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Electrical Safety Tip: Safe Lifting

SLAC recently experienced two recordable accidents involving lifting.

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NuSTAR Satellite Approved for Further Study by NASA

By Matthew Early Wright

The Nuclear Spectroscopic Telescope Array (NuSTAR) satellite may soon give astrophysicists a new window on the universe. Designed to image high-energy X-ray radiation, it will capture sharp images of black holes, supernovae, and galactic nuclei. And if NASA gives the project final flight approval early next year, it could be in orbit by the end of the decade.

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Director's Corner

By Jonathan Dorfman

17 and 8

Minimizing work-related injuries and illnesses is good management—maintaining the SLAC Family's health and well-being is an important collective goal for all of us. In that regard, 17 and 8 are two numbers that I would like all of you to keep forefront in your minds this year. These are the maximum numbers of incidents in two safety-incident categories that have been set by the DOE for Fiscal Year 2005.

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Science Bowl a Great Success

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students) from 14 area high schools. People came forward from areas throughout the Lab and worked together seamlessly to master the myriad details for the tournament-style competition.

This great educational outreach opportunity supports the DOE National Science Bowl.

[See whole story...](#)

The first DOE Science Bowl held at SLAC was a tremendous success due to strong volunteer participation by the SLAC community. A warm SLAC welcome greeted the 23 teams (one coach/five

Cosmic rays harmlessly stream through everything on Earth—our bodies, the scintillator counters in the Visitor's Center and the BaBar detectors.

Normally, BaBar filters out cosmic rays to reduce background noise. However, the Collaboration uses cosmic rays to check out the detectors before starting a new run—and even in the middle of a long run. Experimenters turned to cosmic rays for extra tune-ups and tests of new equipment during the unexpected downtime that began mid-October, just a week before BaBar was to start taking data after a scheduled downtime.

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Director's Corner

By Jonathan Dorfan

17 and 8

Minimizing work-related injuries and illnesses is good management—maintaining the SLAC Family's health and well-being is an important collective goal for all of us. In that regard, 17 and 8 are two numbers that I would like all of you to keep forefront in your minds this year. These are the maximum numbers of incidents in two safety-incident categories that have been set by the DOE for Fiscal Year 2005.

17 is the maximum number of incidents for FY2005 in the category "Total Recordable Cases (TRC)". So what is a TRC incident? Any safety incident that requires more than first-aid treatment is classified as a TRC. If someone slips on a wet walkway, grazes a knee and the treatment is a band-aid, then this incident is not classified as a TRC. However, if there is a laceration on the knee that needs a suture, then the treatment is beyond first aid and it counts in the TRC category. If there is an onset of a work-related illness that can be treated by our medical service with first-aid, then it is not a TRC. However, if you require a prescription drug, then it is a TRC.

8 is the maximum number set for FY2005 of "Days Away, Restricted, or Transferred (DART)" case rate as a result of a safety incident. Let's look at some examples to get a clear idea of what DART means. If one of us suffers a back strain while lifting a piece of equipment and we have to spend a day at home, then that counts as one DART case. If we stay at work but our normal activities are restricted as a consequence of the strained back, then it becomes a DART case. If we cannot carry out our normal tasks because of the back problem and our supervisor transfers us to another activity that we can perform successfully, it counts as a DART case. How long we are away, restricted or transferred does not affect the DART case rating. If it is one day or one month, it counts as one DART incident.

17 and 8 are low numbers. To give you a comparison, there were 34 TRC and 18 DART incidents at SLAC in Fiscal Year 2004. It will take a conscious and consistent effort from each and every one of us, each and every day, to keep to the FY2005 limits.

Scope out each job before you start, identify the hazards and the controls - then use the controls you



Photo by Diana Rogers

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have identified. We have all filled out JHAMs. Think about them before you start a job. If you suspect your routine JHAM does not authorize you to do the work, get together with your supervisor to prepare a non-routine JHAM.

Trips, slips and falls are among the most common safety incidents at SLAC and we all have a responsibility to eliminate them. Last week, I watched someone vault from a low wall near the ROB instead of taking the appropriate route along the pathway. Please don't take shortcuts like that—it is so easy to hurt yourself. Stay healthy by adapting every level of your daily behavior to avoid a safety incident. I know I have adapted mine.

