

# HOTLINE

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

## Johnson Leads U.S. ITER Diagnostics Team

**P**PPPL's Dave Johnson has been named the U.S. ITER Diagnostics Team Leader. Selected by the U.S. ITER Project Office for this newly created position, Johnson is responsible for managing the design and procurement of the diagnostic devices to be supplied to ITER by the U.S. team. Johnson had been the U.S. ITER Diagnostics Area Coordinator — coordinating the work for the U.S. — and the U.S. Delegate to the Diagnostics Working Group — representing the U.S. on the international Diagnostics Working Group.

U.S. ITER Project Office Head Ned Sauthoff said, "We in the U.S. ITER Project Office were very pleased to have such a skilled person as Dave within our system of partner laboratories: Dave is a world-class authority in the design of diagnostic instruments, effective in the management and implementation of such systems, and experienced in the complex multi-cultural environment of ITER. Correspondingly, we appointed him to the position of Diagnostics Team Leader to lead this challenging activity aimed at producing high-performance instruments in the difficult radiation environment in partnership with the other six ITER parties."

As Area Coordinator, his first responsibility was to pull together the cost estimates for the ITER diagnostics. In addition, he has been involved in international working groups considering how to procure the diagnostic devices and the shield plugs that provide these devices with access to the plasma and also provide a radiation shield for the surrounding areas. Diagnostic devices measure plasma characteristics in experiments. ITER will employ about 40 of these devices.

Two years ago, Johnson began serving as U.S. Delegate to the Diagnostics Working Group, charged with designing diagnostic procurement packages and proposing a plan for allocating diagnostics to the ITER parties. Johnson said the feasibility of repackaging the diagnostics came up then. At the time of the ITER final design review, completed about five years ago, the procurement of the diagnostic systems were separate from that of the shield plugs. The international diagnostics group recognized that an important part of the diagnostic systems includes how the systems fit into the shielding plugs. "One can't design port plugs without knowing or designing the diagnostics that fit into these plugs," said Johnson. The working group suggested repackaging



*Dave Johnson*

designs so that the diagnostics and their related plugs would be developed together to ensure compatibility.

"We looked at how to repackage and then divide the diagnostics," Johnson said. Now the party responsible for a particular diagnostic is also responsible for its corresponding port plug.

When it came to dividing the diagnostics responsibilities among the ITER parties, the ITER Central Team Diagnostics Leader discussed with each party which diagnostic systems each most valued — the U.S. wanted 15 percent of the di-

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## ITER

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agnostics — and then set allocations to meet those targets and priorities, arriving at agreeable solutions. “The U.S. is allocated 16 percent of the total diagnostics responsibility for ITER — a significant role in diagnostics. We have the second largest role next to Europe’s,” said Johnson. “I’m very happy with this allocation.” The U.S. portion includes six instrumentation packages and five port plugs. There are generally between two and six diagnostics in each plug.

Johnson lauded the cooperative spirit of the international group. “I’m very encouraged by our participation with the other parties. It has been very collaborative,” he noted.

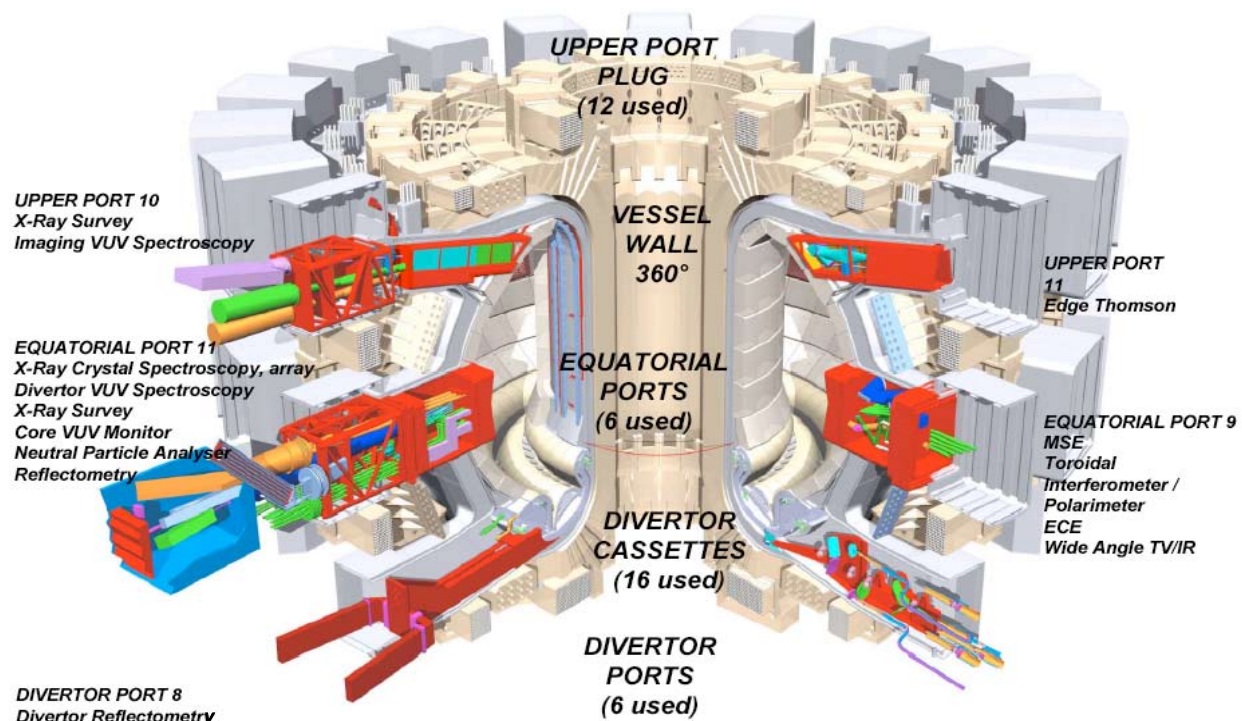
With a career devoted to diagnostics, Johnson seems well prepared for the tasks ahead. “I’ve always really enjoyed developing new measurements,” he said.

