

NLC Modulator Designs Show Promise

By Heather Rock Woods

SLAC is creating radically new modulators to power the next linear collider accelerator. Modulators convert wall-plug energy from PG&E into a high-voltage pulse that fuels the klystrons, which in turn propel particles down the linac.

The next linear collider project (NLC) aims to operate at 10 times the energy of SLAC's accelerator. This will require a 20-mile accelerator and enormously better modulators and klystrons, which are the heart of the radio frequency (RF) system that accelerates particles to nearly the speed of light.

In collaboration with LLNL and Bechtel-Nevada, SLAC has designed a prototype solid state modulator that recently met two major milestones: driving four XL4 (50 megawatt X-Band) klystrons at full peak current and voltage, and creating the ideal shape pulse required for constant RF power. Richard Cassel (ESD) is the project leader at SLAC.

The old, shed-size modulators, which have served SLAC since its inception, use switch tubes that are now obsolescent and would last just over a year of full-time running in the NLC. When triggered, the switch tube sends a short high-voltage pulse from a pulse-forming network (PFN) to a transformer, where it exits at 350 kiloVolts (kV) to drive the klystron cathode. These modulators are sufficient for operating the roughly 240 klystrons on SLAC's linac.

But the old design won't work for NLC. Just the thought of procuring enough of the short-lifetime switch tubes for over 4,000 more powerful klystrons sent the R&D team to the drafting board.



Photo by Diana Rogers

The Solid State Induction Modulator team beside the 8-Pack Modulator. Front row, left: Richard Cassel (ESD), Dan Moreno (ESD), Chris Pappas (ESD), Minh Nguyen (ESD). Rear row, left: Marc Larrus (ESD), Brad Hickman (LLNL), Ray Larsen (TD), Piotr Blum (ESD), Ed Cook (LLNL), Jeff de Lamare (ESD), Craig Brooksby (Bechtel)

"The old modulators are totally impractical for NLC, they're not flexible and reliable enough. We'd worry whether we could keep the machine running," said Ray Larsen, NLC Program Manager. "They're also expensive, and we challenged ourselves to build a more reliable, energy-efficient and cheaper design."

The new modulators put solid state switches on standard circuit boards. The prototype currently being tested at the lab's NLC Test Accelerator (NLCTA) employs 76 boards stacked in a cabinet with a unique 3-turn, tri-axial transformer that steps up the stack's voltage by a factor of three. Each board handles 2.2 kV, enabling the modulator to generate the 500 kV the NLC needs to feed its new 75 megawatt klystrons, which were also designed and built at SLAC.

"The prototype has a lot of beautiful features," said Larsen over the modulator's buzzing noise. Each board handles relatively low voltage, so is easier to insulate. The solid state switches—Insulated Gate Bipolar Transistors (IGBTs)—turn on and then off to make the short pulse. The pulse length and shape are easily adjustable, a major advantage over the PFN design. The modulator is powerful enough to drive eight klystrons at a time. It runs even if a few boards aren't working.

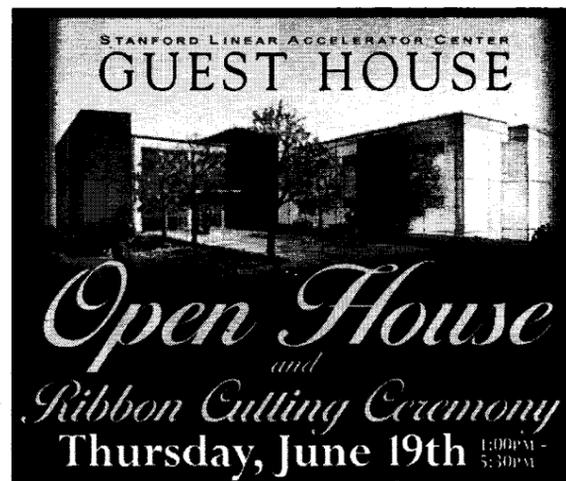
(See MODULATOR, page 3)

Come to the Guest House Opening

This is your chance to get up close and personal with the new Guest House. Come to the Open House where you can tour the rooms and facilities and meet the staff.

