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[Serious Accident Leads to Accelerator Shutdown](#)

A Special Announcement by Lab Director Jonathan Dorfan

A contractor's electrician working at SLAC suffered a serious accident on Monday, October 11. The accident took place in the klystron gallery of the linear accelerator and involved a 480V flashover. At the time of writing, the electrician is in critical but stable condition. The distress to his wife and family is enormous and I know you all join me in sending our heart-felt prayers for his speedy and complete recovery.

An investigative team, including experts from DOE headquarters and other DOE sites, will arrive on Monday, October, 18 and spend approximately three weeks on-site doing a thorough and in-depth evaluation of the accident. As is appropriate, the scene of the accident is sealed off so as to protect the evidence.

[See whole story...](#)

[When it Comes to Accelerators, What is Cold?](#)

By Heather Rock Woods

Superconductivity arises in special materials at super cold temperatures. At these temperatures—a few degrees above absolute zero—the materials' electrical resistance virtually vanishes.

Superconducting technology will be used to accelerate electrons and positrons into extremely energetic collisions in the proposed International Linear Collider (ILC).

This summer, the International Technical Recommendation

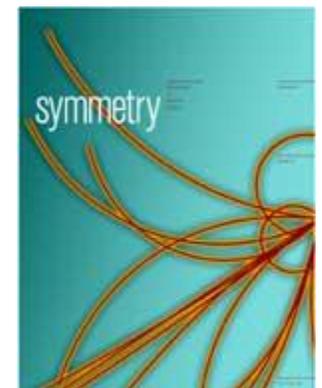


[SLAC and Fermilab to Launch symmetry magazine](#)

By David Harris

SLAC and Fermilab are set to launch symmetry, a new publication for the international particle physics community. The inaugural issue will be released in late October.

This joint publication



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replaces both SLAC's Beam Line (last published

Spring/Summer 2002) and Fermilab's Fermi News (last issue in June 2004) with a monthly full-color magazine and accompanying on-line version. This is the first time two DOE national laboratories have combined resources to produce such a publication.

[See whole story...](#)



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Last update Thursday October 14, 2004 by [Emily Ball](#)

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An investigative team, including experts from DOE headquarters and other DOE sites, will arrive on Monday, October, 18 and spend approximately three weeks on-site doing a thorough and in-depth evaluation of the accident. As is appropriate, the scene of the accident is sealed off so as to protect the evidence.

In order to emphasize my grave level of concern, I directed that all work, other than desk and janitorial work and essential maintenance involving equipment safety, be stopped on Tuesday October, 12. I also took the extraordinary step of turning off the accelerators indefinitely to allow us to focus all our energies on one imperative: SAFETY. Safety comes first—no questions! Safety is something that all of us must value above all.

Following the one-day total work stoppage, we have returned to work, but with restrictions in the areas of electrical work, work on elevated surfaces and hoisting and rigging. The accelerators remain off until further notice.

There is work on this site that is hazardous. This work demands an approach of great respect and understanding. It is work that requires and needs careful planning, training and the use of proper procedures and protective equipment. I expect you all to know and follow safe work practices – there can be no compromises. The Integrated Safety Management approach is the vehicle to accomplish this.

I finish as I started, by sending our wishes of support to him and his family, and by exhorting us all to look deeply into our behavior at work to ensure that such an accident never again happens at SLAC.

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When it Comes to Accelerators, What is Cold?

By Heather Rock Woods

Superconductivity arises in special materials at super cold temperatures. At these temperatures—a few degrees above absolute zero—the materials' electrical resistance virtually vanishes.

Superconducting technology will be used to accelerate electrons and positrons into extremely energetic collisions in the proposed International Linear Collider (ILC).

This summer, the International Technical Recommendation Panel (ITRP) decided that the international physics community should design the ILC linear accelerators (linacs) with cold technology, rather than the warm technology espoused by SLAC and other institutions.

The panel stressed that both technologies were mature and viable. SLAC has strongly promoted the project, independent of the technology choice, and is now refocusing its efforts to optimally design and achieve a machine with cold technology (see [TIP, September 3, 2004](#)).

