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SLAC Unveils New Public Website

By Katherine Bellevin

The Laboratory has launched a new Web site that highlights our varied scientific initiatives as well as important information for staff, users and the public. A key goal of the new Web site is to communicate the excitement and energy surrounding the science we do at the Lab. This has meant creating new content and imagery, as well as organizing existing pages around the various audiences that use the Web site.

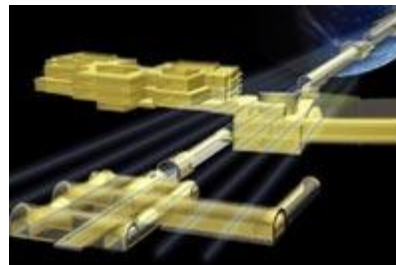


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By Matthew Early Wright

The LCLS project is off and running. This summer, crews will begin several major construction projects, planners will sign



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For five days in early May, the ancient collided with the ultra-modern at SSRL, bringing brilliant, long-hidden ideas to light with brilliant x-ray light. A synchrotron x-ray beam illuminated the obscured work—erased, written over and even painted over—of ancient mathematical genius Archimedes, born 287 B.C. in Sicily.



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40 Years of SLAC Power

By Gregory A. Loew

For more than 40 years up until January 1, 2005, SLAC enjoyed exceptionally low electric power rates for two reasons. The first was because of Director Emeritus W.K.H. (Pief) Panofsky's wise planning from the inception of the Lab to secure a long-term contract with

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contracts for hardware, and R&D experimentation and testing of materials will begin.

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the Western Area Power Administration (WAPA) in Sacramento, now in Folsom. Most of WAPA's power came from dams around the Central Valley. Panofsky used to call it 'socialist power' because it was essentially government power stemming from the Bureau of Reclamation created under FDR.

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A key goal of the new Web site is to communicate the excitement and energy surrounding the science we do at the Lab. This has meant creating new content and imagery, as well as organizing existing pages around the various audiences that use the Web site.

"Communicating to the scientific and general public what we are doing at SLAC and why we are doing it is essential," said Director Jonathan Dorfan. "The public thirsts for scientific knowledge. They also fund what we do, so we owe it to them to explain what we do in terms they can readily understand."

The new site also incorporates updated versions for many of the public information and visitors' pages. As additional pages are created, existing content will be folded into the new site in the coming months. This first phase is just the beginning of a Lab-wide effort to integrate and organize our Web site content.

"The new SLAC Web site reflects the tremendous amount of effort and teamwork that went into so rapidly getting it on-line," said SSRL Director Keith Hodgson. "It conveys in a most compelling and visual manner the future excitement in photon science and particle and astroparticle physics at our Laboratory. I am sure that SLAC's users, staff and sponsors will all find the site welcoming, easy to navigate and very informative."

Dozens of staff from every division at the Lab were involved in this effort, contributing their time and expertise to help pull the new site together. Special thanks go out to the core group of producers and technical staff who

The screenshot shows the new SLAC website homepage. At the top, there's a navigation bar with 'SLAC' and 'STANFORD LINEAR ACCELERATOR CENTER' logos, and links for 'Photon Science' and 'Particle & Astroparticle Science'. Below this is a search bar and a list of links for various audiences: 'For Users', 'For Staff', 'For Students', 'For Educators', and 'For Media and Press'. The main content area features a large image of a child looking through a telescope, with a quote from Keith Hodgson about the LCLS. To the right is a news section with several headlines and a list of news sources.

The new SLAC home page.

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made this effort possible:

Jennifer Formichelli (KIPAC)
Ruth McDunn (TIS)
Ann Mueller (SSRL)
Rebecca Reitmeyer (TIS)
Sean Roberts (SCS)
Larissa Williams (ESH)

We would like to hear your comments and suggestions! We have already heard many useful comments and have begun incorporating them. Please send your thoughts to kathyb@slac.stanford.edu.

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By Matthew Early Wright

The LCLS project is off and running. This summer, crews will begin several major construction projects, planners will sign contracts for hardware, and R&D experimentation and testing of materials will begin.

"We have a lot of stuff going on," said LCLS project director John Galayda. "By June, we should be well on our way."

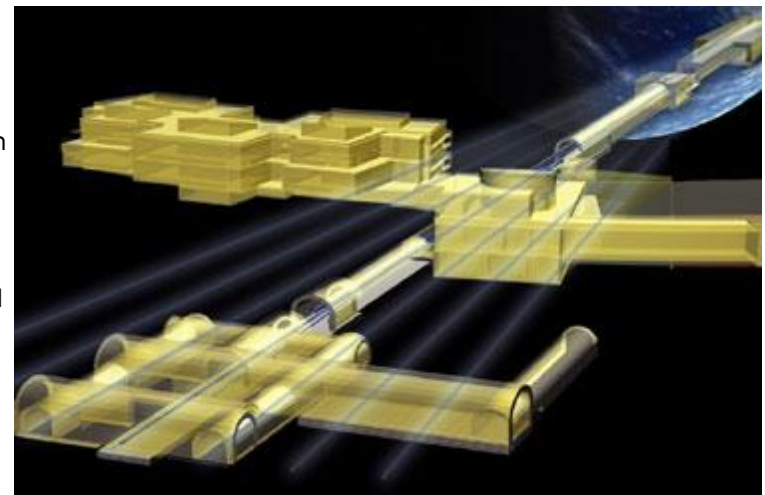
Construction of an annex to the Klystron Gallery, which will house the LCLS injector, is set to begin next month. The annex will be built in sector 20, close to where the gallery passes under Interstate 280.

LCLS collaborators at Argonne National Labs will award contracts for the fabrication of the undulator magnets in June and July. The undulators are long arrays of permanent magnets that wiggle the electron beam back and forth as it travels through the vacuum pipe. "This bathes the electron beam in its own X-radiation, producing the amplification that causes LCLS to act as a laser," Galayda said.

Construction is also set to begin on the Magnet Measurement Lab, where the undulators will be tested, repaired, and calibrated. "The magnet fields must be very precisely controlled," Galayda explained. "We have to take into account and compensate for the difference between the earth's magnetic field in the LCLS undulator hall and that of the lab room."

Later in the summer, collaborators from Lawrence Livermore National Labs will begin materials testing and experiments at DESY's Tesla test facility in Hamburg, Germany, Galayda said.

By September, LCLS will have identified a construction manager to oversee major projects. The most visible of these projects will be tunneling under the hill east of the Research Yard, where the LCLS undulator hall will be built, and constructing the experiment halls and the new Central Lab Office Complex (CLOC).



The LCLS design provides room for expanding the machine from the initial six experimental stations to 30-50 stations on additional beam lines.

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In the month of October, during a scheduled shutdown of the linac, the first section of LCLS vacuum pipe will be installed. This will connect the injector to the main linac for the first time, signaling the official start of hardware assembly. "As the first actual pipe of the LCLS, It's kind of symbolic," Galayda said. "And once it's in place, we can start installing hardware while the B-Factory is running."

