First Director Appointed for New Stanford Ultrafast Science Center

By Heather Rock Woods

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See whole story...

New Deputy Directors Appointed at SSRL

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See whole story...

Einstein Music Gala
Director's Corner

By Jonathan Dorfan

Bravo PEP-II and BABAR!

The B Factory—PEP-II and BABAR—is "enjoying" a welcome four-week "rest" after a highly successful first leg of Run 5. The second leg will commence on November 11, 2005 and run through to late Summer 2006. By then, BABAR expects to have doubled the total data sample logged from late 1999 to the Summer of 2004.

In its last week of running before the current shutdown, PEP-II flexed its mighty muscles and broke performance record after performance record. Ever thirsty for more data, BABAR scooped up every event that PEP-II delivered, likewise breaking its all-time records. Sensing the impending shutdown, on October 8 and 9, PEP-II broke through the peak luminosity barrier of $10^{34}$ cm$^{-1}$ sec$^{-1}$ on three separate occasions. Not to be outdone, BABAR logged data on each of the three historic occasions. In achieving $10^{34}$ cm$^{-1}$ sec$^{-1}$, PEP-II set a world record for stored positron current of 2.995 amps! In that same week, both PEP-II and BABAR broke their all-time single shift and 24-hour integrated luminosity records. PEP-II was designed to deliver 120 pb$^{-1}$ per day (and that was considered highly optimistic)—on October 7th, it delivered 728 pb$^{-1}$! With each new high-water mark, the excitement in the two control rooms was electric; never before have I seen so many beaming faces at the daily 8am meeting as on Monday October 10th. What a spectacular birthday present it was for me!

You might have imagined that the protracted post-accident shutdown and the once-in-fourty-three-year, three-day power outage shortly after turn-on would have dampened the spirits and enthusiasm of the SLAC staff. But the tremendous achievements of the B Factory are testament to the fortitude, dedication, talent and pride of the SLAC staff. Congratulations to you all—those in the PEP-II group, the BABAR Group, Linac and PEP-II Operations, and the extensive engineering and technical staff that maintain the facility. In a very real sense, everyone at SLAC owns this victory and you should each feel pride at these achievements. And I know that you are not done with setting new standards—I look forward with excitement to November 11 when we once again commence operations.

While BABAR adds more fresh data to its stockpile, the collaboration keeps pumping out new and often surprising results on the data logged through Summer 2004. So far this year, they have published over 60 journal articles—remarkably that is more than one publication per week! Never before have I witnessed such an outpouring of high energy physics results, all of it of outstanding quality, including several new discoveries. With twice the data anticipated by next Summer, we can look forward to yet another round of new revelations.

Bravo PEP-II and BABAR!
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By Heather Rock Woods

The growing new field of ultrafast science—which scrutinizes very tiny things that move and change at super fast speeds—gained momentum October 17 with the announcement of the first director for the new Stanford Ultrafast Science Center.

Phil Bucksbaum has joined the Stanford faculty to lead the center, which is a partnership between Stanford and the U.S. Department of Energy. Bucksbaum will be a member of the SLAC Faculty and the Applied Physics Faculty in the Stanford School of Humanities and Sciences.

Bucksbaum is an atomic physicist, and until recently directed the National Science Foundation's Center for the Advancement of Frontiers in Optical Coherent Ultrafast Science (FOCUS) at the University of Michigan. He remains the Peter Franken Distinguished University Professor of Physics in Michigan this academic year. He will work part-time at the Stanford center and part-time in Michigan during this transition year.

The center is bringing together scientists with distinct expertise to develop groundbreaking experiments for, and push the performance of, a revolutionary machine—the Linac Coherent Light Source (LCLS)—that combines x-ray and laser properties. By acting like a lightning-quick strobe light, this machine will essentially make x-ray motion pictures of phenomena no other instrument—or eye—can see.

LCLS, the world’s first hard x-ray free electron laser, will begin operating at SLAC in 2009. To capture the phenomenally small and fast in action, LCLS will create extremely brilliant x-ray pulses that last mere quadrillionths of a second (called femtoseconds).