SLAC is thoroughly familiar with warm technology. A lower-energy version runs the linac here. The particles travel through the center of copper cavities kept at 113 degrees Fahrenheit.

So, How Does Cold Work?

Greg Loew (DO), who spent two years steeped in warm and cold details as chair of the ILC Technical Review Committee, explained the cold technology.

Cavities (roughly seven inches in diameter with a hole through the middle) are cooled to 1.8 Kelvin (271 degrees Celcius below the freezing point of water). The super-cooled cavities are made of a metal called niobium that looks like stainless steel. At that temperature, niobium is superconducting. The electrons in the niobium material (not the electrons being accelerated through the niobium cavity holes) flow with virtually no resistance, like pairs of skaters on perfectly smooth ice.

The ILC calls for two linacs (one for electrons, one for positrons) pointed at each other. Whether a linac is warm or cold, particles get accelerated by microwave power that is injected into the array of cavities. The microwave power generates longitudinal electric fields and cylindrical magnetic fields. The electric field attracts (or pulls) the particles traveling through the cavity, giving them an energy boost.



A Fermilab technician works on an array of superconducting niobium cavities at Fermilab. (Photo courtesy of Fermilab)

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Because they have almost no resistance, the superconducting cavities can hold the microwave power longer. In warm technology, some of the power ends up heating the copper cavity walls—which have some resistance.

Power Cost vs. Energy Reach

“Superconducting cavities allow you to store microwave energy very efficiently for a long time,” said David Burke (ILC).

Linacs accelerate particles in ‘trains’ with multiple cars—bunches of particles—containing a cargo of 20 billion particles per bunch for the cold design, or 7.5 billion particles per bunch for the warm design. Because cold cavities store microwave energy longer, each microwave pulse can accelerate longer bunch trains. Cold trains carry 15 times more bunches than warm trains, but arrive less frequently—five times each second compared to 120 times each second for warm. In the end, the two designs generate similar luminosities, or event rates, for experiments.

Compared to warm technology, cold technology uses less electricity from the power company while accelerating longer energy-efficient trains. That is like adding loaded railroad cars to a steam train without needing more coal to power the train.

However, some of what superconducting technology gains by saving power, it loses in particle energy.

Niobium surrenders its superconductivity when exposed to too strong a magnetic field (see sidebar). Accordingly, the cold linacs will use lower magnetic and electric fields which means particles will get a smaller tug, and gain less energy, for every meter traveled. Thus, a cold machine needs to be longer than a warm machine to reach the final beam energy of 250 Giga electron volts (GeV) for each beam. The machine length will be determined by the design, but will be at least 20 miles long from the end of one linac to the end of the other.

Back to the Future

Helping design a cold machine won’t be completely new to SLAC, Loew pointed out. In the late 1960s, people at SLAC and Stanford explored how to equip the linac with superconducting cavities, but it proved unfeasible at the time. Now the time appears right for super-energetic cold linacs.

For more information on the linear collider, see: <http://www-project.slac.stanford.edu/ilc/>

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October 26 Public Lecture: The Runaway Universe

By Linda DuShane White

Concentrating on questions that have fascinated mankind throughout history, Roger Blandford (KIPAC), director of the Kavli Institute for Particle Astrophysics and Cosmology, will speak on 'The Runaway Universe' at the next SLAC public lecture on Tuesday, October 26, at 7:30 p.m. in Panofsky Auditorium.

Using powerful new technology, scientists have observed that the Universe appears to be flat, accelerating and lightweight. What do these terms mean, how was this view developed and what does it imply? Other questions to be addressed are the connection between cosmology and particle physics experiments, and the connection to the even more powerful telescopes and accelerators envisioned for the future. These tools are expected to help provide far greater knowledge of the geometry, expansion and contents of our Universe, according to Blandford.

Blandford came here a year ago and says he is enjoying being in the Stanford community, working with his new colleagues and building up the Kavli Institute. Born in England, he received his PhD from the University of Cambridge. He joined the Caltech faculty in 1976, where he was the Richard Chace Tolman Professor of Theoretical Astrophysics.