Schedule:

7:00 a.m.:
Tours for owl shift staff
10:30 - 5:30 p.m.:
Open House
4:30: Ribbon Cutting Ceremony



SLAC-wide Standdown Emphasizes Safety Procedures

By Mike Grissom

On January 28, 2003 a serious accident occurred at SLAC, which was followed by an exhaustive Type B investigation of our safety procedures by the Department of Energy (DOE). As a result, we held a safety standdown for all staff on May 23rd. This was an ideal opportunity for us to reflect on what causes accidents at SLAC and how we can all contribute towards eliminating them.

Division Associate Directors led the safety standdown with their divisional staff.

Observations From the Standdown

Feedback received from the divisional meetings included:

Business Services Division: "The stand-down went fine with some limited discussion following the presentation. The only issue that came up was the issue of a pathway around the loop road..."

Staff may note that the pathway around the loop road is a long-term project with the next segment, the area near Cooling Tower 101 and Sector 30 access road, due to be completed during June 2003. (See QuickNews 5/30/03.)

Director's Office: "A key point was that accidents involved relatively simple, routine tasks. Just like most car accidents occur within five miles of home. The idea of safety and

caution needs to be ingrained in the simplest tasks each of us does. Don't save vigilance for difficult or complex tasks."

Common tasks at home and work, such as changing light bulbs and batteries in smoke detectors, may present opportunities for accidents if not properly prepared for.

ES&H Division: "ES&H Division staff have been active in both investigating the causes of accidents/incidents at SLAC and assisting SLAC staff in taking appropriate corrective action to prevent future occurrences."

If you have a safety concern but don't know who to contact, call the ES&H Hotline at x4641. If the concern is an emergency, call 9-911. If the concern is an imminent after hours problem, contact Security at x2551.

Research Division: "Persis gave a very good talk that was well received. This standdown shouldn't replace the Talk Walk and Clean (TWC). This is in my opinion a very useful program. Particularly the clean option which gets things done."

The TWC for 2003 will be replaced by a new program discussed on Page 4. For a number of reasons, good housekeeping is always a best practice. Poor housekeeping may make it harder to identify a hazard in the workplace or may lead to an accident due to the inappropriate location of property. All SLAC supervisors are encouraged to periodically give staff in their areas a clean-up opportunity. Instructions for the proper disposition of excess

(See SAFETY, page 2)

Congratulations 2003 Globie Recipients



Photo by Diana Rogers

Forty SLAC employees received Globie awards on May 27. The awardees were chosen from 190 nominations from all departments of the lab. Jonathan Dorfan presented the awards saying "There are Oscars and Emmys, but there is only ONE Globie." Dorfan also received an award, much to his surprise. Front row, left to right: Clarice Rinard, Dave Bostic, Robert Kirby, Bob Reif, Bill Butler, Craig Haggart, Janice Dabney, Joni White. Middle row, left to right: Kelley Ramsey, Thanh Ly, Pat Dungan, Naomi Nagahashi, Jacqueline Robleto, Alfonso Pacheco, Lisa Mongetta, Michael Smith, Jean Deken. Back row, left to right: Judy Meo, Debbie Nicholson, Jim Allan, Laurie Escudero, John Weisend, Ruth McDunn, Carol Morris, Michael Olson, Steven Frey, Jonathan Dorfan, Roger Erickson, Phil Brunner, Irene Boczek. Not pictured: Terry Anderson, Lisa Dunn, Amy Rutherford, Janet King, Eleanor Mitchell, Ann Redfield, Ben Poling, Sharon Oden, Harold Morales, Yolanda Pilaastro

Director's Corner

By Jonathan Dorfan

This month I would like to spotlight a few recent events that gave me, and I hope will give you all, particular satisfaction.

Last week I presented 39 of your fellow co-workers Employee Recognition Awards, affectionately known as 'Globies' after the beautiful glass globe that each winner receives. This is one of my favorite events of the year because the winners are chosen by their peers for having demonstrated exceptional citizenship. We all get the chance to nominate those people who always pitch in when needed, or who show special caring and kindness in the workplace, or who volunteer for SLAC activities not directly related to their job, or who show unusual grace under pressure. There are no tougher judges than the people we work with all year round, making a 'Globie' a truly meaningful award. It was great to see winners covering the full spectrum of the workplace, with strong representation from all the Laboratory's divisions. World Class People make a World Class Laboratory!