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Archimedes Manuscript Yields Secrets Under X-Ray Gaze

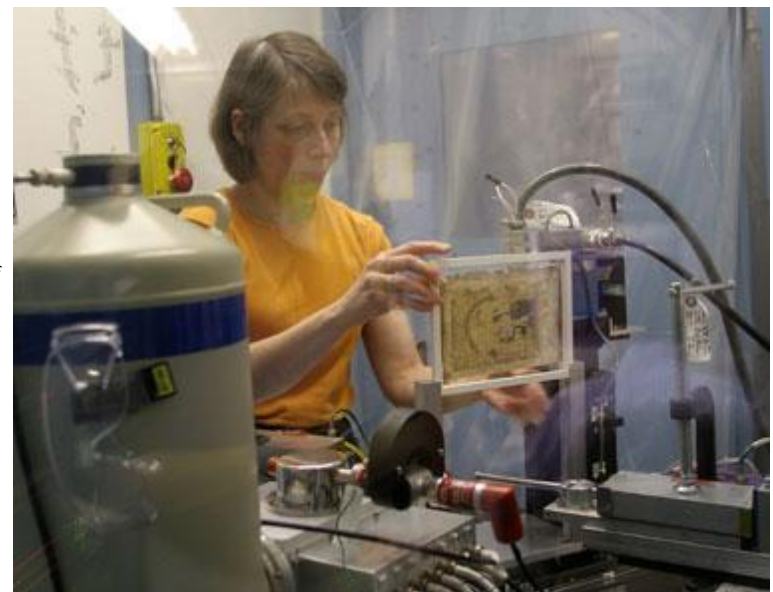
By Heather Rock Woods

For five days in early May, the ancient collided with the ultra-modern at SSRL, bringing brilliant, long-hidden ideas to light with brilliant x-ray light. A synchrotron x-ray beam illuminated the obscured work—erased, written over and even painted over—of ancient mathematical genius Archimedes, born 287 B.C. in Sicily.

Archimedes' amazingly advanced ideas have been lost and found several times throughout the ages. Now scientists are employing modern technology, including x-ray fluorescence at SSRL, to completely read the Archimedes Palimpsest, the only source for at least two previously unknown treatises thought out by Archimedes in the 3rd century B.C.

"This is for broad public interest, to reveal the mind of the greatest mathematician of antiquity," said Will Noel, curator of manuscripts and rare books at The Walters Art Museum in Baltimore. "There's nothing more important and more romantic in the history of ancient science and currently in the history of medieval manuscripts. We're discovering new readings of Archimedes."

Archimedes is legendary for sitting down in his bath, sloshing water over the sides, and immediately recognizing this gave him a way to measure the volume of a supposedly all-gold wreath to determine if the craftsman had cheated the King of Sicily by slipping in cheaper silver. As the story goes, he leapt out of his tub and ran naked through the streets shouting 'Eureka' (I have found it). He also discovered pi, the mathematical equivalent of inventing the wheel. Archimedes did not just take steps toward calculus, as



Abigail Quandt, head of book and paper conservation at The Walters Art Museum, slides a framed page of the Archimedes parchment into a holder that moves in front of the x-ray beam like a book being read by a stationary eye.

(Photo by Diana Rogers)

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formerly believed, he actually created and used calculus methods, the basis for modern engineering and science. He is also credited with designing fearsome war weapons, like claws that pulled attacking boats from the water.

The Walters Art Museum is leading a broad public and private effort involving experts from diverse fields to study and conserve the manuscript. The palimpsest is a 1,000-year-old parchment made of goat skin containing Archimedes' work as laboriously copied down by a 10th century scribe. Two centuries later, with parchment harder to come by, the ink was erased with a weak acid (like lemon juice) and scraped off with a pumice stone, and the parchment was written on again to make a prayer book.

Three pages of the palimpsest recently traveled to Menlo Park because scientist Uwe Bergmann (SSRL) had his own Eureka moment in 2003. From a magazine article, he learned the manuscript ink contained iron pigment.

"I read that and I immediately thought we should be able to read the parchment with x-rays," Bergmann said. "That's what we do at SSRL—we measure iron in proteins—extremely small concentrations of iron."

SSRL and Ametek-Edax in New Jersey—which makes an x-ray system convenient for pages too fragile to travel—are now studying the manuscript with x-ray fluorescence. X-ray light tuned to a specific energy causes the remaining traces of iron ink to fluoresce (see sidebar). A detector catches the fluorescence and renders the 2,000-year-old thoughts of the mathematical genius readable.

Bergmann credits many of SLAC's staff with helping set up the experiment, especially Martin George (SSRL), who developed custom software to continuously scan the pages one line at a time from top to bottom. The hair-thin x-ray beam could not rest on any one spot of parchment for too many milliseconds for fear of damaging the delicate fibers. Many of the pages are in terrible condition, damaged by mold and fungus. But mold, which scatters visible light, should be transparent to x-rays, allowing a clear view of the ink below.

"The Archimedes ink is only one to two microns thick, there's hardly anything there," said Abigail Quandt, head of book and paper conservation at The Walters Art Museum.

The detector signals create a real, readable image from x-ray light, rather than visible light. The x-rays pass right through the parchment, simultaneously registering iron from the Archimedes and religious texts on both sides of the parchment. The four layers of text are already helping Stanford University historian of ancient mathematics Reviel Netz to decode the text.

"We get incredible resolution; you need it when you're reading erased and overwritten ancient Greek cursive," Noel said.

While much of the manuscript can be, and has



been, read by visible or ultraviolet light during the past six years of painstaking analysis and restoration, "now we're concentrating on the really difficult bits," Noel said. The main tools are x-ray fluorescence, optical character recognition (teaching a computer to recognize fragments of ancient Greek symbols) and multi-spectral imaging (using light of different wavelengths).

One of the most intractable problems was seeing the original ink on four pages that had been painted over with Byzantine religious images, which turned out to be 20th Century forgeries intended to increase the value of the prayer book.

The Edax x-ray system recently showed it was possible to penetrate the paintings. At SSRL, the assembled team practically jumped with excitement as the original writing beneath one painting was unveiled on the computer screens. Archimedes' hidden text deals with floating bodies and the equilibrium of planes.

Another page studied at SSRL contains an introduction to the only copy of Archimedes' Method of Mechanical Theorems, where Archimedes showed how he arrived at his theorems. As faint ancient Greek symbols—mingled with the religious text—appeared on screen, Netz began identifying the characters and letters by comparing the layers of text from the synchrotron images and from the multi-spectral images.

"I don't think x-rays will make invisible material simply visible," Netz said. "It will add a layer of information combined with others that will enable me to read the text."