Since 1997, he has served as Division Head responsible for diagnostic development in support of the PPPL experimental activities in fusion facilities at PPPL and around the world. Johnson has managed diagnostic development for the National Spherical Torus Experiment (NSTX) at PPPL, typically implementing several new diagnostics each year, many

in collaboration with researchers from other institutions. He has led the planning for diagnostics for the National Compact Stellarator Experiment (NCSX), which is being constructed at PPPL. Over the years, he also has participated in the collaborative development of diagnostics for JFT-2M in Japan, Alcator C-Mod at MIT, the Korean Superconducting Tokamak Advanced Research (KSTAR) project in Korea, and the Joint European Torus (JET) in England.

In addition to his other efforts, Johnson also has been heavily involved with the development of ITER diagnostics. His ITER involvement began with designing diagnostics as a member of the ITER Diagnostics Expert Group in the Engineering Design Activity (EDA) phase. In 2001 he was appointed the U.S. Lead Delegate of the International Tokamak Physics Activity Diagnostics Topical Group and was later named U.S. Delegate of the Diagnostics Working Group and U.S. ITER Diagnostics Area Coordinator. In February of this year, he became U.S. ITER Diagnostics Team Leader.

“I’ve always felt that diagnostics are vital to the success of any program and ITER diagnostics are extremely challenging, but really vital to burning plasma research. I’m happy to be a member of the team trying to make it a success,” Johnson said. ●



Examples of ITER diagnostic systems and diagnostic port plugs.

## Hotline

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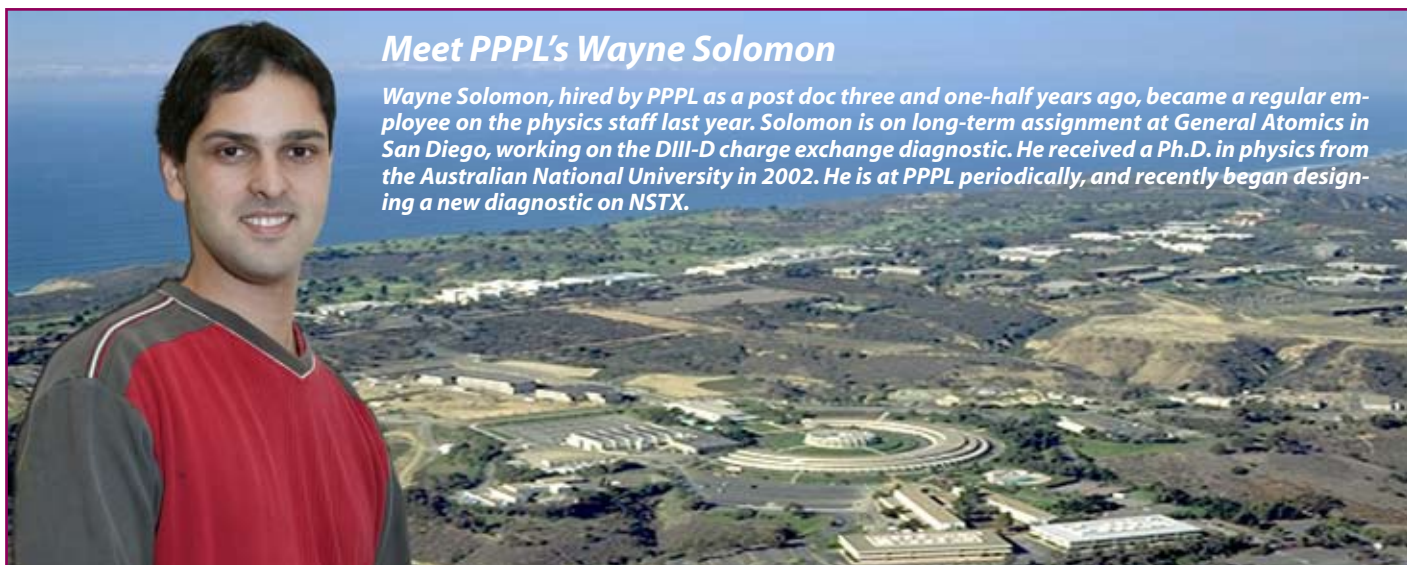
# Science-on-Saturday Talks Draw Record Crowds



**P**PPPL's 2006 Science-on-Saturday series, which featured eight lectures beginning in January, concluded on March 11. The series drew record crowds, averaging 380 people at each talk. Attendance was up by 12 percent over the previous year.

