

HOTLINE

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

Goldston Gives State-of-the-Lab Talk and Presents Awards to Researchers

P PPL Director Rob Goldston delivered his State-of-the-Lab address on December 6, discussing PPPL's scientific programs, internal operations, and the future. "A following wind may be rising," said Goldston, thanking the Lab's line of "great supporters" in Congress, the Department of Energy, and the White House.

The Director said the Lab is producing wonderful scientific results, noting that the National Spherical Torus Experiment's achievement of 35 percent beta is just one example. He stressed that staff must improve our ability to do our jobs "safely, safely, safely," and concluded by thanking everyone for their tremendous support. "We have a great team ... The good ship fusion sails forward," said Goldston.

Following the talk, the Kaul Foundation Prize for Excellence in Plasma Physics and Technology and the PPPL Distinguished Research and Engineering Fellows honors were presented. The awards ceremony was followed by a party for staff in the Lobby.

Kaul Prize

PPPL engineers Erik Perry and Ronald Strykowski received the Kaul Prize for Excellence in Plasma Physics Research and Technology Development. The award recognizes the two for "managing the Tokamak Fusion Test Reactor Decommissioning and Decontamination (D&D) Project, which was completed on schedule and under budget, as well as demonstrating that a large and complex fusion facility can be safely dismantled without significant radiological exposure to workers or harm to the environment."

"Erik Perry and Ron Strykowski have done an outstanding job leading a first-rate team. Their success



Princeton University physics professor and University Research Board Chair Will Happer and PPPL Director Rob Goldston presented the PPPL Distinguished Research and Engineering Fellow Awards and the Kaul Foundation Prize for Excellence in Plasma Physics and Technology Development following the State-of-the-Lab talk in December. From left are Happer, Engineering Fellow recipient Robert Parsells, Goldston, Kaul Prize recipients Erik Perry and Ronald Strykowski, and Distinguished Fellow recipient John Krommes. The awards presentation was followed by a party in the Lobby.

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Goldston

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story is a tribute to their skill as technical managers, and speaks volumes to the possibilities for fusion as a clean and safe energy source," said Goldston.

The three-year, \$40.3 million TFTR D&D project was completed in September for \$3.6 million under budget. TFTR, one of the world's largest and most successful experimental fusion machines, stood 24 feet tall with a diameter of 38 feet. TFTR's use of a fuel mixture containing tritium, a mildly radioactive form of hydrogen, added to the challenge of its safe and environmentally sound removal. PPPL's engineering team developed an innovative system — Diamond Wire Cutting used in conjunction with a concrete filling technique — to disassemble the 100-cubic yard vacuum vessel. This technology reduced worker radiation exposure, airborne emissions, and waste generation.

Perry, who was the project manager for the TFTR D&D Project, is the Construction Branch Head at PPPL. He received a bachelor's degree in mechanical engineering from Cornell University in 1974, a master's degree in aerospace structures from the University of Michigan in 1975, and a certificate in management from Mercer County Community College in 1982. After working at Lockheed Missiles and Space Company, he joined the staff at PPPL. He has more than 25 years' experience in the design, fabrication, installation, and testing of large, one-of-a-kind, high-technology devices. This experience includes analytical and hands-on work, as well as management from the design through installation phases of a project. Perry is a member of the American Society of Mechanical Engineers and of the American Nuclear Society, and a former member of the American Institute of Aeronautics and Astronautics. He has been listed in the American Men and Women of Science, Jane's Who's Who in Aviation and Aerospace, Who's Who in the East, Who's Who in Frontier Science and Technology, and Who's Who in Technology Today.

Strykowski is a project controls manager at PPPL, with responsibilities with the National Compact Stellarator Experiment project, the Engineering Department, and Business Operations. He received a bachelor's degree in civil engineering from Penn State University in 1973 and a professional engineering license in 1979. Prior to joining PPPL, he worked in industry supporting the design and construction of nuclear power plants in the area of cost and schedule control. He came to PPPL in December of 1982, two weeks before TFTR's first plasma was produced, and he has supported the implementation of project control systems on many PPPL projects.