The anonymous private collector who bought the palimpsest for \$2 million at auction in 1998 has loaned the manuscript to The Walters and is funding the studies. The studies have revealed surprising finds, including that Archimedes was the first Greek to use infinity and to set rules for infinity. Scholars have also advanced the reading and allowed the first interpretation of the Stomachion, which solely survives on one page of the palimpsest. This treatise deals with combinatorics—the number of ways a problem can be solved—which is used in modern computation.

Researchers come from RB Toth Associates, Rochester Institute of Technology, Johns Hopkins University, ConocoPhillips and Rutgers University. The team plans to decipher the entire text, catalog and transcribe it digitally, and create an interactive

*A photograph of one page of the Archimedes Palimpsest. Visible and UV light cannot see Archimedes' text under the gold painting done by a 20th Century forger. The text is oriented sideways like this when scanned.
(Image provided by Will Noel, The Walters Art Museum)*



*X-ray fluorescence imaging at SSRL revealed the hidden text. This x-ray image shows the lower left corner of the page.
(Image provided by Will Noel, The Walters Art Museum)*

DVD. They will then exhibit a few pages in 2008 before returning the irreplaceable parchment to its owner.

"There are so many things we want to see with x-rays. This is sensational. We'll be back," Noel said.

For more information, see: <http://www.thewalters.org/archimedes/frame.html>

How X-Rays Read Medieval Ink

By Heather Rock Woods

Synchrotron radiation is a powerful tool to study the Archimedes Palimpsest. In contrast to an x-ray tube, the synchrotron beam is more intense, is collimated (parallel), does not need to be focused, can be polarized and is very easy to tune.

Iron has 26 electrons in different orbits around the nucleus. An x-ray tuned to an energy of 7.1 kilo-electron volts (keV) can knock out an electron from the innermost orbit of an iron atom.

Missing an electron, the unstable atom immediately fills the hole by grabbing an electron from a farther out orbit. Since the replacement electron has less energy (it was less tightly bound to the nucleus), as it falls into its new place it emits x-ray fluorescence, a photon with 6.4 keV, exactly the difference between the two electrons.

This creates a fluorescent signal at an energy specific to iron. The detector window is set to 6.4 keV to capture the iron signals. Like an old dot matrix printer, the detector builds an image dot by dot, mapping out each spec of iron-containing ink.

Extra ink in one spot causes a more intense signal. Generally, the ink from the Archimedes text is no more than a faint stain in the fibers of the parchment, while the thicker, un-erased ink of religious text sits on its surface. Where the two overlap (the texts are written perpendicular to each other) the iron signal is stronger, which may allow researchers to separate the two texts.

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The second reason SLAC got an even better deal was because we had a large load (the linac and the other machines) which we could 'volunteer' to turn off in the summer when the total WAPA load exceeded its capacity of about 1 Gigawatt. These were the famous brownouts that exasperated many operators and physicists but saved us a bundle. For old timers, the SLAC representatives who had to negotiate these brownouts were Ev McKeen, now retired, and the late Larry Kral (both formerly TD). More recently, Chris Foundoulis (TD), Keith Reynolds (TD) and Roger Erickson (AD) have handled them.

For reference, a Gigawatt is a unit of power equal to 1,000 Megawatts (MW). When SLAC runs everything flat-out these days, our meter in MCC registers about 55 MW. When you are at home at night cooking a steak and running your dishwasher, you may be using a few kilowatts. Note, however, that when you get your electric bill at the end of the month, you don't pay for power but for energy measured in kilowatt-hours. A kilowatt-hour is what you consume if you steadily use a kilowatt for an hour (the energy consumed by thirteen 75 watt light bulbs running in parallel). As a minimum these days, depending on where you live, the so-called lifeline kilowatt-hours cost you between seven and eight cents. Forty years ago, SLAC probably paid WAPA about 0.2 cents, and in 2004, about 2.5 cents! Despite the inflation, it was still socialist power!

Actually, the maximum SLAC allocation from WAPA for a long time was about 47 MW.

Already in the PEP and SLC days we often ran above 53 MW, and the supplemental power was bought at a much higher rate from PG&E. The average cost, however, was still cheap compared to the market. Another feature which existed since the inception of SLAC was that WAPA and PG&E had a contractual agreement whereby they helped each other. This meant that when the WAPA dams were high, they would sell cheap power to PG&E, and when the dams were low, PG&E would back-up (the expression in the industry was 'firm-up') power to WAPA at basically the same low price.

In the mid-1990's, DOE participated in the funding and construction of a third 500 KV inter-tie line coming down

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from Oregon which enabled California (and WAPA) to procure less expensive power from the Northwest. The line ended in Tracy, near LLNL in Livermore and the opportunity was seized to connect directly to LLNL. At this point, DOE decided that we would be in a much better bargaining position if all three DOE Northern California labs (SLAC, LBNL and LLNL) bought their power together as a single consortium. That is exactly what happened—the new consortium enjoyed virtual wholesale status, aggregating the three labs' demand, and sharing combined WAPA allocations and a WAPA purchased power contract with a company in Portland called Pacificorp.

This favorable situation basically continued until the beginning of 2005. Around the late 1990's, however, after deregulation when PG&E divested itself of most of its plants and became just a power distribution company that then went bankrupt, it advised WAPA that it would not extend the 40-year contract and would no longer firm them up after the beginning of 2005. With consumption up, WAPA also realized that it could no longer provide steady power as before. A wonderful era was coming to an end.

To prepare the three labs for this new situation, DOE and our EXETER consultants went through all kinds of market studies. At one point, believe or not, it looked like Enron might give us a good deal! Luck had it that we did not go for it. The market studies went on for two or three years until late 2003, when it was determined that DOE (with WAPA as its buyer and dispatcher) would have to go out to the real 'capitalist' market for several parallel bids. This procedure, which took a huge amount of work and negotiations, culminated last summer when the bids came in. To hedge our bets, like when you buy a mutual fund, over 100 MW of firm capacity for the three labs were contracted with two groups of companies, half in the Northwest, the other half in Northern California. The contracts span one, two, three and five years respectively. The average rate, including the cost of transmission provided by WAPA or the California Independent System Operator (ISO), is now between 5 and 7 cents/kilowatt-hour—still cheaper than what you pay at home but over twice what we paid WAPA last year! This is the reason all of you have been hearing all this unfortunate news for the last year.

But hold your breath. There is a rainbow on the horizon! Because of all the rain this year, we will be lucky in late spring to still get a small fraction of our good old 'socialist power' from the bulging Central Valley dams. It will keep our rates below 6 cents for a few weeks. So we can still be thankful to Panofsky!

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Chemically Treated Wood Less Toxic Than Feared

By Heather Rock Woods

The chemically treated wood used for playgrounds, fences and decks appears to be less toxic than once feared. Chromated copper arsenate (CCA) protects commercial outdoor grade lumber from weathering, but in recent years the public and the government realized the chemicals could be potentially risky to the many people exposed to the ubiquitous wood.