Photo by Diana Rogers

Another event that showed SLAC staff's willingness to go beyond what is required in normal daily working life was the lunch to celebrate the first Certificate in Supervision graduating class. Each graduate had completed a suite of nine supervisory-training courses. It is heartening to see the commitment that these Laboratory supervisors are placing on doing a better job of supervising their staff. Finding time for training is always difficult; but I encourage all of you to take advantage of the excellent courses offered by the Training and Development Office.

An important step forward was made in March when the Sub-Picosecond Source started its first experimental run. An innovative change to the linac at sector 10 was made last summer which has allowed us to shorten the length of the electron beam by a factor of 25. This sub-pico second (less than one millionth of one millionth of a second) beam can be used in the Final Focus Test Beam to do electron initiated experiments or the electron beam can be put through an undulator magnet to produce ultra-short, high intensity X-rays. These electron and X-ray bunches are the shortest ever created and establishing such a source is a fine example of how innovation remains a hallmark of SLAC. The short-pulse facility also reminds us of how increasingly we are taking advantage of the synergy that exists at SLAC between high energy physics and X-ray science. In March and April, experiment E164 used the ultra-short electron beam to extend their studies of plasma wakefield experiments. Beginning in May, an international consortium began the first use of the ultra-short X-ray beam, seeing "first light" on Monday, May 19 (<http://ssrl.slac.stanford.edu/welcome.html>). Congratulations to all who worked so hard to bring into being this new and unique facility.

The B Factory's physics run is in full swing. Performance is increasing steadily and new records for peak and integrated luminosity continue to be set. The BABAR collaboration is putting the finishing touches on a large number of papers and we can again anticipate that their results will be amongst the highlights of this summer's conferences.

I was delighted to welcome Professor Yoji Totsuka to SLAC this week. Totsuka took over as Director General of KEK in Japan in April this year and this was the first time he had seen our laboratory. He was very impressed by what he saw and several of us were able to have productive talks on many subjects including the future the Linear Collider. SLAC is an international lab and the future strength of high-energy physics is closely bound to the field's ability to collaborate internationally. I am sure that Totsuka's visit is the start of a long and productive relationship in the tradition of strong and fruitful collaboration between KEK and SLAC.



Photo by Diana Rogers

The members of the first graduating class, in alphabetical order, are: Ron Badger, Carol Bechtel, Richard Bergstrom, Butch Byers, Scott DeBarger, David Ernst, Vickie Flynn, Barbara Hemstad, Marty Hill, Gene Holden, Cindy Imelli, Darrell Jones, Karen Kruger, Ted Lavine, Karen Lawrence, Steffen Luitz, Mary Mathew, Lisa Mongetta, Dwight Ost, Mark Petree, Stephanie Pinkerton, Jackie Robleto, Hillary Russak, Ron Sanchez Jr., Benjamin Scott, Jon Simpson, Bennett Smith, Chuck Taniguchi, Vilma Ventura-Ramelb, John Weisend and Pamela Wright-Brunache.

Safety

(continued from page 1)

property may be obtained from Salvage at x2329.

SSRL Division: "...the standdown went well, was well attended and a reminder to us all that we need to encompass 'safety' both at work and at home and that a little pre-planning saves a lot of post work agony."

This was the third SSRL standdown since the B514 incident on January 28th. SSRL staff indicated they were well versed in what happened, what the DOE expects and what SLAC needs with regard to improving hazard assessments site-wide.

Technical Division: "Ewan Paterson, Director of the Technical Division, gave two back-to-back presentations, attended by a majority of the over-700 division employees. He pointed out that, even though safety is an individual responsibility, we must all watch out for each other. Safety benefits from a team approach just as much as our scientific endeavors. He also added a personal touch to the slides by sharing a hazard he avoided at home when he was changing out a light in the garage: he realized he was about to reach too far and so came down off the ladder and moved the car. He helped the audience realize that we are all tempted to cut corners at times, but just a few extra minutes of preparation can ensure our safety both at home and in the workplace."