The public lecture is free and no reservations are necessary. A photo ID is required to enter the Lab.

For information on the Public Lecture Series, see: <http://www2.slac.stanford.edu/lectures/>



Roger Blandford (KIPAC) will present the next public lecture (Photo by Diana Rogers)

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By David Harris

SLAC and Fermilab are set to launch *symmetry*, a new publication for the international particle physics community. The inaugural issue will be released in late October.

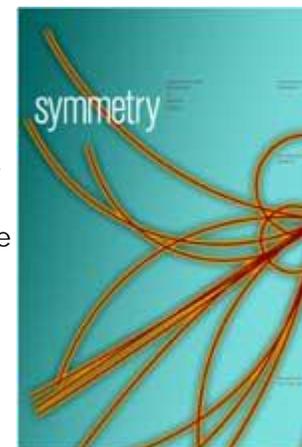
This joint publication replaces both SLAC's *Beam Line* (last published Spring/Summer 2002) and Fermilab's *Fermi News* (last issue in June 2004) with a monthly full-color magazine and accompanying on-line version. This is the first time two DOE national laboratories have combined resources to produce such a publication.

In recent years, much exciting progress has been made at both SLAC and Fermilab by the cross-fertilization of ideas between particle physics, astrophysics, synchrotron science and other fields. *Symmetry* will explore these connections not only through the science but also through stories of people, policy and culture.

The first issue features articles, commentaries, essays, profiles, reviews and outside perspectives of the work done at both labs.

Print copies will be available in the Central Lab (Bldg. 40) from the Communications Office (Ext. 8703, room G106), the Library (Ext. 2411, room Y215) as well as at other locations around SLAC.

People can subscribe to the magazine by visiting the *Symmetry* website and may choose to receive either e-mail notifications when new issues are posted or print copies of the magazine. Staff who work on-site should subscribe at: <http://www.symmetrymagazine.org/slac>. Other readers can subscribe at: <http://symmetrymagazine.org/form.html>



The new magazine's cover. (Image Courtesy of SLAC)

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Lab Adapts Organizational Structure to International Design of ILC

By Jonathan Dorfman

As most of you know, we are combining our resources with others in the worldwide particle physics community to design a superconducting linear collider.

SLAC has an enormous amount to contribute to the International Linear Collider. To maximize our support and contribution to the international effort, we are diversifying our management responsibilities to concentrate on two equally important areas: our technical contribution to the accelerator design and the Laboratory's interface with the larger international collaboration. This new structure allows us to work hard on the technical aspects of the new accelerator and to concentrate on how to effectively integrate these efforts into the worldwide initiative.

Tor Raubenheimer will become Head of the Linear Collider Department leading the accelerator group developing technologies and systems for the ILC. This is the largest group in the worldwide collaboration currently working on linear collider design and can immediately play an important role. Although SLAC's particular area of expertise, room temperature radiofrequency technology, was not the final choice for the ILC accelerator, we have broad experience through the SLC, by developing a comprehensive design for the NLC X-band linear collider, through participation in the ILC Technical Review Committee and the U.S. Linear Collider Technical Options Survey. The group is rapidly learning about those elements of the superconducting approach that will be melded with their already vast experience. and adapt to the chosen superconducting rf cavity technology.

David Burke will become SLAC's interface to the broader linear collider community. As the ILC Coordination Officer, he will take on the responsibility for leading SLAC's contribution in building a dynamic international structure for the ILC. The innovative nature of the accelerator design, pieced together from the ideas, abilities and drive of scientists from all regions of the world, will generate tough organizational issues. Since there is no existing model to follow, his challenge will be to work with his international partners to devise cooperative approaches that will ensure the best possible results from the collaboration.

I know you all join me in wishing Tor and David every success in their new functions.

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Quenching Marital Bliss

Niobium, mined in Brazil, needs to be exquisitely purified. It is one of 26 metals in the periodic table with natural superconducting properties.