“I’m very excited to be doing this,” said Bucksbaum. “The scientists our center will attract will together develop pioneering experiments and exceptional machine capabilities that will advance our understanding in myriad fields and bring wonderful benefits to society.”

LCLS experiments will offer new ways of studying and constructing nanotechnology devices; will capture the structural rearrangements of atoms in reactions like photosynthesis; will create and probe extreme states of matter found in the cores of giant planets and proto-stars; and will explore how proteins function as the engines of life, which is highly relevant to health and disease.

“The Ultrafast Science Center is the perfect tool to develop the unprecedented opportunities in ultrafast science, and Phil Bucksbaum is the ideal scientist to lead this initiative,” said SLAC Director Jonathan Dorfan. “The new center is part of the strong foundation for photon science at SLAC and on the rest of the Stanford campus.”

After graduating from Harvard, Bucksbaum received his doctoral degree from the University of California-Berkeley. He did his postdoctoral work, and became a principal investigator at AT&T Bell Laboratories before joining the Michigan faculty in 1990. His interest in the ultrafast world goes beyond x-ray science.
“My main research interest is fundamental interactions between light and matter at the atomic and molecular levels, and especially the control of quantum systems using ultrafast laser fields,” he said. “I develop new sources of ultrafast laser light in the infrared, visible, ultraviolet, and x-ray regions of the light spectrum.”

The Ultrafast Science Center, one of three main activities within the new SLAC Photon Science Directorate, received its first funding this fiscal year from the DOE Office of Science. In addition, in January the W. M. Keck Foundation awarded Stanford $1 million for developing research programs in the center focused in the area of ultrafast chemistry.

For more information, see: http://www.umich.edu/~amophys/bucksbaum.html and http://www-ssrl.slac.stanford.edu/ultrafast/
New Deputy Directors Appointed at SSRL

By Heather Rock Woods

SSRL Director Jo Stöhr recently appointed two deputy directors to fill his former position: Piero Pianetta, a physicist, and Britt Hedman, a chemist. Stöhr praised their scientific expertise and managerial skills.

Hedman received her doctoral, masters and undergraduate degrees in chemistry at the University of Umeå in Sweden, where she also was a research associate and assistant professor. She came to SSRL and Stanford in 1983, and became an assistant director in 2001 and a professor in 2002.

Hedman’s research field is bioinorganic chemistry, where she studies the electronic and geometric structures of active sites in metalloenzymes and bioinorganic mimetic systems to understand their function. With her staff, she develops methods and instruments for x-ray absorption spectroscopy (XAS), a vital tool for scientists using the x-rays generated at SSRL.

Pianetta has practiced science in Silicon Valley for more than 30 years. He received his masters and doctoral degrees in applied physics from Stanford. After graduation he worked at SSRL and then on the technical staff at Hewlett-Packard Labs before becoming a joint professor in Stanford’s Electrical Engineering Department and SSRL in 1982. He has been an assistant director since 1985.

Pianetta uses synchrotron radiation to characterize the surfaces and interfaces of semiconductor surfaces as well as develop tools for ultra-trace analysis using x-ray fluorescence. He is branching out to the areas of x-ray microanalysis and x-ray microscopy, using the new capabilities of SPEAR3.
GLAST Celebrates Completion of Tracker and Calorimeter Installation

By Lowell Klaisner

The GLAST team celebrated the installation of the 16th—and last—detector tower into the instrument this week. This telescope forms an image of the gamma ray sky by measuring the direction and energy of each gamma ray that passes through it (see http://www2.slac.stanford.edu/tip/2005/may6/glasttower.htm for an earlier story on the towers).

The direction is measured with a silicon strip detector called the tracker. The instrument has 800,000 of these strips to provide precise position information. It is the largest area silicon detector ever built, either for space or ground use. The tracker project was managed by Robert Johnson (UCSC). The modules were fabricated at INFN in Pisa, Italy. The Italian Space Agency (ASI) funded the fabrication effort and one half of the silicon (the other half was funded by the Japanese government). INFN funded the staff and much of the development work. SLAC personnel provided engineering and management support and supplied key components to the operation in Italy.