Also, staff from the DOE's Stanford Site Office attended standdown sessions presented by the Director's Office, SSRL Division, and Technical Division. The DOE staff were impressed by the content of the sessions and participation by staff.

A general issue raised following the standdown dealt with conveying the

following message to SLAC staff: "It is not acceptable for people to exercise (walk, bike, skate, etc.) in the Klystron Gallery."

There are many hazards in the Klystron Gallery, such as electric-powered carts and industrial hazards, that make this area inappropriate for such general uses. Contact Security (Ext. 2551) for information about traffic and vehicular safety.

Were You Unable to Attend the Standdown?

For those unable to attend one of the divisional sessions, videotaped copies of Dorfan's presentation are available from the Library.

A Change For the 2003 TWC

Also, it was pointed out by a number of persons that the annual 'Talk-Walk-Clean' standdown did not take place this year. A brief explanation of why this was the case was provided in the May 23, 2003 QuickNews and is detailed in the article on Page 4, "New Component of the Self-Assessment Process to Replace the Traditional Talk, Walk, and Clean."

Staff from the Federal Occupational Safety and Health Administration are expected to visit SLAC in the Fall to do an audit in preparation for the possible external regulation of the laboratory by OSHA on a regular basis in the future.

Safe Operations Require Active Participation In Work Planning

Our thanks to all SLAC staff for their participation in the safety standdown and their recognition of the key issues to ensure continued safe operations:

- Scope the work
- Identify the hazards
- Control the hazards
- Work within the controls
- Check and improve

Volunteers Needed to Host SU Commencement SLAC Tours

Tours to be held Saturday, June 14

Friends and families of graduating Stanford seniors will be touring SLAC during commencement weekend. Help us host people from around the world who are interested in learning about what we do here at the Lab.

Volunteers are needed on Saturday, June 14. We will host 800 people on two tours, at 1:15 and 2:30 p.m.. To learn more, see: <http://www.slac.stanford.edu/grp/pao/slaonly.ctour03.html> or contact Emily Ball (Ext. 2620)

First Certificate In Supervision Class Graduates

By Carmella Huser

Thirty-one 'graduates' of SLAC's first Certificate in Supervision program were honored at a luncheon at the Faculty Club on Tuesday, May 13. Participants in the program attend nine classes, completing 38 hours of instruction, to learn about the components of leadership necessary to become successful supervisors.

In presenting certificates to the graduates, Jonathan Dorfan noted that coaching and mentoring employees to help them reach their full potential is a supervisor's most important but most difficult role. Because SLAC's success depends upon the dedication and competence

of our staff at every level, supervisory training is an important component in developing a management team with strong supervisory and interpersonal skills.

The Certificate in Supervision program is open to all supervisors who want to enhance their supervisory skills and to other employees who are interested in learning about supervision. The second series of classes is already underway.

Information about the program is available online at: <http://www-group.slac.stanford.edu/hr/t/supervision.html>

Modulator

(continued from page 1)

And, the prototype has successfully pumped four XL4 klystrons to provide the required RF peak power for testing the critical RF distribution and accelerator beamline components.

The modulator team's next challenge is to achieve reliable 24/7 operation to support the NLC full-power demonstration program scheduled over the next one to two years. Meanwhile, the team has just manufactured the first test section of a new prototype geared to run two klystrons instead of eight, because the latest design calls for a more spread out RF system. The cylindrical '2-Pack' modulator relies on 12 boards with fewer switches operating at 4.0 instead of 2.2 KV, and 11 turns in the transformer to generate the 500 kV.

The group continues to improve the IGBT switch to make it faster and better suited for short pulse work. Originally designed to drive electric trains in Europe, the switches will drive even faster objects wherever the new machine gets built.

