

At PPPL THIS WEEK



OCTOBER 8

Columbus Day

OCTOBER 8-13

**24th IAEA Fusion Energy
Conference ♦ San Diego, California**

OCTOBER 9

**Fire Protection Demonstration
11:00 a.m. – 1:30 p.m.**
The Site Protection Division will hold fire extinguisher and fire hose demonstrations in the LSB Circle Driveway for Fire Protection Week.

OCTOBER 11

**4:30 p.m. ♦ Jadwin Hall, A10
Princeton University Physics
Department Colloquium**
Joshua Shaevitz
Princeton University Physics Department
and the Lewis-Sigler Institute for
Integrative Genomics

*Collective pattern formation and group
behaviors from molecules to populations*

UPCOMING EVENTS

October 15
Open Enrollment Begins

October 15-18
IAEA Demo Programme Workshop
University of California at Los Angeles

October 17
**4:15 p.m. ♦ MBG Auditorium
Colloquium**
Dr. Alan C. Cummings
California Institute of Technology
Voyager's Interstellar Mission
Refreshments at 4 p.m.

October 24 ♦ 10 a.m. to 2 p.m.
PPPL Health Fair ♦ LSB Lobby
Information Sessions
11:30 a.m. & 1:30 p.m. ♦ MBG Auditorium

Grant-winning PPPL Center goes to the edge for answers

By John Greenwald

A center based at PPPL has won a highly competitive \$12.25 million grant to develop computer codes to simulate a key component of the plasma that fuels fusion energy. The five-year DOE award could produce software that helps researchers design and operate facilities to create fusion as a clean and abundant source of energy for generating electricity.

The grant will go to the Center for Edge Physics Simulation (EPSI) headed by C.S. Chang, a principal research physicist at PPPL. The award will fund an advanced computer simulation of the complex and turbulent conditions at the edge of the plasma, the hot, electrically charged gas that scientists confine inside magnetic fields in facilities called tokamaks. Controlling the little-understood plasma edge is crucial for maintaining the confinement so that fusion can take place.

The task of confinement has many everyday parallels. "If you want to confine soup, the bowl should not leak, wobble or be broken by the heat," said Chang, who joined

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C.S. Chang with a high-performance computing cluster at PPPL.

A PPPL "safety guru" will fly Chinook helicopters in Afghanistan

By Jeanne Jackson DeVoe



Gerrish poses in front of a Chinook helicopter in Kandahar in 2003. (Photo provided by Neil Gerrish)

In just a few weeks, Neil Gerrish will kiss his fiancée goodbye, put away his books from graduate school, and travel nearly 7,000 miles away to a war zone in Afghanistan, his fourth posting in nine years.

As a member of the Bravo Company's 2nd 104th Aviation Unit, he will be heading to Texas to complete his mobilization training and then going to Kandahar where he will be training crew chiefs and other flight engineers in the maintenance and upkeep of the newest version of the huge, twin engine, dual rotor Chinook helicopters – the CH47F, and flying on board the helicopters himself.

At age 36, Gerrish has served overseas four times in his 19 years as a member of the Connecticut Army National Guard, and each time it is wrenching. But this time, he had to try to finish up his projects at work, and delay his wedding to his fiancée Tracy, an administrator at a charter school in Trenton. He also put off continuing his graduate

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A PPPL “safety guru” will fly Chinook helicopters

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work at New Jersey Institute of Technology, where he was just nine credits short of getting a master’s degree in occupational safety and health engineering.

An obligation to serve

“It’s tough,” he said. “I feel as though I have a duty to be here and complete work and help folks out but at the same time I have an obligation that I made a long time ago and I’m proud to serve.”

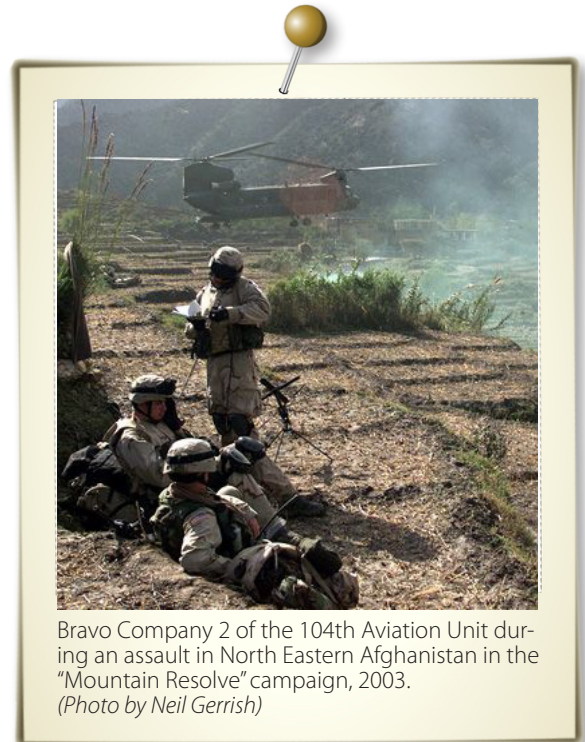
Gerrish’s job at PPPL is all about safety. He reviews safety procedures on everything from the NSTX upgrade project to construction and renovation. As Gerrish puts it, “I am the safety guru.” Being called to duty means scrambling to wrap up those projects. “I’ve got five or six different things I’m trying to complete and trying to finish those up and to put everything on hold is challenging,” he said.