The TRC and DART goals for Fiscal Year 2005 are tough, but achievable as evidenced by statistics at other labs and in industry. Make no mistake, SLAC is being carefully watched to see if we achieve them. Meeting these goals will be a concrete demonstration that all of us are determined and active in ensuring the health and well-being of all who work at and visit SLAC.

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NuSTAR Satellite Approved for Further Study by NASA

By Matthew Early Wright

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NuSTAR is capable of capturing X-rays in the range of 10-80 KeV, known as the 'hard' X-ray band. This is a huge improvement over previous missions, which have only been able to image lower energy, or 'soft' X-rays. Since these hard X-rays are better able to penetrate the layers of gas and dust in our galaxy, NuSTAR will be able to make observations that were previously beyond reach.

"With this mission, we'll open the hard X-ray frontier and look at things never seen before," said project leader Fiona Harrison (Caltech).

The fact that hard X-rays can penetrate matter makes them incredibly hard to focus for imaging purposes. NuSTAR will employ sophisticated reflective surfaces and advanced detection equipment to corral these high-energy rays. In doing so, it will address three main scientific goals.

First, it will take a census of black holes. By looking for their X-ray signatures, NuSTAR will count as many of these bizarre objects as possible. It will also track their accretion rate—or how quickly matter is drawn into them—by imaging the radiation they emit as they grow.

Second, NuSTAR will explore remnants of supernova explosions to study the formation of heavy elements. It will look for titanium-44, which is formed in the region where material either shoots out into space or collapses into the super-dense core. By tracking the



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decay of this isotope, NuSTAR should discover a lot about the evolution of elements in the universe.

Third, it will investigate the astrophysical jets streaming from the core of galactic nuclei. These strange features remain an enigma to researchers. NuSTAR will make observations in tandem with the GLAST satellite to give a first look at the high energy profile of these cosmic particle accelerators.

"This mission takes advantage of new technology, allowing it to have sensitivity hundreds of times better than previously deployed instruments," said Greg Madejski (ASG). "It will push the boundaries of what we can see with mirror-based telescopes."

A high-altitude balloon called the High Energy Focusing Telescope (HEFT) is scheduled to be launched from New Mexico in April. It will carry hard X-ray focusing equipment, similar to that designed for NuSTAR, to test its functionality and readiness for space flight.

Bill Craig (KIPAC), NuSTAR Project Scientist, explained that while HEFT is a useful tool for development and testing, it does have limitations. "A balloon only allows a few hours of observation per flight," he said. "NuSTAR will operate above the atmosphere for three years, allowing a tremendous advance in scientific capability."

NuSTAR work at both SLAC and Stanford will be managed by KIPAC. "We at KIPAC are thrilled about being part of NuSTAR," said KIPAC Director Roger Blandford. "It is our first new project to garner federal funding, and demonstrates how SLAC and [Stanford main] campus can work so well together."

NuSTAR was selected from among 29 Small Explorer (SMEX) proposals submitted to NASA in response to an Explorer Program Announcement of Opportunity issued in early 2003. The SMEX program specifically seeks out promising scientific missions that can be launched at low cost. If final flight approval is granted early next year, NuSTAR will be scheduled for launch in 2009.

The NuSTAR project brings together collaborators from Caltech, SLAC, JPL, Columbia University, LLNL, UC Santa Cruz, Sonoma State University and the Danish Space Research Institute. The researchers invite participatory inquiries from members of the astrophysics community.

For more information, see: <http://www.nustar.caltech.edu/>.

*The NuSTAR satellite will image high-energy X-rays, giving scientists a new perspective on black holes, supernovae and galactic nuclei. The extendable mast, of which only a small fraction is shown here, will extend to 10 meters once the satellite is launched.
(Image courtesy of Bill Craig)*

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ES&H Safety Tip: Safe Lifting

SLAC recently experienced two recordable accidents involving lifting. Improper lifting is probably the greatest single cause of back pain and injury, so it's worth taking the time to learn how to do it correctly.

Your back is incredibly important. It supports your entire body, and you can't afford to damage it. Yet most people experience back pain at some time in their lives, and the back is the most likely part of the body to get injured on the job.

Since many back injuries are serious and can leave you with lasting pain, it's very important to do everything you can to prevent them.