Recent analysis done at SSRL showed that the arsenic and chromium in CCA is in a relatively stable chemical state and is bound to the wood fibers. Contrary to previous estimates of arsenic exposure, research by Peter Nico of California State University, Stanislaus, and his colleagues found that arsenic appears to be relatively stable against leaching and subsequent absorption into the skin of a toddler on a climbing structure or a do-it-yourselfer building a fence.

The Environmental Protection Agency is preparing a human health risk assessment. They had initially estimated that the major routes of CCA-related arsenic exposure to younger children would be half from dermal absorption (through the skin), nearly half from ingestion and four percent from exposure to arsenic-containing soils. In January 2004, a voluntary ban on CCA for residential use took effect but an estimated 300,000 metric tons of arsenic in the last 30 years had been used in the cocktail—and is still present on wood in yards across America.

The SSRL research resolved for the first time the chemical and structural states of the chemicals contained in the treated wood, to better determine the actual risks of coming in contact with CCA-treated lumber. An x-ray technique called XANES yielded crucial information on the oxidation states of arsenic and chromium, showing the two chemicals to be in their less toxic forms. Their molecular structures, obtained through extended x-ray absorption spectroscopy (EXAFS), show the chemicals are in a fairly stable state and they remain tightly bound to the wood despite weathering. They are therefore less likely to release to the air or soil or upon human



Play structures like this are often manufactured using wood that has been chemically treated with arsenic and chromate. A study done at SSRL found the lumber is less harmful than feared.

(Image courtesy of Microsoft Clip Art)

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contact.

"Dermal absorption of arsenic from CCA treated materials could perhaps be eliminated from consideration as a significant exposure pathway," Nico said.

Nico's colleagues include Scott Fendorf (Stanford), Mike Ruby and Yvette Lowney from Exponent, an engineering and scientific consulting firm, and Stewart Holm of Georgia-Pacific Corporation, which manufactures lumber, paper and tissue products.

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Two SLAC Scientists Elected to National Academy of Sciences

By Matthew Early Wright

The National Academy of Sciences (NAS), a society that counts the nation's best and brightest researchers among its membership, has elected two SLAC scientists to join its ranks. In total, 72 new members and 18 new foreign associates were formally announced by the Academy in early May.

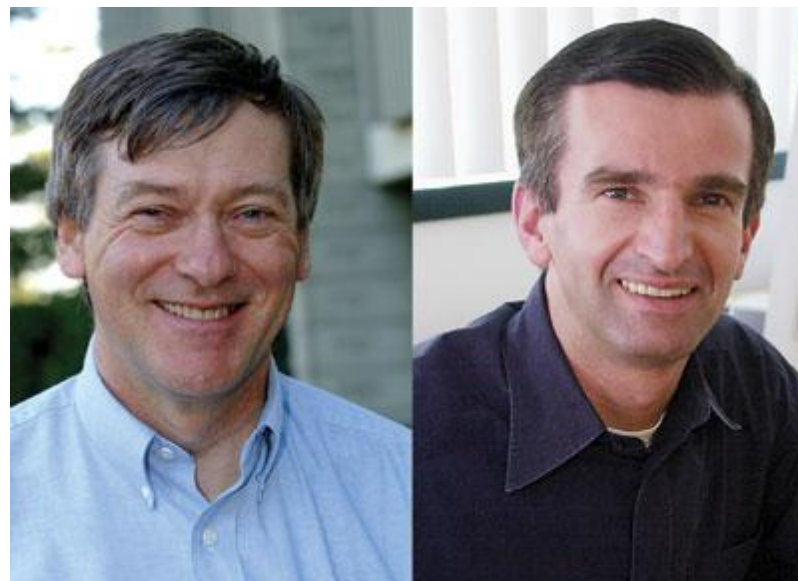
Roger Blandford, astrophysicist and director of KIPAC, and Axel Brunger, biophysicist and SSRL researcher, have been chosen for membership based on their outstanding contributions to original scientific research. Election to the Academy is considered one of the highest honors a scientist can achieve.

Both will be formally inducted next April. Blandford and Brunger will join over 2,000 current NAS members in shaping the nation's scientific agenda, and advising the federal government on scientific and technological matters.

Blandford, who holds a joint appointment with the Stanford Physics Department, first heard of his election via e-mail. "It was a bit of a surprise," he said. "But of course, it's a huge honor."

His research focuses on the astrophysics of black holes, neutron stars, white dwarves and other phenomena. Blandford is especially captivated by cosmology and the early history of the stars. "I'm most interested in using gravitational lenses as tools to understand the universe," he explained.

Blandford's distinguished career has taken him from his native England, where he earned his doctorate from Magdalene College in 1974 and was a research fellow at St. John's College, to a professorship at Caltech starting



*Roger Blandford (KIPAC), shown left, and Axel Brunger (SSRL), shown right, were recently elected to The National Academy of Sciences (NAS).
(Photos courtesy of Stanford University)*

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in 1976. After 27 years there, he joined the faculty at SLAC and Stanford as the Pehong and Adele Chen Professor of Physics in 2003.

"I'm quite happy here," Blandford said. "There is a tremendous concentration of talented physicists to work with."

Brunger, who holds a joint appointment with Stanford's Bio-X initiative and is a Howard Hughes Medical Institute Investigator, received a phone call early in the morning. "It's a wonderful honor," he said. "I'm very excited about becoming a member of the NAS."

His work focuses on proteins involved in neurotransmission. By using both simulations and experiments, Brunger works to resolve the structure and function of proteins involved in synaptic vesicle fusion. "Using both approaches allows us to better understand this complex molecular machinery," he explained.

Brunger has followed an illustrious path from his native Germany, where he earned his doctorate from the Technical University of Munich in 1982, to postdoctoral appointments at Harvard and the Max Planck Institute. He was named a professor at Yale in 1987, the same year he became a Howard Hughes Investigator. After 13 years there, he came to Stanford in 2000.

"I was drawn to Stanford because of SSRL and the Bio-X initiative," Brunger said. "The interdisciplinary nature of Bio-X was very attractive to me."

The National Academy of Sciences is one of four branches of the National Academies. The other three are The National Academy of Engineering, The Institute of Medicine and The National Research Council.

Abraham Lincoln signed the charter that brought the National Academy of Sciences into existence in 1863, with a mandate to "investigate, examine, experiment, and report upon any subject of science or art" whenever the government required such information. The charter was expanded to include the other three branches in 1916 (NRC), 1964 (NAE) and 1970 (IOM).

For more information, see: <http://www4.nationalacademies.org/news.nsf/isbn/05032005?OpenDocument>

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Kavli Construction Update

By Linda DuShane White

The future home of the Kavli Institute for Particle Astrophysics and Cosmology at Stanford University and SLAC (KIPAC) is being built next to the Research Office Building and beside Panofsky Grove on the Green. Architectural plans show a striking building with a view of the San Francisco Bay.

