

# HOTLINE

The Princeton Plasma Physics Laboratory is a United States Department of Energy Facility

## PPPL to Participate in DOE Advanced Computing Program

**P**PPPL has been awarded funding under the new “Scientific Discovery through Advanced Computing (SciDAC)” Program. Nationally, 51 projects will receive a total of \$57 million this year from the DOE to advance fundamental research in several areas, including climate modeling, fusion energy sciences, chemical sciences, nuclear astrophysics, high-energy physics, and high-performance computing. The projects involve collaborations among 13 DOE laboratories and more than 50 colleges and universities.

SciDAC is an integrated program that will help create a new generation of scientific simulation codes. The codes will take full advantage of the extraordinary computing capabilities of terascale computers (computers capable of doing trillions of calculations per second) to address ever larger, more complex problems. The program also includes research on improved mathematical and computing systems software that will allow these codes to use modern parallel computers effectively and efficiently. Additionally, the program will develop “collaboratory” software to enable geographically separated scientists to effectively work together as a team, to control scientific instruments remotely, and to share data more readily.

### New Energy Sources for the Future

“This innovative program will help us to find new energy sources for the future, understand the effect of energy production on our environment, and learn more about the fundamental nature of energy and matter,” said Secretary of Energy Spencer Abraham. “A major strength of many of the projects is a partnership between scientists at the Energy Department’s national laboratories and universities.”

PPPL researchers will participate in four SciDAC projects focused on the development and improvement of physics models and computer resources needed for integrated simulations of plasma confinement systems and data analysis. Three of the projects will focus on fundamental phenomena including electromagnetic-wave-plasma interactions, plasma turbulence, and macroscopic stability of magnetically confined plasmas. The fourth project aims to develop a software “collaboratory” allowing workstation and supercomputer resources to be shared among fusion experiments for high-speed data analysis. The project will include tasks relating to security, high-performance distributed computing, and networked collaborative visualization of scientific results. All totaled, PPPL will receive approximately \$2 million for the four projects during the next three years. ●

### PPPL 50th Anniversary

*In honor of the Laboratory’s scientific achievements during the past five decades, a symposium entitled “A Celebration of High-temperature Plasma Physics” is scheduled at PPPL September 12-14. All employees are invited to a reception on Thursday, September 13, at 3:30 P.M. in the Lobby. Everyone is welcome to attend the technical talks in the Auditorium throughout the three-day event. When the symposium schedule is finalized, it will be posted on the web, and staff will be notified. See the PPPL web site ([www.pppl.gov](http://www.pppl.gov)) for the preliminary announcement.*

## PPPL Hosts Next Generation of Scientists

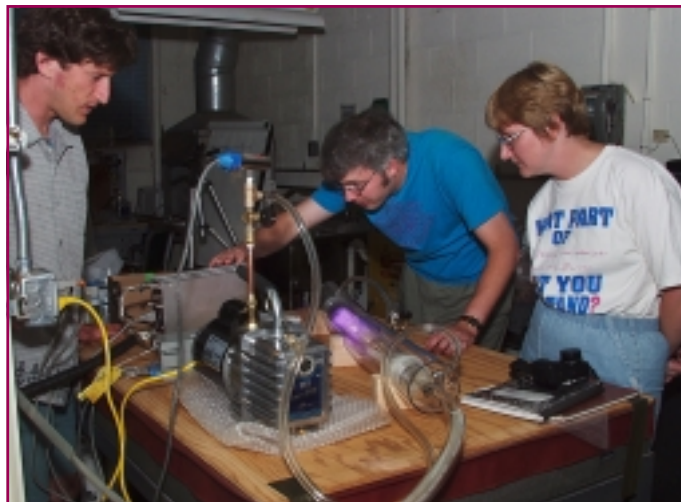


This summer, PPPL hosted 13 Energy Research Undergraduate Laboratory Fellowship (ERULF) students, including, from left: (back) Ethan Shoshan, David Pace, Eric Harkleroad, Andrew Osgood, Thomas Kramer; (middle) Abby Oelker, Monet Barley, Kristi Hultman, Annie Ahnert; (front) Michael Pagliorola, Craig Grube, James Austin, and Siddharth Patel. PPPL was one of many laboratories participating in ERULF, a national program offered by the DOE's Office of Science to prepare the next generation of scientists and engineers. PPPL staff served as mentors to the undergraduate college students on research projects such as "The Effect of Nearby Conducting Structure on the Macroscopic Stability of NSTX Plasmas." ●

## Teachers Come to PPPL for Summer Workshops



Twenty-one Trenton elementary and middle school teachers looked at life science issues and pollution, and were involved in "inquiry-based hands-on science," during a one-week Teaching Science Matters workshop at PPPL in July. The workshop was provided through a collaboration among Princeton University, PPPL, and the Invention Factory Science Center in Trenton. Teaching Science Matters is funded by an Eisenhower Professional Development grant from the New Jersey Department of Education. ●



PPPL's Andrew Post-Zwicker (left) works with teachers Mark Brooks Hedstrom (middle) and Paulette Struckman on building a plasma source. The teachers were among 12 enrolled in Plasma Camp (officially called the Plasma Science and Fusion Energy Institute), an intensive two-week summer program of lectures, lab work, and curriculum design held at PPPL in July. The institute helps high school physics teachers develop curricular materials, making the subject of plasma and fusion accessible to high school students. ●