Below a critical temperature (9.2 Kelvin for niobium) electrons in a superconducting metal begin to pair up in happy couples called Cooper pairs. Cooper was one of three physicists who received the Nobel Prize for explaining this effect. The colder you make the niobium below 9.2 Kelvin, the more pairs form.

"The electrons get 'married' and they behave in a different way," said Greg Loew (DO). "They flow freely through the cold niobium, meeting with absolutely no resistance to their motion. Only the remaining unpaired electrons, the bachelors, still feel a little residual resistance. If the critical temperature is exceeded, all couples undergo instant divorce."

Couples face one more problem: Even at low temperatures, a strong magnetic field will quench the superconducting properties. Niobium has a high quenching field—it takes a magnetic field of 1750 Oersteds to extinguish its superconductivity. That is crucial in an accelerator because the longitudinal electric fields which propel the particles are always surrounded by circular rings of magnetic fields.

"Thus it's inevitable that magnetic fields will eventually limit the cold approach to a certain accelerating gradient," Loew said. "The secret is how to design the cavity shapes so that the magnetic field which accompanies the electric field is as low as possible."

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Terry Anderson's Montana Homestead

By Linda DuShane White

As is true of many multi-faceted SLAC employees, Terry Anderson's (TIS) avocation is quite different from his graphics work.

Anderson was born on a 'dry land' wheat farm in Montana on the high plains near the Canadian border. The nearest town (Chester, population 800) is 30 miles away by dirt road and the nearest neighbor is two miles away. 'Dry land' means the farm is not irrigated. Anderson says, "Whatever the weather brings, when it rains, that's it. It's a tough life. The area gets about 12 inches of moisture per year, which is considered arid and not suited for farming. But somehow a few people have stuck it out. They are a tough breed." Anderson loves the place, loves to revisit his past. "After my dad died three years ago it sank in just how much the farm meant to me, and its link to our family history."

Anderson explains his ties to Montana. "My grandpa came from Sweden to homestead his wheat farm in 1912. That first winter he lived in a canvas tent surviving on jackrabbits and coffee. The other Homesteaders called him the Little Swede on the Hill."

Anderson believes his grandfather was misinformed by deceptive flyers sent to Sweden promising free fertile farmland to lure immigrants to populate the American West. "They needed to build a railroad across the Northern U.S., linking Chicago and Seattle. To do this they needed stops along the way and got the idea to use the Homestead Act. Farmers needed supplies, and little towns sprung up all along Northern Montana to help support the Homesteaders. It's dying back now, going back to the prairie."

Move from Montana

Anderson was first introduced to graphics as a draftsman/cartographer for the Montana Highway Department. He then came to California and began doing technical illustration. "I remember when I came out here and found out that snow was optional. That was a real treat. The two things I don't miss about Montana are the long cold winters and the constant wind."



Farmyard showing a barn Terry's grandfather built in the early 1930's. The two mountains you see in the background are West Butte and Gold Butte, and make up part of the Sweetgrass Hills bordering Montana and Canada. (Photo courtesy of Terry Anderson)

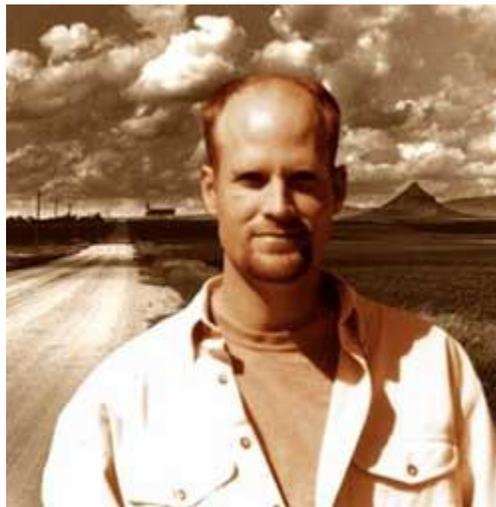
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Terry Anderson with the family farm in the background. (Photo courtesy of Terry Anderson)

Anderson had heard of SLAC while still in Montana. Over 20 years ago when he saw an ad for a SLAC technical illustrator, he applied for the job.