For a while this year the only thing on view was an excavation. Delays were unavoidable, according to Devcon Construction Project Manager Todd Viera. "The biggest issue has just been weather. It's May and still raining."

With the advent of spring, the rain has slowed and the building is now going up quickly. The main structure (the steel) of the 25,000 square foot building is rapidly rising to its full three stories.

Viera says that the entire frame of the building as well as the roof will be up by late May. "The walls and floors will follow, with concrete being poured on the second and third floors through the months of June and July. The outside of the building, what we consider the skin, will be going on as well."

No further major road closures should be necessary until late summer. Devcon is working closely with SLAC so we will know what to expect ahead of time. Watch SLAC Today and TIP for updates on the latest construction news.

According to Viera, "The goal is to impact everything the least amount possible. It's nice to have everyone so accommodating. If we need to close something, we do."

The Kavli Institute is scheduled for completion early next year. In the meantime, we can enjoy watching the building going up and savor the prospect of this wonderful new addition to the exciting science at SLAC.



The Kavli Institute is quickly rising to its full three story height. Construction should be completed by early 2006.

(Photo by Diana Rogers)

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For more information, see:

<http://www-group.slac.stanford.edu/kipac/building.html>

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New Chemical Management System is Coming!

By Butch Byers

SLAC's long-awaited rollout of its new chemical management system (CMS) is about ready to begin. In fact, for nine of the approximately 40 SLAC workgroups that use chemicals in the course of their daily activities, the rollout has already begun!

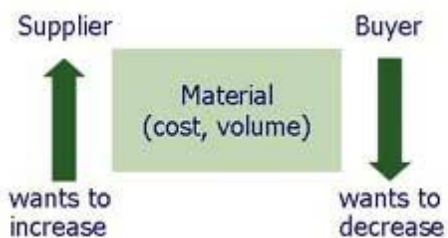
The CMS project will change the way SLAC orders, receives and manages chemicals on a site-wide basis. The project has proceeded through the planning and pilot stages, and two major schedule milestones are coming up:

Monday, June 6

This is the date on which responsibility for providing SLAC staff with chemicals and cylinder gases that are currently Stores items will shift from SLAC Stores to SLAC's CMS provider, Haas TCM. Subsequent to this date, requestors requiring Stores chemicals will place their orders using Haas's on-line ordering system. Such orders will be delivered to the specified location the next business day, much like Corporate Express works. An open house may be held at Stores the week prior to the transfer and if so will be announced in SLAC Today.

Under the CMS model, formerly conflicting incentives are now aligned

Traditional relationship:
Conflicting incentives



CMS model:
Aligned incentives



Changing the supply chain model results in potential costs savings and environmental gains

Chemical Strategies Partnership
a project of The Green Institute
funded by The Ford Foundation
with major support from The Hewlett Foundation

(Image courtesy of ES&H)

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Monday, August 1

This is the facility-wide go live date. Everyone who initiates a chemical transaction on or after this date will be required to use the Haas TCM platform.

The SLAC CMS Implementation Team, comprised of several representatives from each division, has worked together for the last year to make this project a reality. In the event you have questions or concerns about the upcoming milestones, please contact one of the following divisional representatives:

SSRL: Stephanie Carlson, Todd Slater
 RES: Jim McDonald, Bob Kirby
 TECH: Karen Holtemann, Mary Regan
 DIR: Rich Jones
 ESH: Butch Byers, Matt Padilla
 BSD: Tom Murphy

Further information about the project, including a list of FAQs, is available at the project website (<http://www-group.slac.stanford.edu/esh/cms/>). Approximately 100 SLAC staff members have operator privileges within the Haas system. A list of these operators and their departments is also posted on the project website.

To be added to the system, please contact either your divisional representative, Matt Padilla (ES&H) at Ext. 3861), or Haas's on-site customer service representative, Ray Barbara (Ext. 8776).

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SLAC Electrical Equipment Inspection Program Graduates its First Team of Inspectors

By Wayne Linebarger

In order to get the new SLAC Electrical Equipment Inspection Program (EEIP) started, a trained team of electrical equipment inspectors was needed. A select group of 24 Electronic and Electrical professionals were given a world class training course to achieve this goal. The course was developed and led by Underwriter Laboratories (UL) as well as on-site professionals. Perry Anthony (DO), acting as the Authority Having Jurisdiction (AHJ), and his Electrical Safety Support Group provided guidance for this project. The first class of graduates received their certificates on April 22.

Topics Covered

The course of study covered Hazard Based Safety Engineering Principles, the National Electrical Code, Electrical Safety in the Work Place, UL Standards, Inspection Methods and Instructors and Student led Case Studies. In addition, SLAC instructors reviewed equipment that is used by R&D facilities. Areas covered included RF Safety, Pulsed Power Systems and Large DC Power Supplies. There was also instruction on arc flash analysis and custom-made EEIP documentation software.

SLAC now has a very talented and diverse group of Electrical Equipment Inspectors, and their expertise covers most types of electrical and electronic equipment here at SLAC. The intent is that, going forward, all custom or procured equipment without National Recognized Testing Laboratory (NRTL) labeling will have one of the inspectors either aiding in the design or visually inspecting it to ensure that the equipment does not pose electrical hazards to personnel when



The EEIP Inspector Program graduated field representatives from across the Lab. They will be advising, inspecting and/or guiding various projects on electrical safety and issuing EEIP approvals. The complete list of inspectors is on the EEIP Web site.

(Photo by Diana Rogers)

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used as designed.

The Inspector's Role

It is important to note that these inspectors are there to assist in the design, procurement and installation of safe electrical equipment. They do not have an enforcement role. Compliance with SLAC's electrical safety programs is a line responsibility, with oversight by the Electrical Safety Officer, Perry Anthony.

Jonathan Dorfan (DO) said, "I encourage all groups to work with these inspectors, and encourage departments to continue to support the training of additional personnel to help SLAC achieve compliance with this program."

Three more classes are planned in the coming months with the intention of training an additional 100 EEIP inspectors to support the Lab.

For additional details on the electrical safety program, including the EEIP Organization, see:

<http://www-group.slac.stanford.edu/esh/electrical>

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ILC News: Takasaki Selected as Regional GDE Director

By Kurt Riesselmann

Reprinted from Fermilab Today

On Tuesday, Fumihiko Takasaki, KEK, was appointed as the regional director of the ILC Global Design Effort for Asia. The announcement was made by Barry Barish, the director of the ILC GDE team. Takasaki had been recommended for the position by the Asian Linear Collider Steering Committee with the endorsements of Barish and Yoji Totsuka, Director General of KEK.