The latest of three generations

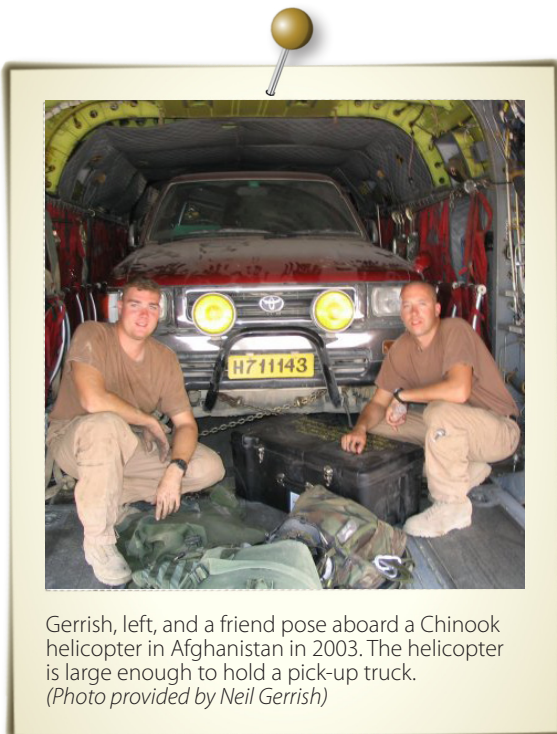
Gerrish joined the Connecticut Army National Guard in 1993. He is the latest of three generations in his family to serve with the Guard. His grandfather, Walter Gerrish, served when they still had horse-drawn artillery units in the early 1920s and his father, Gordon, was a combat medic with an airborne unit in the late 1950s. His twin brother, Ken, is a member of the Guard who has served three tours, and several uncles and cousins have also served with the Connecticut Guard.

Gerrish has trained as a helicopter mechanic, flight engineer and flight engineer instructor. His first overseas mission was one year in Afghanistan from February, 2003 to February, 2004, where his company supported troops taking part in “Operation Enduring Freedom.” One of their missions was flying the massive Chinook helicopter, which can carry 25,000 pounds, to recover downed aircraft. They also used the helicopter to deliver heavy equipment such as trucks to the troops.

The living conditions in Afghanistan were difficult -- dusty, dirty and hot, with temperatures climbing to 120 degrees during the summer. Winters in the mountains were extremely cold and Gerrish remembers dropping soldiers off in an area with six feet of snow.



Bravo Company 2 of the 104th Aviation Unit during an assault in North Eastern Afghanistan in the “Mountain Resolve” campaign, 2003.
(Photo by Neil Gerrish)



Gerrish, left, and a friend pose aboard a Chinook helicopter in Afghanistan in 2003. The helicopter is large enough to hold a pick-up truck.
(Photo provided by Neil Gerrish)

After a one-year tour, he was relieved to come home in 2004 to Connecticut where he worked as an industrial hygiene field technician at Hartford Hospital in Hartford, Conn.

But the following year, Gerrish was deployed again, this time for a short but difficult mission to the Sinai Desert in Northern Egypt in September through November of 2005. There he supported training missions for NATO and Coalition forces who were going into combat in Iraq. He lived in a building with no power, no running water and no windows and was relieved when he was sent home after two months.

Leaving PPPL for “Operation Iraqi Freedom”

After his last tour, Gerrish, armed with a bachelor’s degree in industrial engineering from Central Connecticut State University, took a job at PPPL in 2006. He was at PPPL for three years when his company was mobilized again to support “Operation Iraqi Freedom” in February of 2009, as a flight engineer instructor and platoon sergeant who supervised 30 soldiers.