For more information, see: <http://www-project.slac.stanford.edu/lc/nlc.html>

The Cafeteria menu is available on the Web at:

<http://www2.slac.stanford.edu/gateway/cafeteria/>

A Special Day: Celebrate Juneteenth at SLAC

By George Maclin

For the past thirteen years, the Black Association of SLAC Employees (BASE) has hosted this SLAC event. BASE extends an invitation to the SLAC community to help us celebrate Juneteenth on Friday, June 13. This Juneteenth celebration will include musical entertainment, displays, door prizes, BBQ and desserts.



Guests at the 2002 Juneteenth celebration were treated to good food, music, games and more. This year's event will feature home-cooking and BBQ by staff volunteers, a video presentation, door prizes and more.

The event will be held on the 13th at the Cafeteria Picnic Area from 3-6 p.m. Flyers will soon be posted around site with information on where to obtain your tickets.

Juneteenth is the oldest known celebration of the ending of slavery in this country. June 19, 1865, was freedom day for the slaves in East Texas and portions of surrounding states. On this day General Gordon Granger landed with Federal Troops in Galveston, Texas, with the expressed mission of announcing that the war was over and the enslaved were now free. Note this was two and a half years after President Lincoln's Emancipation Proclamation of January 1, 1863.

The first observance of Juneteenth started in East Texas and Southwestern Arkansas. Juneteenth is now celebrated throughout the country. SLAC's Juneteenth celebration is one of the oldest Juneteenth celebrations in California.

DOE National Lab Fabrication Managers Tour SLAC

By Emily Ball

Showcasing the lab's considerable fabrication expertise, SLAC recently impressed DOE National Laboratory fabrication managers from Argonne, Berkeley, Brookhaven, Fermilab, Livermore, Oakridge, Pacific Northwest and Sandia with a whirlwind tour. On May 14, these managers convened for their second annual inter-lab meeting, designed to promote greater collaboration among DOE fabrication facilities. Held this year at Lawrence Berkeley National Lab (LBL), the agenda for

the three-day meeting included a tour of SLAC's extensive fabrication capabilities.

"There are a number of machines here at SLAC that differentiate our fabrication facilities from other national labs," says Karen Fant, SLAC fabrication manager. "We took the group through several areas in light and heavy fabrication buildings. We focused on these areas of expertise: machining, chemical cleaning and plating, hydrogen furnace brazing, vacuum processing and our electron beam welder."

After the tour of the buildings, attendees took a site tour of SLAC, guided by Tom Himel (NLC). Stopping at the Visitors Alcove in the Klystron Gallery and the Collider Experimental Hall, the visitors gained a sense of SLAC's overall mission.

According to Fant, the DOE labs can save money and utilize resources, including infrastructure and personnel, by working together on various projects. "We believe it is in everyone's best interests to see greater interoperability among labs, and we are off to a great start," said Fant.



The thirteenth International Magnetic Measurement Workshop was held at SLAC in May. The workshop is held every two years at laboratories all over the world. This was the first time ever that the workshop was held at SLAC. The purpose of the workshop is to bring together the people who measure the world's accelerator magnets and insertion devices. Information is shared about measurement techniques in an effort to keep up with the demands of larger and more complex projects. Many thanks to Vivian Kirby (MET) who did a flawless job organizing the workshop. — Zack Wolf (MM)

ISMS: Quickly and Simply

By Mike Grissom

The Integrated Safety Management System (ISMS) is a simple process that can help guide you to working more safely and to being a good steward to our natural environment.

The ISMS functions are the core of the process and serves as a mantra for how we do work:

- Scope the work
- Identify the hazards
- Control the hazards
- Work within the controls
- Check and improve

Every person at SLAC can influence safety and environmental stewardship by taking a moment to think through this simple process each time they begin a task - whether that task is as simple as installing a light bulb, as easy as climbing a ladder, or as complex as building the LCLS.