Princeton University awards the Kaul Prize to recognize a recent outstanding technical achievement in plasma physics or technology development by a full-time, regular employee of PPPL. It includes a cash award of \$2,000 for each individual. Nominations for the award are submitted to the Prize Selection Committee, which includes the Princeton University Provost, the Chair of the Princeton University Research Board, the PPPL Director, PPPL Deputy Director, and PPPL Chief Scientist.

Former PPPL Director Ronald C. Davidson created the prize by giving a portion of the gift he received as the 1993 recipient of the Award for Excellence in science, education, and physics from the Kaul Foundation to Princeton University to endow the Kaul Foundation Prize for Excellence. This is the sixth time the prize has been given.

PPPL Distinguished Fellows

PPPL researchers John Krommes and Robert Parsells are this year's PPPL Distinguished Research and Engineering Fellows, respectively.

Krommes, a physicist, was recognized for his pioneering and creative research on the modern theory of plasma turbulence and for outstanding pedagogical contributions to Princeton University's Graduate Program in Plasma Physics. Parsells, an engineer, was cited for his extraordinary ingenuity in the solution of practical engineering problems, including the adaptation of diamond wire cutting technology for the TFTR D&D Project.

Krommes graduated summa cum laude from Pennsylvania State University in 1971 with a bachelor's degree in engineering science and received a Ph.D. in astrophysical sciences from Princeton University in 1975. Before joining the staff at PPPL in 1977, he was a visiting member at the Institute for Advanced Study in Princeton. Krommes is a principal research physicist at PPPL and a lecturer with the rank of professor at Princeton University in the Department of Astrophysical Sciences, and an associated faculty member at the University's Program in Applied and Computational Mathematics. He is a fellow of the American Physical Society and the author of more than 70 publications in scientific journals.

"Krommes is a national and world leader in the fundamental understanding of turbulent phenomena, an area of research of critical importance for fusion energy and for the understanding of a broad range of phenomena in nature. He is a greatly loved teacher, and a mainstay of our educational program," said Goldston.

Parsells received a bachelor's degree in civil engineering and a master's degree in mechanical engineering from the New Jersey Institute of Technology. Before joining PPPL in 1982, he worked in the chemical process

industry and later established an engineering consulting company, where he provided services to corporate research departments. Parsells has 20 years of experience in plasma and fusion engineering and process engineering at PPPL, where he has been involved in the design, testing, and fabrication of various diagnostics and components used in fusion and plasma-related research. He was a major contributor to the design and implementation of the diamond wire cutting technology for the TFTR D&D Project. PPPL won the “Outstanding Engineering Achievement Award” from the New Jersey Society of Professional Engineers for developing this technology.

Said Goldston, “Bob Parsells cleverly adapted the technique of diamond wire cutting to our application — and thereby greatly broadened the potential scope of this ‘hands-off’ technique for disassembling large components. This technique may see wide application outside of fusion applications.”

The Distinguished Research and Engineering Fellow Program, funded by the U.S. Department of Energy, was created to recognize members of the Laboratory’s research staff, as well as engineering and scientific staff, for their accomplishments. Fellows receive one-time gifts of \$5,000 and qualify for priority in regard to their research and engineering programs. ●



Andrea Moten (right) serves cake in the Lobby following the State-of-the-Lab presentation.



PPPL Director Rob Goldston delivers the annual State-of-the-Lab talk in the MBG Auditorium.

American Physical Society Awards Yamada and Ji

PPPL scientists Masaaki Yamada and Hantao Ji recently received the American Physical Society's (APS) 2002 Award for Excellence in Plasma Physics Research. The award recognizes a recent outstanding achievement in plasma physics research. Yamada and Ji, along with former PPPL graduate students Troy Carter and Scott Hsu, were cited "for the experimental investigation of driven magnetic reconnection in a laboratory plasma."

Magnetic reconnection is the breaking and topological rearrangement of magnetic field lines in a plasma. It is one of the most fundamental processes of plasma physics and has important relevance to fusion research, as well as to the physics of the earth's magnetosphere and solar flares. The APS honored Yamada, Ji, Carter, and Hsu for research conducted on the Magnetic Reconnection Experiment (MRX) at PPPL. The four received the award during the Society's Division of Plasma Physics annual meeting in November in Orlando, Florida.

