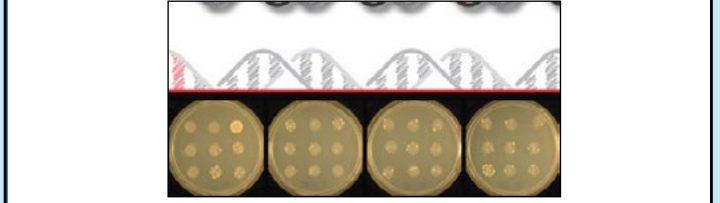
QUANTUM MECHANICS & SPACETIME GEOMETRY

JUAN MALDACENA, Institute for Advanced Study

Tuesday, Feb. 25

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

COLLOQUIUM



GENETIC HITCHHIKERS

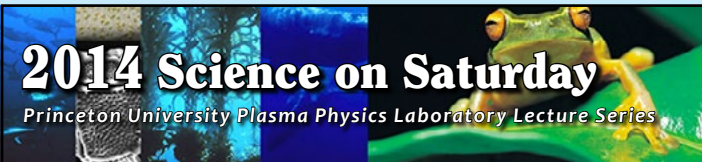

GREGORY LANG, Lehigh University

Wednesday, Feb. 26

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

2014 Science on Saturday

Princeton University Plasma Physics Laboratory Lecture Series

Can Studying Infinite Dimensional Space Help Us Improve Healthcare?

DAVID SCHEINKER
MIT

Saturday, March 1

9:30 a.m. • MBG Auditorium

2014 Science on Saturday

Princeton University Plasma Physics Laboratory Lecture Series




From MOOC to MIIC: Can Effective Learning Be Big?

MUNG CHIANG
Princeton University

Saturday, March 8

9:30 a.m. • MBG Auditorium

BROCK Café Menu

at PPPL

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, *Chief Manager*

COMMAND PERFORMANCE
CHEF'S FEATURE

MON. 24
FEB.



Fried Chicken with Mashed Potatoes, Country Gravy and Veggies

Apple Pancakes with Cider Syrup

Tomato Basil Bisque

Roast Beef Melt, Onions & Mozzarella on French Bread, Beans

Chopped Veggie Antipasto Wrap, Cheese, Olives, Tomato & Lettuce

Italian Sausage, Pepperoni, Peppers and Onions Stromboli

TUE. 25
FEB.



Cheese Tortellini Pomodoro Served with Tossed Caesar Salad

Chicken, Spinach, Mushroom, Cheddar Omelet with Potatoes

Beef Noodle

Kielbasa & Kraut Torpedo served with Fries

Chopped Chicken Caesar Sammie

Peppers & Eggs with Potatoes Torpedo Smothered in Cheese

WED. 26
FEB.



Taco Salad Bowl with All Your Favorite Taco Toppings

Strawberry Shortcake English Muffin French Toast

French Onion

Cajun Catfish Po' Boy with Slaw, Remoulade Sauce & Hush Puppies

BLT with Avocado, Smoked Ham & Mayo on Whole Grain Toast

Honey Dijon Grilled Chicken with Spinach & Tomato on a Baguette

THU. 27
FEB.



Apple Cranberry Stuffed Porkloin, Sweet Potatoes & Roasted Vegetables

Grilled Cheese with Bacon, Ham and Fried Egg

Cream of Turkey

Chicken Cacciatore, Peppers, Onions, Mushrooms on a Torpedo Roll

Classic Tuna Club Sandwich with Hard Cooked Egg

Eggplant Parmesan on Ciabatta Bread

FRI. 28
FEB.



Lemon Garlic Shrimp and Grits

Banana Chocolate Chip Pancakes

Vegetarian Split Pea

Philly Style Portobello Cheese Sandwich

Chicken Carbonara Torpedo, Bacon, Mushrooms, Mozzarella

Hot Open-Faced Roast Beef on Texas Toast with Mashed Potatoes & Gravy

MENU SUBJECT TO CHANGE WITHOUT NOTICE

VEGETARIAN OPTION

[CLICK HERE FOR A PRINTABLE WEEKLY MENU](#)

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