The International Linear Collider Steering Group (ILCSC) accepted Takasaki's appointment at a meeting in Frankfurt, Germany, on May 10. The appointments of the regional directors for Europe and North America will be next.

Takasaki, a high-energy physicist, is the head of the [KEK Linear Collider Office](#). He was a spokesperson of the Belle collaboration at KEK, and he has extensive ties to the United States.

"He's been coordinating the U.S.-Japan collaboration [in high-energy physics]," said Tor Raubenheimer, referring to the bilateral science and technology program that has benefited science projects such as CDF and Glashow. "He is a very impressive person." For more information on the Asian Regional Team and its working groups, visit the ILC-Asia homepage at: <http://lcdev.kek.jp/ILC-AsiaWG/>

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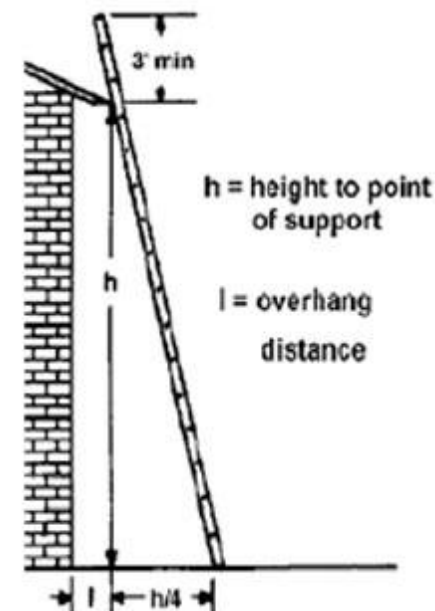
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ES&H Safety Tip: Using Ladders Safely

Ladders are commonly used across the Laboratory. But did you know that more than half a million people a year are treated for ladder-related injuries? Please keep safety, and these tips for safe ladder usage, in mind whenever you plan an action using a ladder. You might want to keep these points in mind with the ladders you have at home, too.

- Both single and extension ladders should be equipped with nonskid safety feet and should be placed on a firm, level surface. The distance from the ladder's base to the wall should equal one-fourth the distance from the base to the point of support.
- Never set ladders on boxes or other objects to make the ladder reach higher areas.
- Lock or barricade any doors that may open toward ladders.
- Approximately three feet of a straight ladder should extend above the topmost spot to be reached.
- Never stand above the third rung from the top of a straight ladder or above the second highest step of a stepladder.
- Never use stepladders as straight ladders. Open stepladders fully and make sure that the spreader is locked securely.
- Only one person should be on a ladder at a time and should always face the ladder when going up or down.
- While on a straight ladder, hold on with one hand and do not overreach. It is safer to climb down and move the ladder.
- If you use a metal ladder, make sure that it—or you—does not come into contact with electric wires or equipment.
- Never carry large objects while ascending or descending a ladder. To carry tools and accessories, use shoulder straps, bags or hand lines.
- Inspect all ladders before each use.



Ladders should be tilted at a 4:1 ratio, meaning that the base of the ladder should be one foot away from the wall or other vertical surface for every four feet of height to the point of support.

(Image courtesy of OSHA)

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- Defective ladders should be tagged 'dangerous—do not use' or destroyed and removed from service without delay.

- Ladder steps and rungs should be kept free from oil and other foreign matter.

- Ladders should not be painted because paint may conceal defects, labels or other markings.

For more information refer to the ES&H Manual, Chapter 15 (<http://www-group.slac.stanford.edu/esh/eshmanual/ESHch15.pdf>) or take Course 293, Stairway and Ladder Safety.

If you have any questions call the Safety Service Desk at Ext. 4554.

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Time to Apply for the Ashley - A Great Career Opportunity

By Carmella Huser

Applications are now being accepted for the annual Alonzo W. Ashley Career Development Fellowship, which was established in 1999 in honor of Alonzo W. Ashley. Continuing the spirit of his work, the Fellowship allows an employee one year to engage in full or part-time activities that will enhance his or her career and contribute to SLAC's mission. Proposed activities could include attending school, participating in on-the-job training, participating in a job rotation or creating training.

Who is Eligible?

Employees who have worked at SLAC for at least three years and have demonstrated contributions to diversity at SLAC or in their community are eligible to apply for the Ashley Fellowship. The person selected will receive his or her regular salary for the year and participate in the normal salary and performance evaluation cycles.

Approval of one's supervisor and of others involved in the proposed activities is required. Applicants must describe these activities, explaining how they will develop their career and contribute to the SLAC mission.

Application Deadline is July 1

Proposals must be submitted to Carmella Huser, Manager of Employee Relations and Training (MS 11, Ext. 2358), by July 1. Application forms are available on-line or from Human Resources. We anticipate the Fellowship year will begin October 1, 2005 and end on September 30, 2006. Finalists will be interviewed by a selection panel, and the person selected will be notified by July 22.

WIS Presents

Pauline Wethington
and Lesley Wolf
Ashley Fellows

May 24, Noon
Panofsky Auditorium

Have you ever wondered what and ASHLEY FELLOW does during their paid year off work? No idea what an Ashley Fellow is? Now's your chance to find out!

Past Ashley Fellowship recipients Pauline Wethington (COM/HR) and Lesley Wolf (LIB) will describe their career development experiences.

Please save your lunchtime on May 24 and come to this talk to understand this

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Past Recipients

Past Ashley Fellows include William Colocho (AD), Nick Arias (NLC). Pauline Wethington (COM/HR), Lesley Wolf (LIB) and Arturo Alarcon (AD). Eligible employees are encouraged to apply. For proposals from past recipients, see: www-group.slac.stanford.edu/hr/er/fellowship/2004/pastproposal.html

For more information, see:

<http://www-group.slac.stanford.edu/hr/er/fellowship/2004/ashley.html>

career opportunity for SLAC employees.

Bring a lunch and a bring a friend!

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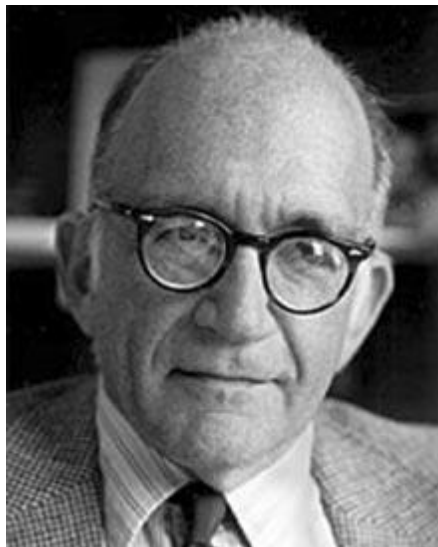
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Recent Award Announcements



SLAC Deputy Director Emeritus Sid Drell (DO) received a \$250,000 Heinz Award for Public Policy for his efforts to limit "the threat of nuclear annihilation while assuring our nation's adequate defense." The Heinz Family Foundation award honoring Drell for over four decades of work to make the world a safer place will be presented at a private ceremony in Washington on May 24.