PPPL Director Rob Goldston said, "The work by Masaaki Yamada, Hantao Ji, Troy Carter and Scott Hsu on the Magnetic Reconnection Experiment has eluci-

dated a physical problem of high importance in plasmas — large and small — those in our laboratories aimed at producing fusion energy and those of astrophysical scale such as solar flares. The interplay of scientific fields that this represents is healthy for both."

Yamada

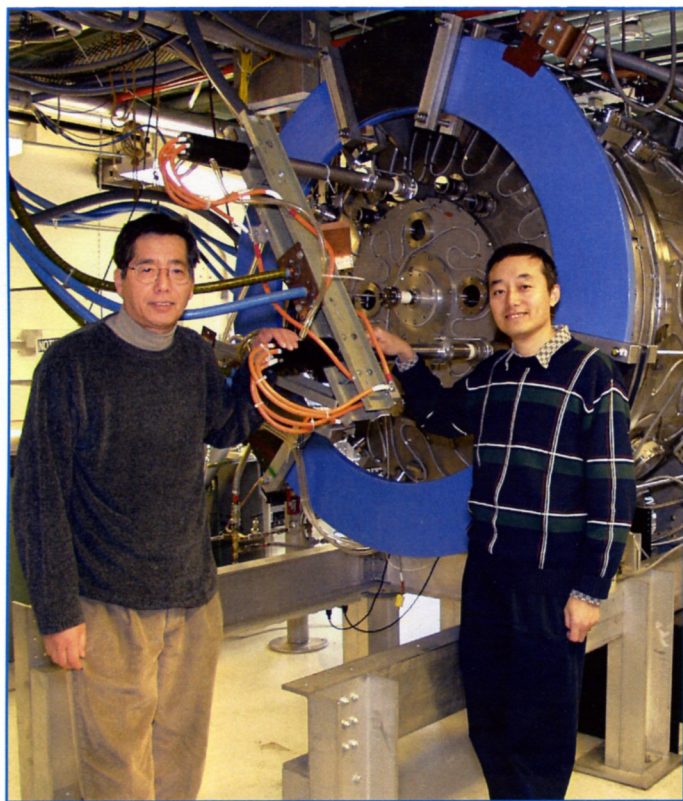
Yamada, a PPPL Distinguished Research Fellow and an American Physical Society Fellow, is the Head of the MRX research program. He received a bachelor's degree and a master's degree from the University of Tokyo and a Ph.D. in physics from the University of Illinois, joining PPPL in 1973 as a postdoctoral fellow. He carried out many basic plasma physics experiments before pioneering MRX in the early 1990's to explore the fundamental physics of magnetic reconnection. Yamada has been the doctoral thesis advisor for a dozen graduate students of Princeton University, the University of Tokyo, and Purdue University and has held invited professor positions at Ecole Polytechnique Federale de Lausanne, Switzerland, as well as at Kyoto University and the University of Tokyo in Japan.

Ji

Ji received a bachelor's degree in physics from Ehime University in Japan in 1985 and a doctor of science degree in physics from the University of Tokyo in 1990. He conducted plasma physics research at the National Institution for Fusion Sciences in Japan and at the University of Wisconsin-Madison before coming to PPPL. Since 1995, he has been conducting research on the MRX. Ji has published many papers on laboratory studies of basic physics phenomena observed in space, astrophysical, and fusion plasmas. He won a Kanbayashi International Fellowship (1985-1986), an Iwatani Memorial Fellowship (1986-1990), and a Department of Energy Outstanding Mentor Award in 2002. Ji is a member of the American Physical Society, the American Geophysical Union, the American Association for the Advancement of Science, and the Japan Society of Plasma Science and Nuclear Fusion Research.

Carter and Hsu

Carter is now an Assistant Professor in the Department of Physics and Astronomy at the University of California, Los Angeles. Hsu recently joined the P-24 Plasma Physics Group at Los Alamos National Laboratory in New Mexico as a Frederick Reines Fellow. ●



Masaaki Yamada (left) and Hantao Ji, winners of the APS 2002 Award for Excellence in Plasma Physics Research, are next to the Magnetic Reconnection Experiment.