The energy of the gamma ray is measured with a cesium iodide detector called the calorimeter. Cesium iodide emits light when a particle passes through it and the light is measured by photodiodes at the end of the CsI logs. All of the logs together weigh approximately 1 and one-half tons (about half of the total weight of the instrument). The CsI was supplied by Sweden, the mechanical structure by France, and the units were completed and tested at the Naval Research Laboratory in Washington, DC. The calorimeter was managed by Neil Johnson of NRL.

The detectors were divided into 16 towers in the instrument for manufacturability. Now all of these towers have been assembled into the backbone of the instrument, the grid. This assembly and test work was done by the GLAST Integration and Test group at SLAC headed by Elliott Bloom.

Next the computers and software will be added to the instrument and then a system test will be conducted. After that, the instrument will leave SLAC in January to go to NRL for environmental tests. The GLAST launch is scheduled for the fall of 2007.

RELATED STORY: Last Chance to See the Satellite
Symmetry's Birthday Surprise

By David Harris

When the tenth issue of symmetry magazine came out on October 12, 2005, the magazine’s Web server crashed unexpectedly. The reason became instantly obvious when looking at the server statistics—symmetry had been ‘slashdotted’.

Well-known to tech-savvy Web users, slashdot.org highlights sites of interest around the Web, causing tens of thousands of devoted readers to check out the recommendations. And so, when the gallery of particle physics art from the latest symmetry was linked to the front page of slashdot, our server could not initially handle the demand since it was set to accept only 175 simultaneous connections—usually more than enough. Within minutes, the Web server was reconfigured and ready to handle the flow of readers from slashdot. And flow they did, with nearly 30,000 unique visitors in the first four hours after appearing on slashdot. Servers regularly crash when they are unexpectedly bombarded like this; the phenomenon is even known as the slashdot effect.

The chart below shows the number of visitors per day through the start of October. It peaks at nearly 30,000 on October 12, with another 20,000 visitors on the following day. Traffic dropped off as the story left slashdot’s front page but residual traffic is still higher than earlier in the month.

If there is any good reason for a web server to crash, it is because of sudden great interest, and the symmetry team found it a welcome way to celebrate one year of publishing the magazine.
Panofsky Prize Awarded to Jaros

John Jaros (THP) was awarded the 2006 APS W.K.H. Panofsky Prize in Experimental Particle Physics along with Bill Ford (U. Colorado), and Nigel Lockyer (U. Pennsylvania).

The award was given for their pioneering work at the MAC and MARK II experiments at SLAC that led to the measurement of the unexpectedly long lifetime of B mesons in 1983.

The award of the Panofsky prize has been twenty years in coming and is a greatly appreciated recognition of this seminal work.

For complete details, see: http://www2.slac.stanford.edu/tip/special/panofsky_prize.htm

John Jaros (THP), Panofsky Prize winner. (Photo courtesy of SciArts)
Human Rights of Scientists Award for Winick

Herman Winick (SSRL) and Zafra Lerman were awarded the 2005 Heinz R. Pagels Human Rights of Scientists Award on September 29 at the New York Academy of Sciences (NYAS). Both activists have long fought for the rights of scientists—especially in the Middle East. Shown (l to r) are: Winick, assistant director and professor emeritus of SSRL, Ellis Rubinstein, President NYAS, Joe Birman, Chair of NYAS Committee on Human Rights and Prof. at the City University of New York, Zafra Lerman, Professor at Columbia College (Chicago) and Chair of the Subcommittee on Scientific Freedom and Human Rights of the American Chemical Society’s Committee on International Activities and Torsten Wiesel, Chairman, NYAS Board of Governors and 1981 Nobel Laureate in Physiology. For more information, see: the NYAS web site (www.nyas.org) and http://www.nyas.org/programs/award.asp
Two Incoming Lanes at Main Gate

Beginning later this month, the SLAC Main Gate at Sand Hill Road will have both incoming lanes open during normal business hours—Monday through Friday from 6:00 a.m. to 6:00 p.m.

The right lane will be designated a ‘thru’ lane, and is to be used by vehicles with SLAC registration decals, or for persons showing SLAC Photo I.D. badges.