His interests have taken some surprising directions. "My younger brother has a PhD and MBA so he handles most of the business decisions and legal contracts. I do all the planning and day-to-day decisions. We have a couple of gas wells on the place and needed to negotiate new leases and easements. I knew nothing about the gas business but learned quickly."

During the year he consults by phone with his cousin who leases the 420 acre farm. "I get a kick out of talking to him while he is sitting out on tractor or the combine during harvest. I know when I was a kid driving tractor you couldn't hear yourself scream. I certainly never imagined at that time being able to talk to someone on a phone while working the fields."

Anderson's graphic skills come in handy, too. Using a satellite image of the farm as a base he has superimposed all the information he has gathered about the place: crop information, gas well locations and production numbers as well as historical information about when land was acquired and from whom. "I can look at that map and tell you anything about the farm. It really comes in handy when dealing with the gas companies or talking with my cousin. Dad was always telling me things about the farm when I was growing up, but I didn't really listen. It wasn't until after he was gone that I realized someone had to pass on this information. Hopefully this map will be able to do that."

This piece of Anderson family history is also American history, and Anderson works to keep it alive for future generations. People wonder why they don't sell or why they bother fixing up the old buildings, but to Anderson and his brothers, "The way we look at it, our Grandpa and Dad spent their entire lives working on that place. The least we can do is keep it from falling down. I would love for my children to take up the reins after I am gone, and keep it going. As a young adult I remember telling Dad when he was about to retire to just sell the place. He told me he wouldn't sell it, that he wanted to keep it in the family. I thought he was crazy. I guess I am, too."

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Health Care Options Change Substantially for 2005

By Anita Piercey

November 1-19 is the health care Open Enrollment period for Stanford/SLAC faculty and staff. Changes to the 2005 options are designed to stem rising costs, to provide better access to Stanford Hospitals and Clinics, and to update health care options to reflect changes in the health care industry. All changes to your health benefits must be completed by November 19 at midnight. BenefitSU will be sending mailers to home addresses with complete information.

The SLAC Benefits Fair will be held on Thursday, November 4, in the SLAC Panofsky Auditorium Lobby and Breezeway from 10:00 a.m. to 4:00 p.m. An Open Enrollment Information/Q&A Meeting will be held in Panofsky Auditorium on Tuesday, November 9, from noon until 1:00 p.m. SLAC employees/retirees may also attend any of the benefits fairs and information meetings on the Stanford campus listed below.

Informational Presentations (scheduled 1-hour sessions)

Thursday, 10/28, 1:30 p.m.
Fairchild Auditorium

Friday, 10/29, 1 p.m.
Hacienda Commons, 796 Escondido Road

Monday, 11/1, 1:30 p.m.
Facilities Dept. Room H, D, L, 340 Bonair Siding Bldg.

Wednesday, 11/3, 10 a.m.
Stanford Management Co., 2770 Sand Hill Road

Monday, 11/8, 12:30 p.m.
Bechtel Int'l Center, Assembly Room

Tuesday, 11/9, noon
Panofsky Auditorium, SLAC

Wednesday, 11/10, 1 p.m.
Alumni Assoc., Barnes & McDowell Conf. Rooms

Friday, 11/12, 10 a.m.
Stanford Management Co., 2770 Sand Hill Road

Monday, 11/15, 1 p.m.

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Alumni Assoc., Barnes & McDowell Conf. Rooms

Tuesday, 11/16, 1:30 p.m.
Fairchild Auditorium

Thursday, 11/18, 10 a.m.
Tresidder, Cypress N&S, 459 Lagunita Dr. 2nd flr.

Friday, 11/19, 10 a.m.
Tresidder, Cypress N&S, 459 Lagunita Dr. 2nd flr.

Benefits Fairs Schedule
(10:00 a.m.–4:00 p.m.)