Improper lifting is the greatest single source of back injuries, so concentrate on doing it right:

- Use mechanical aids for lifting whenever possible.
- Break a load into its smallest possible parts before lifting.
- Don't overestimate your strength.
- Plan your route before you lift.
- Lift with knees bent and back straight so your legs, not your back, do the work.
- Move your feet to change direction; don't twist your body.
- Take the ES&H Course 410, Back Safety.

Remember to sit and stand in ways that give your back good support. Keep your back in mind as you plan and execute any task. As you start a task, remember to think through a safe process—scope the work, identify the hazards, control the hazards, do the work using the controls, think of ways to improve the process next time and tell your supervisor. Also try to stay in good shape with a healthy diet and a regular exercise program.



*Good technique: head up, knees bent, weight in close to the body.
(Photo by Tom Rizzi)*

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The bottom line: become conscious of just how important it is to protect your back. Learn to avoid situations that force your back to do something it's not meant to do or not able to do.

Also see: <http://www-group.slac.stanford.edu/esh/training/trainops/trainops.html>

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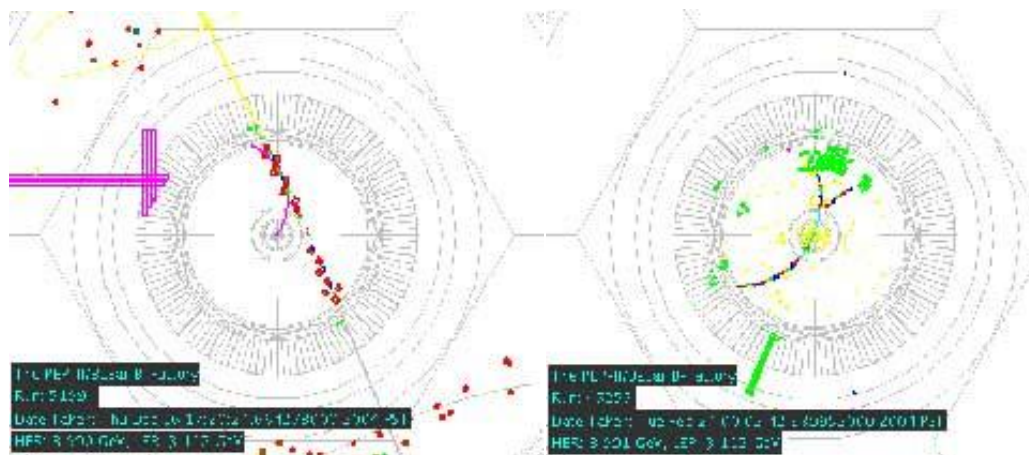
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Cosmic Tune-Up: Cosmic Rays Help Prime BABAR Systems

By Heather Rock Woods

Cosmic rays harmlessly stream through everything on Earth—our bodies, the scintillator counters in the Visitor's Center and the BABAR detectors.



The BABAR detectors normally catch B particle decays, as in the image shown left, taken during the last run. During the cosmic ray runs this winter, the detector saw tracks made by cosmic rays like the event shown right, recorded in December 2004. (Image Courtesy of BABAR)

Normally, BABAR filters out cosmic rays to reduce background noise. However, the Collaboration uses cosmic rays to check out the detectors before starting a new run—and even in the middle of a long run. Experimenters turned to cosmic rays for extra tune-ups and tests of new equipment during the unexpected downtime that began mid-October, just a week before BABAR was to start taking data after a scheduled downtime.

"Our detectors are sensitive to things going through all the time," said Run Coordinator Tom Meyer (Iowa State University). "We can really exercise the entire detector and data acquisition systems and check them out using the cosmic rays so we can be all ready when the beams arrive."

Earthly cosmic rays come mostly from protons in outer space. When the protons hit the air in our upper atmosphere, the interactions produce a shower of particles, many of which decay to muons that live long enough to reach the Earth's surface.

During the recent cosmic ray experiments, naturally occurring cosmic rays activated detector triggers some 200 times a second. The triggers are what determine whether activity seen in the detectors is

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experimentally interesting. The triggers are usually set to throw away cosmic ray tracks, as well as events that take place away from the interaction point where the electron and positron beams meet.