Tools That Make Integrated Safety Quick and Easy

To make it easy to implement ISMS, tools are available to help identify and control hazards. Many checklists are available in the topic sections of the ES&H Forms and Templates Web page at: <http://www.slac.stanford.edu/esh/forms.html>

Examples include:

- Pre-work Hazard Analysis Form, a checklist to evaluate hazards prior to construction work
- Checklist for Inspecting Construction, Soil Excavating and Grading Projects
- Mixed Waste Generation Checklist
- Facility Inspection Checklist
- Floor Operated Hoist Pre-shift Checklist
- Hoisting and Rigging Critical Lift Checklist

More checklists are available on the Technical Division's Safety Information Web page (see 'Safety Checklists') at: <https://www-internal.slac.stanford.edu/td/safety.htm>

Help That Simplifies Integrated Safety

Help is available for each step of the ISMS process. Experts in environmental protection and work safety are listed on the ES&H Resource List and the ES&H Staff contact page. These are located on the Web at:

<http://www.slac.stanford.edu/esh/resource.pdf>

and

<http://www.slac.stanford.edu/esh/contact.html>

Future TIP articles will provide details about how individuals and managers can fully participate in the ISMS process.

Details about the SLAC ISMS program, including the Safety Management System document, are available on the Web. See: <http://www.slac.stanford.edu/esh/isms/>

POLICIES AND PROCEDURES UPDATE

Recording Time During Leave-Without-Pay Days

We are approaching the time when our high energy physics staff will be taking leave-without-pay days. In order to assure accurate accounting of these days and to ensure that you receive appropriate holiday pay and leave accruals, the Payroll Department has added a new code, letter 'L' for 'unpaid shut down'. On your time report, (yellow for Exempt, green for Non-exempt, purple for BU) use code "L" in the "Other Leave" box and record the number of leave-without-pay hours.

Thank you for your cooperation.

Contact:

Cory Ferreras (for last names A - K), Ext. 2303

Bernie Espiritu (for last names L - Z), Ext. 2433

Ellen Remerata, Ext. 5194

Carol Tam, Ext. 2473 ●

Grainger.com—Simplifying Procurement Needs

Purchasing is pleased to announce a new procurement avenue for all SLAC employees. A blanket agreement has been developed with Grainger, Inc. that will allow requestors to place orders directly through the Grainger.com Web site. This site offers a fast, efficient and simple-to-use procurement method that gives the user 24/7 accessibility as well as real-time availability and pricing. Other benefits include personal lists of frequently ordered items, as well as access to order history and order status.

What Grainger Offers

Grainger works with over 1,200 suppliers and provides access to over 500,000 products and replacement parts in each of the following categories:

- Cleaning & Painting
- Electrical
- Metalworking
- Hand & Power Tools
- HVAC
- Pneumatics
- Lighting
- Material Handling
- Storage

- Motors & Power Transmission
- Repair Parts
- Pumps & Plumbing
- Test Instruments
- Safety & Security
- Janitorial

Billing will be done bi-monthly via a summary bill. All SLAC departments will have access to a copy of their purchases sorted by requestor's name. In addition, the Web site offers order management for departments requiring pre-approval. Any manager interested in setting restrictions on the ordering process for their employees should contact Janet Adams, Deputy Purchasing Officer, before June 10.

"Roll Out Fair" On June 11th

All staff members are invited to the 'Roll Out Fair' in the Auditorium Breezeway on June 11 from 8 a.m. to 12 noon. At this event, Grainger will be registering users on the Web site and hold demonstrations in the Panofsky Auditorium every hour on the hour. Manufacturer representatives will be on hand to demonstrate what's new on the market.

Contact: Janet Adams, Ext. 8515, jadams@slac.stanford.edu ●

New Component of the Self-Assessment Process to Replace the Traditional Talk, Walk, and Clean

Over the years, SLAC has reviewed its safety and environmental concerns through a number of auditing or self-assessment processes. These have included integrated safety management system (ISMS) reviews, line and building management assessments, the Talk, Walk, and Clean standdowns (TWC), and others. For each process, SLAC assesses itself to see how well employee safety and site environmental risks are being addressed.

As we all know, safety is a part of everyone's job and we are all affected by the safety and welfare of each other. As a result, a self-assessment process such as the TWC has been an important tool to identify issues and ask from within: What can we do better? In keeping with this spirit, the Safety and Environmental Discussion Assistance Committee (SEDAC), that helped prepare the site for the TWC process, is currently developing a new activity in anticipation of possible regulation by the Occupational Safety and Health Administration (OSHA). The DOE has historically handled safety regulation. This program will compare SLAC safety programs against the criteria of the OSHA Voluntary Protection Program, and ISMS principles. This assessment is being developed to help SLAC continue its leadership role in demonstrating to the regulatory agencies and the community that it conducts its scientific mission while effectively managing safety and environmental issues.