Tuesday, 11/2
Tresidder, Oak Lounge

Wednesday, 11/3
Tresidder, Oak Lounge

Thursday, 11/4
Panofsky Auditorium, SLAC

Friday, 11/5
Fairchild Auditorium

Monday, 11/8
Tresidder, Oak Lounge

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More Traffic Tips

By Rick Yeager

Bicycle Safety Gear

Bicycle operators at SLAC are responsible for following the same traffic rules as a motor vehicle. Stop signs require a complete stop before proceeding. Turning or changing lanes requires the display of DMV approved hand signals, and caution should be used when passing pedestrians. Although operating bicycles on the paved walkways at SLAC is permitted, this is not recommended for pedestrian safety.

Operation of a bicycle during the hours of darkness requires both a white or clear front and light as well as a red rear light or reflector. When riding at night, you should be sure you can be seen. A flashing red light armband, using lights attached to clothing or mounted to the rear of the bicycle seat or fender is strongly recommended. Other safety gear such as reflective clothing or attachable reflective markings, gloves and knee pads is recommended for personal safety.

Helmets

Motorcycle, motor scooter and moped operators are required by DMV to wear a D.O.T. approved helmet for motorized vehicles.

Bicycle helmets are required for persons under the age of 18 and strongly recommended for persons 18 and up. A bicycle safety helmet is also D.O.T. approved, but only for use with a pedal operated vehicle and not with a motorized vehicle.

Scooter Weight Capacity

Motor scooters and mopeds have rider/operator weight limitations placed on them by the manufacturer. Ratings differ and for their own safety, operators should check the weight capacity of the scooter or moped they are planning to use. The capacity rating is posted underneath the vehicle seats. Many of the Honda scooters are rated for 185 lbs. The Honda Elite is rated for 275 lbs. If a weight rating cannot be found, contact SLAC Transportation to obtain this information.

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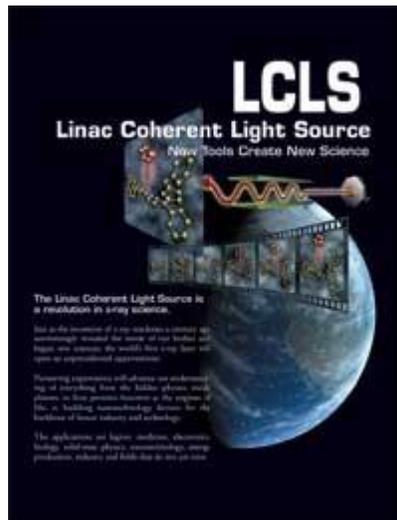
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The LCLS Brochure is Now Available

By Heather Rock Woods

A new brochure highlighting the marvels of the Linac Coherent Light Source (LCLS) and the burning scientific questions the machine will address is now available on-line and through the Communications Group (Joni White, Ext. 8703, joni.white@slac.stanford.edu).



The LCLS brochure is now available. (Image Courtesy of TechPubs)

SLAC is leading the collaboration, which is now in the engineering and design phase. Construction is slated to begin in 2006. The light source will use the final kilometer of the SLAC linear accelerator.

The brochure was designed by Terry Anderson in SciArts Media (TIS) and written by Heather Rock Woods (COM), in consultation with LCLS Division Director John Galayda and SSRL Director Keith Hodgson.

Introducing a Truly Unique Machine

The Linac Coherent Light Source is a revolution in x-ray science. Just as the invention of x-ray machines a century ago astonishingly revealed the inside of our bodies and began new sciences, the world's first x-ray laser will open up unprecedented opportunities in medicine, biology, electronics, solid-state physics, nanotechnology, energy production, industry and fields that do not yet exist.

LCLS is dramatically different from any x-ray source ever built thanks to its laser properties: exceptionally bright, coherent, short pulses of x-ray light. It is also different from any other laser because it will produce light at x-ray wavelengths that can probe matter on the atomic scale.

Until now, our only glimpses into this realm have been long exposure shots that give an average image of these constantly moving objects, like a blurred picture of a hummingbird's wing beats.

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Fall Back!