BA BAR's detectors are like layers of a cylindrical onion, with the beams meeting at the center. The vertex detector is the first layer, surrounded by the drift chamber, the DIRC detector, the calorimeter and finally the Instrumented Flux Return (IFR), which identifies and measures muons (usually the ones generated by particle collisions). The IFR detector gets tested with cosmic rays every two weeks during a regular run.

In 2004, BA BAR underwent upgrades during its scheduled downtime from July through early October. Two of six sections of the IFR were replaced with a completely new technology.

"Checking that out with cosmic rays has been very valuable," said Meyer. The cosmic ray tests allowed researchers to see that the new systems worked, and to wear them in, like a new pair of jeans.

Another upgrade involved reprogramming drift chamber electronics to more efficiently handle, in the short term, the flood of data pouring through the detectors.

"Everything that folks have done in simulation looks like it will work," said Technical Coordinator Bill Wisniewski (BA BAR). "But does it? Originally, we would have taken data and fixed any problems on the fly. We now have the cosmic ray run to reassure ourselves. The drift chamber electronics upgrades look good."

For the long term, the collaboration is developing new readout electronics boards for the drift chamber, to be installed during a downtime in 2005. Researchers were able to take a prototype out of the lab and test it during the last week of cosmic ray running, which ended February 4.

"We were seeing how it performs in battlefield conditions," Meyer said. "It's looking great. It gives the team confidence to go ahead with full production."

Wisniewski added, "The drift chamber electronics developers are doing a fantastic job. It's been a welcome luxury to be able to check prototype electronics on the drift chamber before the beams come on."

Faced with extra downtime, the BaBarians have been making small adjustments and improvements in addition to the scheduled upgrades.

"We're walking a fine line between improving the detector and trying to maintain readiness," said Meyer. "Cosmic rays are a good way to verify we really have improved things."

Meanwhile, the Lab is moving forward with the validation process to turn on the linear accelerator and PEP-II to deliver beams to BA BAR again. With a reconfigured schedule, collaboration Spokesperson David MacFarlane still expects BA BAR can double its data set by the 2006 summer conference season.

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Conflict of Interest Update

Both Stanford University and the DOE impose requirements on SLAC employees related to avoiding even the appearance of a conflict of interest. Conflicts of interest occur when employees' outside activities could influence their professional conduct, including allocation of time and energies, due to considerations of personal gain (financial or otherwise).

Please familiarize yourself with University Administrative Guide Memo 15.2 (http://adminguide.stanford.edu/15_2.pdf). All such work must be performed during your free time and may not be done using SLAC/DOE resources or property. If necessary, use vacation or leave without pay; do not do outside work on SLAC time.

The work may not interfere with your normal duties at SLAC, and the performance of your duties at SLAC must not involve you in any way with the potential outside employer. Finally, you may not participate as a consultant to a company on the preparation of a bid, offer, or unsolicited proposal for SLAC.

If you have any questions concerning this statement of policy or its interpretation, please contact the University Counsel for SLAC, Rachel Claus (ext. 4343), for explanation and advice.

For complete details, see: <https://www-internal.slac.stanford.edu/do/allhands/allhands.html>

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OSC Listens @SLAC

You have a good idea on how to reduce accidents. You wonder what's being done about the speeding problem on the SLAC Loop Road. Or you hear ticketing will start soon for people not wearing seatbelts on site and want more info.

For these and other general safety matters, you have always been able to turn to the Operating Safety Committee, the only safety committee whose membership represents the entire Lab. You've contacted me (as Chair) or a representative from your own division.

Now you have one more way of transmitting questions, concerns or ideas: send an e-mail to osclistsens@slac.stanford.edu. At the present, all mail will go to me, though I will engage other OSC members and ES&H Subject Matter Experts in the dialogue as necessary. OSC will evaluate the program in six months and see if anything needs modification.

To view our charter and a list of members, see our Web page at <https://www-internal.slac.stanford.edu/esh/committees/osc.htm>. Continue to contact us through phone or in person, and try out the new e-mail address.

Don't forget: OSC Listens!