(Photo courtesy of Stanford University)



The American Academy of Arts and Sciences announced 19 Bay Area people as new fellows of the academy, which honors intellectual achievement. Five scholars were elected to the American Academy of Arts and Sciences including Jerome Friedman (SCS), former leader of the SLAC Computational Research Group.

(Photo courtesy of Stanford University)



Guggenheim Fellowships for 2005 include Stanford University physics professor Pat Burchat (BABAR) and two others from Stanford. Burchat is studying dark matter in the universe. This year's Fellowships were awarded to 186 artists, scholars and scientists from the U.S. and Canada. More than 3,000 applicants applied for the fellowship awards totaling about \$7 million.

(Photo provided by SLAC)

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Safety Reminder for Construction Areas

Important Safety Reminder for SLAC staff and visitors, particularly people who walk and jog on the loop road:

Recently some SLAC walkers and joggers have been ignoring the construction barriers placed across the loop road and entering the area where work is going on. This presents an extreme safety hazard because this is the area where the steel for the building is being staged and handled.

Remember that the construction site is closed to anyone except construction workers. Everyone on site must observe and obey all barriers and signs.

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Stanford Commencement Tours of SLAC

WHO?

YOU! Step forward as a SLAC Ambassador!

WHAT?

Stanford University Commencement Tours of SLAC

WHY?

A great campus community outreach event

WHERE?

Gather at Memorial Auditorium, Stanford Campus

WHEN?

Saturday, June 11

As part of the Stanford University Community, help us host the families and friends of Stanford Commencement for tours of the Lab.

To join us as SLAC Ambassadors to the Community, please contact Nina Stolar (Ext. 2282, nina@slac.stanford.edu)

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Welcome New Employees!



The new employee orientation held April 28 included (left to right): Aaron Jensen (KLY), Doug Mitchell (CEF), Simon Engemann (USC), Julia Narevicius (NIGMS), Maria Herraes (PUR), George Quilon (CEF), Brandon Mai (CEF), Salvador Limon (CEF) and Richard Boushey (CEF).

(Photo by Diana Rogers)

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MILESTONES

Awards

Blandford, Roger (KIPAC), elected to the National Academy of Sciences (NAS) ([see related article](#)).
 Brunger, Axel (SSRL), elected to the National Academy of Sciences (NAS) ([see related article](#)).
 Burchat, Patricia (BABAR) to receive Guggenheim Fellowship for 2005 ([see photo and caption](#)).
 Drell, Sidney (DO), will receive \$250,000 Heinz Award for Public Policy on May 24 ([see photo and caption](#)).
 Friedman, Jerome (SCS), elected to the American Academy of Arts & Sciences ([see photo and caption](#)).

Service Awards

5 Years

Altieri, Richard (CEF), 5/22
 Gibbs, Danny (CEF), 5/16
 Mansell, Stanley (MD), 5/16
 Prado, Andres (ESRD), 5/16

15 Years

Olszewski, Joseph (ESD), 5/15
 Stieber, Joseph (MD), 5/16

20 Years

McDougal, John (MET), 5/18

25 Years

Hettel, Robert (ASD), 5/19
 King, Frank (PEL), 5/19

Retirements

Billitzer-Jenkins, Stan (ASD), 4/19
 Donald, Martin (AD), 4/12
 Ebel, Clark (MFD), 4/12
 Graham, Corrine 'Faye' (CEF), 4/18
 Gutierrez, Adolfo (MFD), 4/18
 Hamner, Earl (ESD), 4/18
 Herrmannsfeldt, William (ARDA), 4/1
 Itani, Victor (MD), 4/18

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Lowe, Stephen (ESD), 4/18
 Myers, William (SEM), 3/17
 Page, Howard (ASD), 4/19
 Phillips, Robert (KLY), 4/18
 Rek, Zofia (ESRD), 4/19
 Rinard, Clarice (SCS), 4/29
 Roos, Franklin (MFD), 4/5
 Tam, Carol (ACC), 4/15
 Tatchyn, Roman (SSRL), 4/19
 Wallace, Raymond (ESD), 3/17
 Wilson, Edward (ESD), 4/18

Deceased

Watt, Bob (formerly with CRYO), age 85, passed away on April 3, 2005.

To submit a Milestone, see: <http://www.slac.stanford.edu/pubs/tip/milestoneindex.html>

See Awards and Honors at: <http://www.slac.stanford.edu/slac/award/>

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Chinese Lion Dance Honors Panofsky on his Birthday

By Vickee Flynn

SLAC's first director W.K.H. Pief Panofsky (DO) was honored on his 86th birthday with a traditional Chinese celebration. According to Ellie Lwin (DO), "You are given such a party in your honor when your children are doing well, grandchildren are also thriving, and your legacy is obvious and considerable. It says you have done your life's work very well indeed, and your beneficiaries offer their respect and gratitude. And you have to be about 75 years old."

The fact that on relatively short notice a large crowd gathered to sing 'Happy Birthday' led by Jamie Davis, speaks volumes of Panofsky's legacy. From one, many generations have come and thrived. He built this world class lab for us, his contributions to the national and international science policy and arms control community are considerable and, very importantly, he is respected as much for his character as for his work. His way of leadership is collegial; he is kind, inclusive, the soul of politesse and funny.

A Chinese ritual also speaks to Panofsky's many significant scientific and governmental affinities to China. Lion dances and dragon dances are performed for important, auspicious occasions as a way to confer our best wishes for the honoree. Lions are considered peaceful and divine animals of nobility and dignity. They symbolize strength, courage and wisdom. The calligraphy banner was made for Panofsky just for this occasion, and the phrase is a classical one reserved for honored characters. It's full meaning is not simply 'happy birthday to you' but appropriately represents much more.



At Pief Panofsky's birthday celebration, the blessing on the banner can be translated as: May your luck be as broad as the East [China] Sea and may your longevity be as high/tall as the South Mountain.

*Translated by Pisin Chen (ARDA)
(Photo by Diana Rogers)*

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NOVA Films at SLAC

By *Stephon Alexander*

NOVA, ARTE (France), Chan. 4 (UK), and NDR (Germany) are collaborating on this year's biggest science documentary, $E=MC^2$, an in depth look at Einstein's life and work. The last section of the TV Special was filmed at SLAC on May 5, 6 and 7. The special will air in September of this year, but SLAC will receive an advance copy which will be projected in the Auditorium.

In this excerpt from his Quantum Diaries blog, SLAC Theoretical Physicist, Stephon Alexander, talks about the recent visit of the NOVA film crew.

NOVA meets SLACERS

Trini Steff: Some people from England come all de way across de Atlantic to film some ah we at SLAC and de facilities.

SLAC Steff: Well thats awesome Steff, was it some documenatry by the usual culprits.