Special thanks for this success goes to Science-on-Saturday organizers Ronnie Hatcher and James Morgan. "Ronnie and James did a wonderful job getting exciting speakers for this year's program, focusing on timely and varied topics," said PPPL External Affairs Head John DeLooper.

Above, Thomas Brettell, Director of the New Jersey State Police Office of Forensic Sciences, presents, "The Science Behind Forensics," on January 21, which attracted 490, the most any Science-on-Saturday talk has brought. At right, Rutgers University Genetics Professor Jody Hey delivers a talk, "The Evolution of Species: Insights from Fish, Chimpanzees and Humans." ●



## Meet PPPL's Wayne Solomon

*Wayne Solomon, hired by PPPL as a post doc three and one-half years ago, became a regular employee on the physics staff last year. Solomon is on long-term assignment at General Atomics in San Diego, working on the DIII-D charge exchange diagnostic. He received a Ph.D. in physics from the Australian National University in 2002. He is at PPPL periodically, and recently began designing a new diagnostic on NSTX.*

## Spotlight



**Name:** David Gates

**Position:** Principal Research Physicist, with responsibility for plasma controls on the National Spherical Torus Experiment (NSTX). Gates also is involved in research that focuses on various plasma instabilities, the loss of plasma particles and energy in plasma, and plasma performance optimization.

**Quote:** “I came to PPPL eight years ago after spending four years at Culham Science Centre in the UK, working on the COMPASS-D and START fusion experiments.”

Gates, who grew up in Wisconsin, received a bachelor’s degree in physics from the University of Wisconsin at Madison in 1986 and a Ph.D. in applied physics from Columbia University in 1994. He has had a lifelong interest in science and physics, and became enamored with fusion as a young college student in Wisconsin.

“I started working on fusion when I was about 19 and was at college. I was working on the Phaedrus tandem mirror [plasma physics] experiment at the University of Wisconsin. I ended up as a co-author on a paper about self-emissive probes, which give off currents by themselves,” says Gates. “By the time I was 21, I began working on space physics and then nuclear physics. I went back to plasma physics in graduate school, after briefly considering a Ph. D. in solid state physics.”

Gates, an experimentalist who is an NSTX physics operator, describes a typical day at work. If NSTX is running, he operates the machine about 30 percent of the time and spends the rest of the time debugging and fixing problems with upgrades and control systems. “NSTX upgrades and controls are very demanding,” he notes. Gates also runs high-beta and steady-state operation experiments on the machine. On a non-operations day, Gates analyzes data from the experiments and writes papers.

The physicist says working at PPPL is rewarding and challenging. “It’s really easy to get things done here. I think part of the reason is that the Lab is run by scientists. They understand the ideas and what’s necessary.”

Gates also enjoys working with graduate students. Presently, he and PPPL’s Roscoe White are thesis advisors to Princeton University graduate student Patrick Ross. Earlier, Gates served as an advisor to Adam Rosenberg. “Working with students is great. I wish I had more time to do this.”

**Other interests:** Gates enjoys spending time with his wife, Karen, and their two sons, 11-year-old Robert and 9-year-old



James. The family recently renovated and put an addition on their Princeton Township home, which now includes a combination music room-study for David. That’s where he often picks up his acoustical guitar — playing folk, blues, pop, and classical — and does the *New York Times* crossword puzzle every night on line. “The puzzle is the easiest on Mondays and it takes me about 9 minutes to finish. On Saturdays it is the hardest and it takes me longer,” Gates says.

He and his wife are putting the finishing touches on their newly renovated home so Gates is busy building things around the house and getting the garden in order. He squeezes in frequent jogs around the neighborhood to stay in shape.

A recently acquired recreational endeavor has been acting, where this past year Gates landed the starring role in the Lab’s Holiday Skit, *The Robfather*, playing Vito Rob Goldstone. Some say his knack for accents has taken him far in his acting career at PPPL. Skit watchers might well remember his adeptness at managing a Brandoesque mobster accent in 2005, and the Scottish brogue when he took the stage as “Scotty” in the 2004 production of *Rob Trek*. Walking down the PPPL stairs on a recent morning to meet his wife for lunch, he can’t resist reprising his roles — and tossing in a few extra accents — as he jumps from New York mobster to Russian scientist to a Scot and then an Irishman, and slipping back into Scottish. “The Irish accent is the hardest to maintain,” he says.

*Aye, laddie ... Make him an offer he can’t refuse.* ●