Contact: Janice Dabney, Ext. 3603, dabney@slac.stanford.edu

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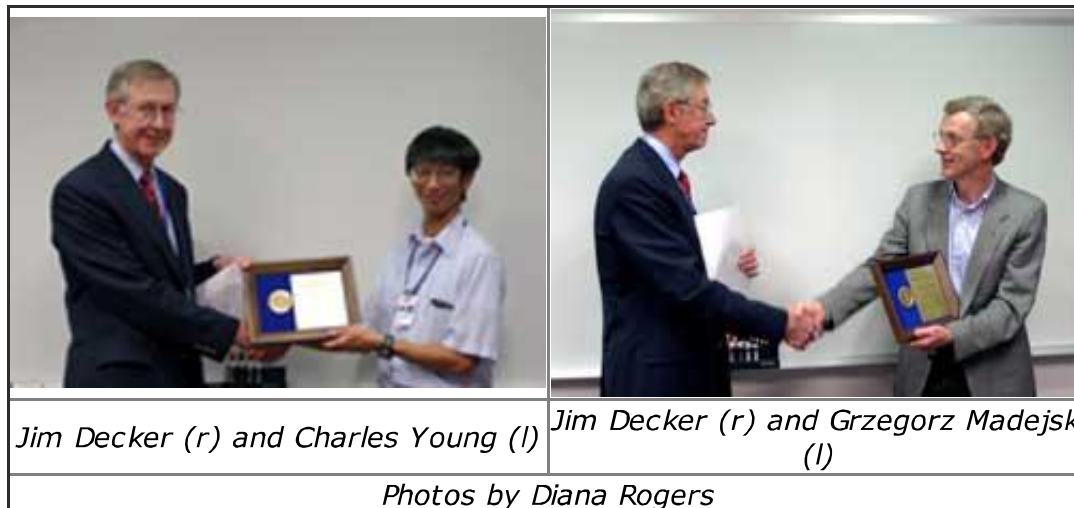
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DOE Outstanding Mentor Awards

By Vickee Flynn

Jim Decker, Principal Deputy Director of the DOE Office of Science, presented the DOE Outstanding Mentor Awards to Charles Young (EA) and Grzegorz Madejski (ASG) in January.



Both Madejski and Young were mentors to students who participated last summer in the Science Undergraduate Laboratory Internships (SULI) program.

Madejski served on the student selection committee and took responsibility for placement and on-going support of all the students working in the area of astrophysics as well as being a first rate mentor to one of

them.

Young, together with his colleagues Peter Kim (EE) and Mark Convery (EB), worked with four students! Young was the leader of this effort. His quiet and unassuming way, and his willingness to take time to explain things, makes him an excellent mentor. He went out of his way to support the students both before they arrived at SLAC and during the program.

The 2005 SULI program at SLAC will run from June 19 to August 20. For more than thirty years, this program has offered 20 students an eight week paid internship at SLAC. Students work with a scientist or engineer on a project related to the laboratory's research program.

For details on education and outreach at SLAC, see:
<http://www.slac.stanford.edu/gen/edu/student.html>

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Ten Year Service Awardees

By Erin Shatara

Seventy-two employees who made their 10-year milestone at SLAC in 2004 were honored at an awards ceremony in January.

Honorees are:

Anthony Acosta (CEF)
 Ronald Akre (KLY)
 Dakila Baltazar (ESD)
 Paul Bellomo (ESD)
 Samuil Belopolskiy (ESRD)
 Booker Bense (SCS)
 Patrick Bong (ESD)
 Pezhman Boussina (ASD)
 Rene Candelario (CEF)
 Stephanie Carlson (SSRL)
 Harold Channels (MFD)
 Michael Copeland (MD)
 James Dayton (RP)
 Armando Deanda (CEF)



*Stephanie Carlson (SSRL) (shown left) receives her ten-year award and gift from Greg Loew (DO).
 (Photo by Diana Rogers)*

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Elizabeth Emmersen (PUR)

James Fenske (KLY)

Noe Figueroa (ESD)

Beverly Freeman (PUR)

Thomas Galetto (AD)

Patricia Garriz (EP)

Francis Gaudreault (MET)

Lester Harwood (CEF)

Natasha Haulman (SLD)

Victoria Hopkins-Sandefur (PUR)

David Jeglum (CEF)

Darrell Jones (PUR)

Luis Juarez (MET)

Peter Kim (EE)

James Krebs (RD)

Patricia Kreitz (TIS)

Douglas Kreitz (BLS)