He and his platoon flew helicopters in combat missions all over Iraq, transporting soldiers, equipment and supplies. He worked 14-hour days on a 10-day rotation in 135-degree heat when he first arrived, working from 4 p.m. until 6 a.m. Even when the schedule improved, there was no real down time because as a supervisor Gerrish was honor-bound to make sure that everyone maintained “situational awareness” in the battle zone. “I was lucky if I was able to down a cup of coffee and get something to eat, maybe sleep a little, take a little nap,” he recalled.

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Grant-winning PPPL Center goes to the edge for answers

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PPPL in April, 2011, from the Korea Advanced Institute of Science and Technology and the Courant Institute of Mathematical Sciences at New York University. “You must have very good confinement at the edge of the soup,” Chang said.

Developing confinement methods

The EPSI team, consisting of leading physicists, mathematicians and computer scientists from some dozen U.S. research institutions, together with researchers at PPPL, will develop models simulating conditions at this important region of the plasma. Participants include PPPL staff physicists Stephane Ethier, Seung-Hoe Ku, Jianying Lang and Daren Stotler, and postdoctoral fellows Devon Battaglia and Robert Hager.

The federal Department of Energy grant is “terrific for the Laboratory because it allows us to work in the forefront of the simulation of the edge region of fusion plasmas,” said PPPL Director Stewart Prager. “This code could go a long way toward modeling and understanding this pivotal region.”

Working on one of the world's fastest computers

The EPSI team will work on Titan, one of the world’s fastest scientific supercomputers, which is housed at the DOE’s Oak Ridge National Laboratory. Titan will have a peak performance of more than 20 petaflops—the technical term for a million billion calculations a second. The machine will have the combined power of well over two million home computers and the ability to perform in one day what a single desktop device would take more than 5,000 years to complete. The EPSI team also will work on Hopper, a supercomputer at the DOE’s E.O. Lawrence Berkeley National Laboratory.

The new computer code will build on software that a previous Chang-directed center, the Center for Plasma Edge Simulation, created for an earlier version of the Titan system called Jaguar. PPPL’s Seung-Hoe Ku led the previous code-writing effort and will serve as simulation leader for the current one. PPPL’s Daren Stotler led the atomic physics section of the previous project and will serve in that capacity for the current one. DOE funding for both projects has come through the department’s Scientific Discovery through Advanced Computing (SciDAC) program and been awarded by the Office of

Fusion Energy Science and the Office of Advanced Scientific Computing Research.

The EPSI code will seek to model the harsh pressure, temperature, density and flow conditions that mark the edge of intensely hot fusion plasmas, and cause them to grow unstable, leak from their magnetic confinement and damage tokamak walls. Such contact can drive impurities back into the plasma and block fusion reactions, which occur when the atomic nuclei—or ions—in the plasma fuse and release energy. “We will simulate what the plasma will do in contact with the wall,” Chang said.

Some useful data could come from collaboration with a team of researchers headquartered at the University of Tennessee, Knoxville, and the Oak Ridge National Laboratory. The team won a separate SciDAC grant to study materials for the tokamak wall. “We plan to use their information,” Chang said.

The EPSI researchers will also test their model against data gleaned from actual fusion experiments to see if the model’s predictions are accurate. “If the code proves to be validated for all the relevant aspects of today’s experiments, then we would have the confidence to project it for the future,” Chang said.

A guide for next-generation fusion facilities

The validated model could serve as a guide to developers of next-generation fusion facilities, which will need to confine hot plasmas at temperatures of over 100 million degrees and cope with extreme heat fluxes against their walls. Such facilities include ITER, the huge tokamak that the European Union, the United States and five other countries are building in Cadarache, France. Plans call for ITER to produce 500 million watts of fusion energy for up to 500 seconds by the late 2020s.

Efforts such as the EPSI project could thus serve as a pathway to fusion power. “When combined with theory and experiment, large-scale simulation is becoming an increasingly important and viable opportunity for understanding plasma,” noted PPPL Director Prager. “So this really will make PPPL a significant contributor to this important area of research.”



Gerrish at his send-off party at PPPL.

A PPPL “safety guru” will fly Chinook helicopters

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One of the positive things to come from his 19 years of service is that his company has become like a family. Gerrish says he has been to numerous weddings and birthday parties of fellow soldiers and their loved ones. He is thankful that despite all the danger, his company has never lost a soldier.

There is an element of adventure to being deployed overseas, Gerrish says. He gets to do unusual work in areas of the world that most people only see or read about in the news. But while he is stoic about leaving, he can’t help thinking ahead to a year from now. “I’m looking forward to coming home and coming back to PPPL,” he said. “And I’m looking forward to spending time with family and friends and completing my degree and getting married.”