All others must use the left lane (the one closest to the Gate House) and will be stopped until the gate Officer has obtained the necessary information to allow the vehicle to enter the site.

If you do not have a decal for your vehicle, we strongly recommend you obtain one immediately, since this will speed your entry into SLAC each day. Stop by the Safeguards and Security Office at Bldg. 207 to get your vehicle decal.

Questions about gate access should be directed to Rick Yeager, Manager of Safeguards and Security, Ext. 5333, ryeager@slac.stanford.edu. An announcement giving the actual start date will appear in SLAC TODAY.
Questions About Investing for Your Retirement?

Representatives from Fidelity, TIAA-CREF and Vanguard will be holding free individual counseling sessions at SLAC throughout the year.

Please note the change in location. Appointments will be in B41, Room 130A (ACD Conference Room).

**Fidelity:** November 10, December 13  
**TIAA-CREF:** November 16, December 12  
**Vanguard:** November 9, December 15

Please call the investment company directly to set up an appointment.

Fidelity (800) 642-7131  
TIAA-CREF (800) 842-2007, or [www.tiaa-cref.org/moc](http://www.tiaa-cref.org/moc)  
Vanguard (800) 662-0106 ext. 14500, or [www.meetvanguard.com](http://www.meetvanguard.com)
Who Are You Going to Call?

By Heather Rock Woods

The Public Affairs Office has new procedures you need to know about!

To reserve the Panofsky Auditorium, send an e-mail to BOTH Herbert McIntye, herbert@slac.stanford.edu and Rod Reape, autech1@slac.stanford.edu. At the time you send in your request for an auditorium reservation, please let them know what your audio visual needs will be.

To reserve the Orange Room, please contact Linda White, lwhite@slac.stanford.edu. If you have any questions or suggestions regarding our new procedures, please call the SLAC Communication Office at ext. 2204.

Rod Reape and Herbert McIntye. (Photo by Diana Rogers)
Stanford Benefits Enrollment Period

October 26 – November 15

Mark these dates on your calendar:

November 3
10 a.m. – 3 p.m.
Panofsky Auditorium
Benefit Fair and Flu Shots

November 10 11:00 a.m. – noon
Orange Room, Central Lab (B40)
Informational Session

For more information see:
http://home.slac.stanford.edu/forstaff.html#benefits
New Mileage Rate Announced

Beginning October 1, the mileage rate for business use of cars is increased to 48.5 cents per mile, and applies to trips taken on or after October 1. Trips occurring before that date will be reimbursed at the prior rate of 40.5 cents per mile.

Contact Alison Twombly, Ext. 4346, at wombly@slac.stanford.edu

Fall Back!

Daylight Saving
Time Change
Sunday, October 30
at 2:00 a.m.

Set clocks back one hour before going to sleep on Saturday night. Also a good time to change smoke detector batteries!
For more information, see: http://webexhibits.org/daylightsaving/b.html
Order SLAC Logo Items from Land's End!

SLAC Volunteers will have the latest catalogs and can help you order from a full selection of embroidered items from Lands’ End
When? November 7 – 11, each day from Noon – 1:00 p.m.

Where? SLAC Guest House (Main Lobby)

Note: Delivery will be in early December

For more information, contact Doug Kreitz, Ext. 4550, dougkr@slac.stanford.edu
Corrective Actions for Safety Violations, April 1- September 30, 2005

SLAC Human Resources (HR) is supplying this information to keep the Lab informed of the actions taken to ensure adherence to our safety requirements. HR will provide this data periodically.

During the second and third quarters of 2005, SLAC implemented the corrective action process for employees in ten different safety related incidents and, in three of those cases, for their supervisors as well.

The incidents were: two cases of working outside one’s JHAM without a non-routine JHAM; four situations in which employees either smelled of alcohol or appeared impaired; two cases where employees did work without proper authorization; one incident in which the scope of work changed without a new JHAM being written; and one case where an employee used a chair for climbing. Four supervisors were also disciplined in the above situations for not being diligent in carrying out their supervisory duties. The corrective actions included four counselings, four verbal warnings, three written warnings, two final written warnings and a termination. In addition, four employees received verbal warnings for moving traffic violations.