Steff: Boy if ah tell yuh, yuh mite tink ah lyin, but es NOVA boy!

SLAC Steff: NOVA!!! dawg they get 10 Million viewers a week. Thats a great thing for SLAC and its about time since that place is the bomb. I hope they got some footage of Bar Bar events.

Trini Steff: How yuh mean? Dey get meh main man Mike Kelsey at de control room an ting.

SLAC Steff: What about that cute experimentalist, Caolionn?

Trini Steff: Hey man doh disrespect me homegual Caolionn, she es a badd ass, but deh film she too.

SLAC Steff: So why did the decide to come to SLAC



A film crew from WGBH NOVA adjusts equipment between shoots in the CEH. Sandy Pierson (RD), shown top left, oversees the camera crew at work.

(Photo by John Shepardson)

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Trini Steff: Deh doing a docudrama about the making of de famous equation discoverd by Einstein $E=MC^2$. An since we make use of dis equation all de time at SLAC and some of we work on related ideas deh decided to come down an capture daily life.

SLAC Steff: You forgot to tell the people out there that there is a cool trailer they can check out on Nova's website <http://www.pbs.org/wgbh/nova/emc2/>.

Trini Steff: An big up to de people of de Caribbean and all de Trinis an meh peops at SLAC.

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What Old Fogie?

By Von Taylor

Have you thought to yourself, "I wonder what ever happened to...?" Well that is the genesis of the Old Fogies Club (OFC). It started when Chuck Hartley (formerly AD) and I arranged to stay in touch by going to lunch once a month after he left SLAC to work at another company.

I mentioned to Fred Coffey (formerly HR) that Chuck and I were having lunch and he wanted to come along. Then I said something to Ted Fiedor (formerly KLY) about talking to Fred about some aspect of the Test Lab. Ted asked when I saw Fred and I told him at lunch.

You can see where this is going. Every time I told someone I saw someone, someone else would want to go. So now there are old Old Fogies and young Old Fogies. Some still go to work and some are happy just going to the bathroom...

Most of the members are associated with the Klystron Department, but not all.

Just to name a few: Tineke Graafland, Harold (formerly I&C) and Nada Comstock (formerly BSD), Merrill Card (I&C) and Kathy Burrows (AD)—neither old nor fogie.

We get together every three months or so, depending on who's in town. Here are some pictures taken from the last OFC luncheon on April 1 at Zott's (now called the Alpine Beer Garden).



*Top Left: Rod Curry and Von Taylor.
Top Right: John Eichner, Dave Burrows and Lee Hall.
Bottom Left: Gus Sandoval. Bottom Right: Randy Fowkes.
(Photos by Lou Garcia & Von Taylor)*

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Celebrate Juneteenth at SLAC!

By Jasmine Rogers

This year the Black Association of SLAC Employees (BASE) invites you to come and celebrate our 16th Annual Juneteenth Celebration.

Each year, BASE hosts this event celebrating the ending of slavery in this country as well as providing an opportunity for co-workers, friends and family to gather. Juneteenth celebrations began in Texas and Arkansas and are now celebrated nationwide.

The theme for this year honors Sam 'Emanuel' McDonald, a Stanford University employee for over 50 years, and other Afro-Americans that have made contributions to California. This event also honors our dearly departed SLAC employee and BASE member Clyde Barker.

Guests at this year's event will enjoy a raffle, great food, music, a jumper for the kids and more!



*Juneteenth Celebration at SLAC, 2004
(Photos by Diana Rogers)*

Event Date:

June 17

Event Time:

3:00 - 6:00 p.m.

Location:

Cafeteria Picnic Area

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Cost:

Adult - \$11.00

Child (12 & under) - \$6.00

Stay tuned for posted flyers with ticket sale information!

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Time to Apply for the Ashley - A Great Career Opportunity

By Carmella Huser

Applications are now being accepted for the annual Alonzo W. Ashley Career Development Fellowship, which was established in 1999 in honor of Alonzo W. Ashley. Continuing the spirit of his work, the Fellowship allows an employee one year to engage in full or part-time activities that will enhance his or her career and contribute to SLAC's mission. Proposed activities could include attending school, participating in on-the-job training, participating in a job rotation or creating training.

Who is Eligible?

Employees who have worked at SLAC for at least three years and have demonstrated contributions to diversity at SLAC or in their community are eligible to apply for the Ashley Fellowship. The person selected will receive his or her regular salary for the year and participate in the normal salary and performance evaluation cycles.

Approval of one's supervisor and of others involved in the proposed activities is required. Applicants must describe these activities, explaining how they will develop their career and contribute to the SLAC mission.

Application Deadline is July 1

Proposals must be submitted to Carmella Huser, Manager of Employee Relations and Training (MS 11, Ext. 2358), by July 1. Application forms are available on-line or from Human Resources. We anticipate the Fellowship year will begin October 1, 2005 and end on September 30, 2006. Finalists will be interviewed by a selection panel, and the person selected will be notified by July 22.

WIS Presents

Pauline Wethington
and Lesley Wolf
Ashley Fellows

May 24, Noon
Panofsky Auditorium

Have you ever wondered what and ASHLEY FELLOW does during their paid year off work? No idea what an Ashley Fellow is? Now's your chance to find out!

Past Ashley Fellowship recipients Pauline Wethington (COM/HR) and Lesley Wolf (LIB) will describe their career development experiences.

Please save your lunchtime on May 24 and come to this talk to understand this

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Past Recipients

Past Ashley Fellows include William Colocho (AD), Nick Arias (NLC), Pauline Wethington (COM/HR), Lesley Wolf (LIB) and Arturo Alarcon (AD). Eligible employees are encouraged to apply. For proposals from past recipients, see: www-group.slac.stanford.edu/hr/er/fellowship/2004/pastproposal.html

For more information, see:

<http://www-group.slac.stanford.edu/hr/er/fellowship/2004/ashley.html>

career opportunity for SLAC employees.

Bring a lunch and a bring a friend!

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Joel Parriott (OMB) Visits SLAC



Joel Parriott (center), Office of Management and Budget, visited SLAC on May 5. He is shown here with Tom Abel (KIPAC), shown left, and Elliott Bloom (EK), shown right.

(Photo by Diana Rogers)

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Soccer: Young Guns Win!



We had about 28 players for the annual Old Farts vs. Young Guns soccer game on Friday. For the first time in 3 years, the Young Guns were able to field their regulars (instead of having a large number of non-regulars), and they were able to come away with a convincing 5-1 victory. The barbecue was a great success, as the weather was nice and the food and drink abundant.

Thanks to all for an enjoyable game!

(Photo and caption courtesy of David Fryberger)

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The Interaction Point is published twice monthly every first and third Friday. Submissions are due the second and fourth Tuesdays of each month.

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TIP is available online at:

<http://www2.slac.stanford.edu/tip/>