Nadine Kurita (AD)

Joong Kwon (CEF)

Marc Larrus (ESD)

Chester Lauchner Jr. (CEF)

Roderick Loewen (KLY)
Richard Malec (MD)
Darren Marsh (RD)
Arnold Massoletti (KLY)
Regina Matter (AD)
Herbert Maxson (MFD)
Charles McKenzie Jr. (CEF)
Pedro Medina (CEF)
Craig Moore (SCS)
Christopher Nantista (ARDA)
Yuri Nosochkov (ARDA)
Sharon Oden (KM)
Frank O'Neill (RD)
Alden Owens (KLY)
Joan Paz (ESD)
Yolanda Pilastro (EPR)
Bennett Poling (ASD)
Ricardo Principe (CEF)
William Ross (ESD)
Guadalupe Salgado (RD)
Rose Marie Santana (MFD)

Leonid Sapozhnikov (RD)

Gennady Stupakov (ARDA)

Robert Todaro (PUR)

Rudolph Toledo (MFD)

Kurt Vaillancourt (MD)

Robert Vanderzyl (KLY)

Vincent Villanueva (PUR)

Genedina Villaruel (PUR)

John Ward (KLY)

Hans-Ulrich Wienands (AD)

William Wisniewski (EE)

Susan Witebsky (EPR)

Gary Woodcock (ASD)

Andrew Young (ESD)

Nancy Yu (NLC)

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Community Emergency Response Team Training

By Stephen Mahaley

In an emergency, what are we going to do? How can we, as individuals, help others and ourselves? What emergencies might occur here at SLAC? What can we do to be prepared for them? To help us answer these questions, the ES&H Division is sponsoring an upcoming course on disaster preparedness and response.

The Community Emergency Response Team (CERT) program educates people about disaster preparedness for hazards that may affect their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization and disaster medical operations.

People who go through CERT training (Course 290 in the ES&H Training Schedule) have a better understanding of the potential threats to their homes, workplaces and communities and can take the right steps to lessen the damage.

If a disaster happens that overwhelms local response capability, CERT members can apply the training, learned in the classroom and during exercises, to give critical support to their families, loved ones, neighbors or associates until help arrives.

When help does arrive, CERT members can provide useful information and support, as directed, to responders and their efforts at the disaster site.

Beginning March 9, a series of nine classes will be held on the second Wednesday of the month from 9:00 a.m. till noon. To get a certification, you must attend all classes.

If you have any questions about emergency management, contact Stephen Mahaley (Ext. 2095, smahaley@slac.stanford.edu). You should also contact him to sign up for the course.

Complete details of the CERT program can be found at the FEMA CERT Web site: <http://training.fema.gov/emiweb/CERT/>

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Spencer Featured in Textbook

Cherrill Spencer (ILC) was one of the scientists profiled in a sixth-grade science textbook published by MacMillan McGraw-Hill. Spencer is shown here with the published textbook. Check it out in the SLAC Library Authors' Cabinet. For the full story see the March 19 issue of TIP:

<http://www2.slac.stanford.edu/tip/2004/mar19/textbook.htm>



Photo by Diana Rogers

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Make a Difference Today

Disaster Relief at SLAC, or DRAS, is accepting donations now for Tamil Nadu Relief Project in Chennai, India (see <http://www2.slac.stanford.edu/tip/2005/jan21/disaster.htm>) to help victims of the south Asian tsunami of December 26, 2004.

Make your tax deductible donation today!

To find out about DRAS, see: <http://www.draslac.org/>

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Photo by Diana Rogers

The new employee orientation held February 3 included (left to right): Ramona Vargas (CEF), Jesus Dominguez (ESRD), Seva Kaplounenko (MET), Ralph Colon (MET), Jonathan Granot (KIPAC), Regina Franco (RD), Claudio Rivetta (ARDA), Josephine Kato (EB) and Alfred Gerard Suarez (ASD).