Daylight Saving
Time Change
Sunday, October 31
at 2 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>

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MILESTONES

Service Awards

5 Years

Ohldag, Hendrik (ESRD), 10/25

10 Years

Juarez, Luis (MET), 10/17

Malec, Richard (MD), 10/24

Poling, Bennett (ASD), 10/24

Ross, William (ESD), 10/17

Toledo, Rudolph (MFD), 10/17

15 Years

Hahn, Jack (SHA), 10/23

Lessard, Luc (ESRD), 10/16

Liu, James (RPG), 10/24

Webb, Barry (HR), 10/20

20 Years

Popescu, Gheorghe (ESD), 10/29

25 Years

Meyer, Steven, (SCS), 10/16

35 Years

Bostic, David (MFD), 10/23

Retired

Dorsey, Odell (KLY), 9/30

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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Seminar Series Features Wide Range of Speakers

By Raven Hanna

You have probably seen announcements on SLAC Today on the Colloquia series. You may have noticed scientists, staff and visitors walking toward Panofsky Auditorium around 4:00 p.m. on Mondays. You may even have seen people in the Lobby chatting before the seminar.

"All are welcome," says Marty Breidenbach (SLD) who currently heads up the SLAC Departmental Colloquia series. The goal of the talks is to bring interdisciplinary stimulation to the SLAC community, encouraging communication and collaboration. Natasha Haulman (SLD), who organizes the seminars, added, "[The talks are] a way for people from different departments to come together and mingle."

Presented for the Non-Specialist

Speakers are chosen from a variety of scientific fields and the lectures are aimed at those who have science interests, not for specialists. Memorable past lecturers include Sharon Weinberger on 'Hafnium Isomer Weapons' and Bulent Atalay speaking about 'Math and the Mona Lisa.'

Upcoming topics include autoimmune disease, science on Mars, renewable energy, drug industry marketing ethics, science and lore of the kitchen, and the reversal of diabetes in adult animals.

The Colloquia are featured on SLAC Today generally on the Friday before each talk. Haulman also sends e-mail reminders. Contact her to be added to the list (Ext. 5449, haulman@slac.stanford.edu). Let her know if you would like to meet with a speaker or with any questions on the Colloquia.

Missed a Talk?

Many past seminars are available on video from the Library in the Central Lab (Bldg. 40, room Y215). To search Library videos, see: <http://www.slac.stanford.edu/spires/video/>

For upcoming talks, see SLAC Today: <http://today.slac.stanford.edu>

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DOE Library Managers Meet, Talk and Row

By Lesley Wolf

You could talk all you wanted as loud as you wanted as long as you wanted in DOE libraries everywhere last week without being shushed. Really. The DOE Laboratory Library Managers were away from their posts attending the Library Operations Working Group (LOWG) Conference sponsored by SLAC.

No one could shush the librarians either. There was a whole lot of discussion going on about the rising cost of journals, electronic access to publications and meeting evolving customer requests for information delivery.

LOWG is a vehicle for giving site reports, but more importantly it is a friendly, supportive gathering where librarians can share ideas, problems and solutions, debate the pro's and con's of paper versus digital and brainstorm ways to satisfy increasing demands for print and electronic materials on shrinking budgets.

Everyone was pretty much talked out by Wednesday evening so they kicked off their sensible shoes, pulled on shorts and sweatshirts, and headed down to Bair Island in Redwood City for rowing lessons from our SPIRES database guy Mike Sullivan (TIS). Then it was off to Shiok! for a taste of the multiethnic cuisine of Singapore.



LOWG attendees shown left to right. Front row: Annanaomi Sams (PNNL), Mary Petersen (BNL), Jose Olivares (LBNL), Jeanne Perrone (DOE); Center row: Ann Redfield (TIS), Patricia Kreitz (TIS), Judy Gilmore (OSTI), Susan Tackett (OSTI), Shannon Savage (ANL), Mary Donahue (NREL), Elois Morgan (JLAB); Back row: Bob Conrad (ORNL), Yvette Woell (ANL), Jackie Stack (LANL), Karen Spence (OSTI), Rob Atkinson (FNAL), David Klepich (INEEL). (Photo by Diana Rogers)

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On display

Art Work & Working Art at SLAC

In the Library through October!

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