Kaye Named APS Fellow



P PPL's Stan Kaye (above) was named a Fellow by the American Physical Society (APS) during the APS-Division of Plasma Physics meeting in November. Kaye, a principal research physicist at the Lab, was cited for his pioneering investigation of the characteristics of strongly heated plasmas confined by magnetic fields. The honor is a lifetime appointment. The APS rules limit the maximum number of Fellows selected each year to be no more than half of one percent of the Division membership.

Kaye, who heads the National Spherical Torus Experiment (NSTX) Physics Analysis Division at PPPL, received a bachelor's degree in physics and math from Hamilton College in Clinton, New York, a master's degree in geophysics and space physics from the University of Washington in Seattle, and a Ph.D. in space plasma physics from the University of California at Los Angeles. He joined the staff at PPPL in 1980, and has worked on several experiments at the Lab.

"Stan is a veteran in physics analysis of fusion plasmas and has made crucial contributions to the NSTX Project and Program since its inception and in its research program. This is a well deserved and timely honor," said NSTX Program Head Martin Peng.

Added NSTX Project Head Masa Ono, "Stan became internationally well known due to his seminal work in the area of plasma confinement behavior in strongly heated tokamak plasmas, which is one of the central research topics on magnetic fusion research today. For NSTX since 1992, as the head of the NSTX physics team, Stan played a pivotal role by leading a team of physicists and engineers to formulate the NSTX physics requirements and the predictions of its performance, based on his broad knowledge in tokamak physics. His work helped to set a solid foundation on which NSTX is designed and built, and from which the research plan is conceived." ●

Simmons Honored

P PPL engineer Bob Simmons is the recipient of the first Engineering and Technology Management Leadership Award of the American Society of Mechanical Engineers (ASME). Simmons (below with award) received the honor at the 2002 International Mechanical Engineering Congress and Exposition in New Orleans in November. The award recognizes him for "extraordinary leadership in raising the value and significance of engineering and technology management."

The honor has been permanently designated as the Robert T. Simmons Leadership Award, which will be given annually. It was established to recognize Simmons for exhibiting strong leadership within the ASME. Simmons developed a strategic plan for the ASME's Engineering and Technology Management Group, noting the group's importance in providing organizational and management guidance to mechanical engineers and ASME members. "While most of the ASME groups focus on basic engineering skills and accomplishments, our group is concerned with 'how' the work is accomplished, striving to ensure that it is done right," said Simmons, vice president of the ASME Engineering and Technology Management Group.

Simmons, who joined PPPL's staff in 1989 as a project control manager for the Advanced Projects Department, is presently the Systems Engineering Support Manager for the National Compact Stellarator Experiment (NCSX). "For many years, Bob has been a leader in raising the standard for engineering and technology management at PPPL. We are very pleased that the ASME is highlighting the importance of this area and giving Bob some well-deserved recognition for his leadership," said NCSX Head Hutch Neilson.

Simmons received a bachelor of science degree from the Naval Academy and a master's in business administration from Ohio State University. Before coming to PPPL, he worked in private industry as a project manager for nuclear power plant services and served nine years on U.S. Navy nuclear submarines in various capacities. He retired from the Navy as a reserve captain in 1991. ●



Science-on-Saturday Talks for 2003

This year's Science-on-Saturday wintertime lecture series at PPPL kicked off on January 18 with "Cryptography: Secret Codes, Spying, and E-Commerce," by Princeton University Professor Edward W. Felten. More than 400 attended. The series is free and open to the public. Lectures begin at 9:30 a.m. and take place at the Lab's MBG Auditorium. Below is the remaining schedule for 2003.