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MILESTONES

Service Awards

5 Years

Gierman, Stephen (AD), 2/22

10 Years

Williams, Peggy S. (EP), 2/16

15 Years

Jimenez, Miguel A. (CEF), 2/16

25 Years

Prado, Hector A. (ASD), 2/25

Deceased

Allington, Jean, formerly worked in Facilities, on January 31, 2005

Wilson, Lucy, formerly worked as a Scanner, on February 12, 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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Next talk in the SLAC Public Lecture Series

Profiling the Invisible: Quantum Mechanics and the Unseen Universe

**Michael Peskin,
Professor of Theoretical Physics at SLAC**

Tuesday, February 22
7:30 p.m.
Panofsky Auditorium

For more information, see:

http://www2.slac.stanford.edu/lectures/info_2005/2005_02_22.htm

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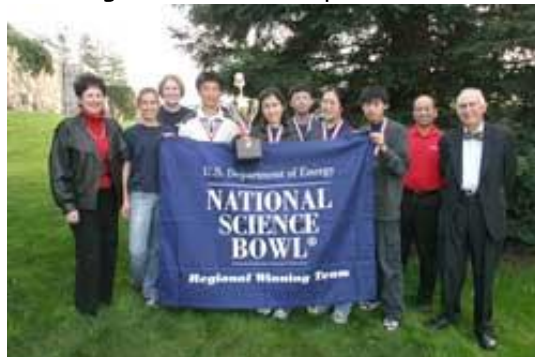
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Science Bowl a Great Success

By Nina Stolar

The first DOE Science Bowl held at SLAC was a tremendous success due to strong volunteer participation by the SLAC community. A warm SLAC welcome greeted the 23 teams (one coach/five students) from 14 area high schools. People came forward from areas throughout the Lab and worked together seamlessly to master the myriad details for the tournament-style competition.



Nobel Laureate Professor Martin Perl (EE) (shown right) presented the 1st place trophy to Team 1 of Lynbrook High School in San Jose. Perl congratulated the students, asking them about their specific interests. Also shown left to right: RoseAnn Pelzner (SSO), Team 1 Coaches Amanda Day and Jessica Banchieri, students Andrew Xiao, Victor Lin, Lisa Wang, Grace Li and Andrew Ma. Ray Ng (Sandia) is shown to Perl's left. (Photo by Diana Rogers)

to better prepare us for the day.

This allowed many more students to participate. The overwhelming response from area high schools—many with multiple teams—shows the strong interest in students to get involved in science activities.

Ng sent his congratulations immediately after the event adding, "I just want to say 'Great Job' with the

This great educational outreach opportunity supports the DOE National Science Bowl. Winning teams from regional competitions are invited to the Nationals in Washington, DC (April 28-May 2). Local hosts this year were LBNL, Sandia National Laboratory in Livermore and SLAC.

You Can Take Pride in this Achievement

SLAC Ambassadors to the Community assured the day was a tremendous experience for students participating in this event! To properly conduct the official event, each of the 10 meeting rooms required a 3-person team to fill the official roles of Moderator, Timekeeper and Scorekeeper. Each position required a genuine personal commitment from Lab staff members, including a mandatory training session.

With over 10 years of Science Bowl experience each, regional coordinator Ray Ng (Sandia Lab) and RoseAnn Pelzner (SSO) were pleased and excited to add a third site in the Bay Area. Their guidance was invaluable in preparing for the event. Science Bowl alumni Michael Mazur (BaBar) and Geoffrey Milanovich (AO) lent the students' perspective to the planning and helped with the training

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regional Science Bowl. There's a great group of people at SLAC and I see a bright and long future with the Science Bowl. I hope you had a chance to enjoy everything. Again, thank you."

Many thanks to our generous sponsors: Sandia National Lab, Sun Microsystems and the Epicurean Group.

And the Winner is...

After six morning rounds followed by a dramatic 3-way Tie-Breaker, the remaining students, coaches, parents and staff gathered in Panofsky Auditorium to watch the intense Elimination Rounds. At the end of the day, hard won trophies were presented by Martin Perl (EE) to winning the teams.

- 1st Place — Lynbrook High School, Team 1, San Jose
- 2nd Place — Monta Vista High School, Team 1, Cupertino
- 3rd Place — Monta Vista High School, Team 2, Cupertino

Toward the end of the day, students were overheard to say "Wow, this is a great place! I'm coming back here next year!"

For participating high schools and more information, see: <http://www-group.slac.stanford.edu/com/scibowl/>

For pictures of the Science Bowl, see: <http://www-project.slac.stanford.edu/slacpix/index.htm>

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