Contact: Lee Lyon, ext. 2283, lyon@slac.stanford.edu
The SLAC Emergency Hotline Number:

1-877-447-SLAC (7522)

Please make a note of the SLAC Emergency Hotline number. In the event of an emergency, the most current information about SLAC will be a single phone call away.
MILESTONES

Awards
Jaros, John (THP), the 2006 W.K.H. Panofsky Prize in Experimental Particle Physics

Service Awards
10 Years
Ringwall, Andrew (ESRD), 10/30

15 Years
Cellamare, Richard (EP), 10/8
Grissom, Michael (ESH), 10/15
Hug, Michael (EPR), 10/29
Mao, Stan (RP), 10/29

30 Years
Kirby, Robert (PEL), 10/16
Roster, Bill (ESD), 10/16

35 Years
Pacheco, Ronald (CEF), 10/30

Retirements
Giannini, Leo (MFD), 9/9
Howell, Gary (CEF), 9/6
Jimenez, Miguel (CEF), 10/3
Lowrey, Lorenzo (CEF), 10/7

Deceased
Sweeney, Lennox (formerly with SCS), age 64, passed away on October 13, 2005

To submit a Milestone, see:

See Awards and Honors at: http://www.slac.stanford.edu/slac/award/
Einstein Music Gala at SLAC

On November 8, SLAC will host a special gala evening of music in celebration of the World Year of Physics, timed to coincide with the 100th anniversary of the publication of Albert Einstein’s three most important discoveries.

The event will be held in the Panofsky Auditorium. It will begin with a reception at 6:00 pm. Free tickets will be available on a first-come-first-serve basis at the Communications Office, please see Melinda Lee (Bldg. 40, Room G106) for your invitation.

Einstein said, “I often think about music. I daydream about music. I see my life in the form of music.” To honor Einstein’s scientific achievements and his love of violin music, the outstanding British violinist Jack Liebeck will appear in concert with pianist Charles Owen. Prior to the concert, Liebeck will join Oxford University Professor Brian Foster in a lecture entitled From Einstein to Superstrings. The lecture will highlight Einstein’s appreciation of classical music as well as his scientific legacy.

For more information and please see: http://www.jackliebeck.com/superstrings.htm.

Seating is limited, so pick up your ticket today!
Historic Film Screening at SLAC

On October 31st at 4:15 pm in Panofsky Auditorium SLAC’s Colloquium Series will present the exceptional Oscar-nominated documentary The Day After Trinity. The film offers invaluable insight into historic events which have forever changed the face of our world – this screening should not to be missed.

After witnessing the tremendous destructive power of the atomic bomb, J. Robert Oppenheimer declared “I have become death”. Still topically relevant a quarter of a century since its release, Director Jon Else’s documentary uses interviews, archival footage, and narration to reveal the internal landscape of the man whose leadership at Los Alamos, New Mexico, defined the rise of the Manhattan Project and the beginning of the Atomic Age.

The Day After Trinity traces the unexpected path of Oppenheimer’s career - from his formation of the Los Alamos colony and the first successful atomic bomb detonation at the Trinity test site in 1945, to his final years spent branded as a security risk and excluded from the atomic energy research he pioneered due to his opposition to the development of the Hydrogen bomb.
Last Chance to See the Satellite

GLAST holds an open house to see the satellite on Wednesday, October 26, from 1:00 to 3:00 at bldg. 33. The last of the 16 towers that make up the detector has just been installed (see article). In early November, the Anti-Coincidence Detector will be installed. This leaves a window of time when the detector towers can be seen before being covered up by the ACD. Please join us for the opportunity to see this unique instrument.

Come see the satellite while you still can.
(Photo courtesy of Lowell Klaisner)
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Send submissions to tip@slac.stanford.edu, or mail to TIP Editor, MS 58, Stanford Linear Accelerator Center, 2575 Sand Hill Road, Menlo Park, CA 94025.

TIP is available online at: http://www2.slac.stanford.edu/tip/