OPEN ENROLLMENT IS STARTING



PPPL's open enrollment for insurance and other benefits will be from Oct. 15 through Nov. 16 and PPPL'ers will soon be receiving a packet of information about changes in the benefits plan.

The packets explaining the details of the new plans will be mailed out to employees on Oct. 12, said Kim Mastromarino, the Human Resources generalist who is in charge of open enrollment. Employees can also review their benefits at www.princeton.edu/selfservice starting on Oct. 15.

Princeton University is streamlining its healthcare plans this year and is offering three plans instead of five. A new Princeton Health Plan (PHP) will replace the existing preferred provider (PPO) and point-of-service plans (POS). The current Aetna HMO will still be available and has been improved to cover 100 percent of preventive services.

The Princeton Health Plan will still offer UnitedHealthcare and Aetna as network choices and will provide in and out-of-network services. Employees who do not choose a plan will be automatically enrolled in the Princeton Health Plan with their current provider, Mastromarino said.

Employees who have Health Benefit Expense Accounts (HBEAs) should be aware that they do not roll over and they must sign up for the

accounts during open enrollment. The maximum amount employees can contribute to their HBEA will decrease from \$5,000 to \$2,500 due to requirements under the Patient Protection and Affordable Care Act.

The prescription plan will remain the same but the name of the company that handles prescriptions has changed from Medco to Express Scripts due to a merger.

There will be more information about what the health insurance plans offer at a PPPL Health Fair on Wednesday, Oct. 24 from 10 a.m. to 2 p.m. in the Lyman Spitzer Building lobby, with information sessions at 11:30 a.m. and 1:30 p.m. in the MBG Auditorium.

Human Resources will provide information to employees about their employees' UniversityNetID, password and Self Service. Anyone who has questions about their ID or their healthcare plan should contact Mastromarino, kmastrom@pppl.gov, extension 2101.

REGISTER NOW FOR ELECTRIC UTILIZATION TRAINING

Electric Utilization Training is being offered on Oct. 17 from 8:30 a.m. to 2:30 p.m. in the MGB Auditorium. To register, please email Sue Hill, shill@pppl.gov or call 2227.



PPPL Café 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.

MONDAY - OCT. 8

TUESDAY - OCT. 9

WEDNESDAY - OCT. 10

THURSDAY - OCT. 11

FRIDAY - OCT. 12

**COMMAND PERFORMANCE
CHEF'S FEATURE**



Pasta Bolognese w/
Vegetable & Garlic
Bread



Create Your Own
Grilled Chicken
Caesar Salad



Teriyaki Glazed
Salmon w/ Home-
Fried Potatoes &
Vegetable



Chicken Cacciatore
over Pasta



Hungarian Pork
Chops over Rice

Early Riser

Chocolate Chip Pancakes w/
Pork Roll

The XL Bacon, Tomato, Onion &
Cheese Omelet w/ Potatoes

Pork Roll, Egg & Cheese on an
Oversized Biscuit

Sausage, Egg, Cheese, Onions,
Peppers, Potato & Salsa Burrito

Gina's Breakfast Casserole

Country Kettle

Chicken Noodle 🍎

African Peanut Soup 🍎

Hearty Onion 🍎

Turkey Chili 🍎

Loaded Potato 🍎

Grille Special

Grilled Turkey & Swiss Hoagie
w/ Fries

Double Bacon Cheeseburger w/
Onion Rings

Chicken Parmesan Quesadilla

Sloppy Joe Sandwich w/ Fries

Mediterranean Crispy Chicken
Wrap w/ Fries

Deli Special

Create Your Own Open-Faced
Toasted Hoagie

Grilled Chicken BLT on a Kaiser Roll

Southwestern Chicken Salad on a
Multigrain Roll

Egg Salad, Bacon, Swiss, Lettuce
& Tomato Wrap

Crispy Chicken Breast, Provolone,
Red Pepper & Balsamic

Panini

Salami & Three Cheeses w/
Tomato & Spicy Mustard

Turkey, Pepper Jack, Banana
Peppers, Tomato & Spicy Mayo

Ham, Provolone, Red Pepper,
Onion, Tomato & Balsamic

Napoli Vegetable 🍎

Tuna, Cheddar & Tomato

MENU SUBJECT TO CHANGE WITHOUT NOTICE

WEEKLY

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Comments: comteam@pppl.gov ♦ PPPL WEEKLY is archived on the web at: <http://www.pppl.gov/ppplweekly.cfm>