SEDAC will be detailing this new self-assessment process in the next couple of months. More information will be shared as plans are developed.

The announcement is brought to you by the members of SEDAC:

Jack Hahn (x3295) SEDAC Chairman
Rich Cellamare (x3401) for ES&H Division

Rick Challman (x3004) for Business Services Division

Ian Evans (x3110) for SSRL Division
Bill Kroutil (x4785) for Technical Division

Frank O'Neill (x5300) for Research Division ●

MILESTONES

Service Awards

5 Years

Langenegger, Urs (EC), 06/01
Palmer, Dennis (ARDB), 06/01
Sha, Shyue-Rong (TIS), 06/01
Simpson, Jonathan (MFD), 06/01
Wolf, Michael (ACD), 06/01
Frey, Steven (OHP), 06/08
Dumaop, Edward (PC), 06/16

10 Years

Imfeld, Hans (MET), 06/01
Rogers, Ron (MD), 06/01
Skarpaas VIII, Knut (REG), 06/01
Su, Dong (EE), 06/01
Rabedeau, Thomas (ESRD), 06/16
Wachter, John (ASD), 06/16

15 Years

Quach, Long (MFD), 06/06
Cutino, Philip (SEM), 06/13

20 Years

Wallace, Raymond (ESD), 06/01
Yee, Chuck (ESD), 06/17

25 Years

Bower, Gary (EFD), 06/01
Muffett, Arthur (EFD), 06/19

30 Years

Cook, Robert (SCS), 06/18

40 Years

Perl, Martin (EE), 06/14

Retirees

Barrera, Barbara (BABAR), 5/31
Schwarz, Heinz (KLY), 5/31
Johnson, Bill (BSD), 5/31
Nelson, Ruth Thor (HR), 6/4

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/>

Upcoming Events

Mon., June 9, 4:15 p.m.

SLAC, Panofsky Auditorium,
(Refreshments-3:45)
SLAC DEPARTMENTAL
COLLOQUIUM
Howard Gordon,
To be announced...

Tues., June 10, 12:30 p.m.

SLAC, Orange Room
SLAC EXPERIMENTAL SEMINAR
Christoph Paus, MIT
"First Beauty and Charm Physics
Results from CDF II"

Mon., June 16, 4:15 p.m.

SLAC, Panofsky Auditorium,
(Refreshments-3:45)
SLAC DEPARTMENTAL
COLLOQUIUM
Pierre Sokolsky, University of Utah
"UHECR"

Mon., June 23, 4:15 p.m.

SLAC, Panofsky Auditorium,
(Refreshments-3:45)
SLAC DEPARTMENTAL
COLLOQUIUM
Susan Fernyak, SF Public Health Dept
"Epidemiology"

Mon., July 7 - 11

SLAC, Panofsky Auditorium
SLAC PHYSICS MEETING
Marcello Giorgi
INFN-U of Pisa/SLAC
BABAR Detector Collaboration
Meeting

Wed., July 23, 8:00 a.m. - 3:00 p.m.

SLAC, Panofsky Auditorium Lobby
SLAC/STANFORD BLOOD DRIVE
Linda Ahlf, SLAC
Call x2354 for appointment - Drop-
ins Welcome!
<http://www-group.slac.stanford.edu/hr/d/Blooddrive.html>

Mon., July 28 - Aug 8

SLAC, Panofsky Auditorium
SLAC PHYSICS MEETING
Maura Chatwell, Coordinator
SLAC Summer Institute on Particle
Physics: Cosmic Connection to
Particle Physics
<http://www-conf.slac.stanford.edu/ssi/2003/>

Please send additions to:
seminars@slac.stanford.edu

For complete event listings, see:
<http://www.slac.stanford.edu/grp/pao/seminar.html>

The Interaction Point

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