	Science on Saturday Princeton University Plasma Physics Laboratory Lecture Series 
February 1	MOBILE WIRELESS NETWORKING: FROM PLANES TO TANKS TO ROBOTS by Dr. Jason K. Redi, Division Scientist, BBN Technologies, Cambridge, MA
February 8	THE SCIENCE AND ETHICS OF HUMAN EXPERIMENTATION by Dr. Andrew Post-Zwicker, Princeton Plasma Physics Laboratory, Science Education Program, Princeton, NJ
February 15	HOMO ERECTUS FROM AFRICA TO ASIA by Prof. Susan Anton, Dept. of Anthropology, Rutgers University, New Brunswick NJ
February 22	HOW EVOLUTION ENGINEERED A BRAIN by Prof. Dmitri Chklovskii, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY
March 1	NO PROGRAM — NEW JERSEY REGIONAL SCIENCE BOWL®
March 8	THE SEARCH FOR SUPERSYMMETRY by Prof. Edward Witten, Institute for Advanced Study, Princeton, NJ
March 15	GLOBAL CLIMATE CHANGE AND LAND-ATMOSPHERE INTERACTIONS by Dr. Kirsten Findell, Geophysical Fluid Dynamics Lab, Princeton, NJ

Tour Guides Honored at Pizza Party

The Lab's tour guides who gave tours during Fiscal Years 2001 and 2002 were honored at a Tour Guide Recognition Pizza Party on December 6 in the Commons. Following lunch, PPPL Director Rob Goldston presented the guides with certificates of appreciation and PPPL shirts.

The event was given to thank the volunteer guides for serving as "ambassadors of the Laboratory." About 3,700 people toured PPPL during FY01 and 02, including students, Lab neighbors, and members of professional groups.

Honorees

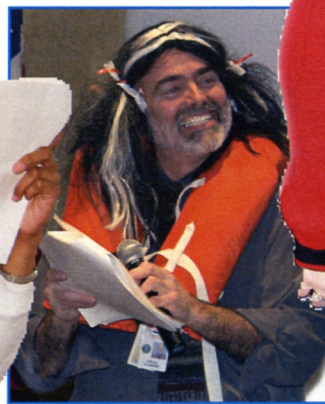
The honorees included Michael Bell, Stefano Bernabei, Bill Blanchard, Ray Camp, Henry Carnevale, Doug Darrow, Bill Davis, John DeLooper, Larry Dudek, Eric Fredrickson, Virginia Finley, David Gates, Charlie Gentile, Geoff Gettelfinger, Ronnie Hatcher, Alex Ilic, Hantao Ji, Bob Kaita, Ben LeBlanc, Paul LaMarche, Rajesh Maingi, Tom McGeachen, Jon Menard, Tobin Munsat, Steve Paul, Erik Perry, Andrew Post-Zwicker, Hans Schneider, Bill Slavin, Tim Stevenson, Al von Halle, Irving Zatz, and Stewart Zweben. ●



The tour guides at the Tour Guide Recognition Lunch are, from left, beginning with back row of three next to window, Irving Zatz, Tim Stevenson, and Paul LaMarche; next row from back, Bob Kaita, Hantao Ji, Andrew Post-Zwicker, Henry Carnevale, Bill Blanchard, Ray Camp, Hans Schneider, and Doug Darrow; next row, Bill Slavin, Ben LeBlanc, Al von Halle; next row, Steve Paul, Bill Davis, Tom McGeachen, and Stewart Zweben; next row, Virginia Finley and Alex Ilic; and, front, PPPL Tour Program coordinator Patti Wieser.

Thanks, Tour Guides!

PPPL's Holiday Revelers



On December 20, the Lab held its annual staff Holiday Party. The bash included food, festivities, music by the Rhythm Kings with PPPL's Ed Synakowski, and a skit, "Robigan's Island," featuring the not-ready-for-tritium PPPL Players. The event concluded with a raffle. From left, beginning with top row, are Andrew Post-Zwicker (left) and Arlene "crayola is not a cosmetic" White in the skit, staff enjoying the party, Sonja Patterson in festive reindeer gear; second row from top, Jon Menard, Regina Worthy, and Al von Halle in the skit; third row from top, The Rhythm Kings in the Lobby with Ed Synakowski at far right, Ray Camp (right) and Gretchen Zimmer in the skit, and Sonja Patterson (at left) and PPPL Director Rob Goldston with the raffle; bottom, everyone enjoys the holiday fare. A special thanks goes to the Holiday Party Committee, which included Joanne Bianco, Mary Ann Brown, Greg Czechowicz, Geoff Gettelfinger, Sue Hill, Steve Iverson, Dolores Lawson, Andrea Moten, Susan Murphy-LaMarche, Sonja Patterson, Al von Halle, and Sharon Warkala.

