

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

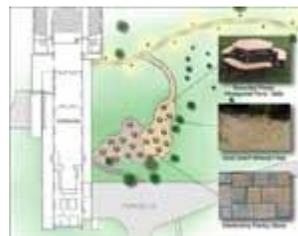
ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

Cafeteria Picnic Area to be Revamped

By Mason Inman

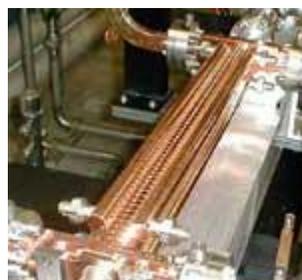
The Cafeteria's outdoor seating area is headed for an overhaul this summer. Site Engineering and Maintenance (SEM) will resurface the area and replace the tables to make a cleaner, more pleasing eating area that should stay in good shape for years to come.



[See whole story...](#)

NLC Team Achieves Key Milestone for 'Warm' Linear Collider

By Heather Rock Woods



More than 2,600 physicists agree that the hunt for heavier particles, dark matter and supersymmetry requires an international linear collider (LC)—but the open question is whether to use 'warm' or 'cold' technology to accelerate the electrons and positrons to the

BABAR Tests Matter-Antimatter Theory in New Ways

By Kate Metropolis

A physicist in the twenty-third century telephones her automobile mechanic. "Hello," she says, "I've been having trouble with my new car. It's a red Alpha Romeo. Any chance you can fix it? Oh, by the way, it's made out of antimatter."

[See whole story...](#)

A 1960's Dream Comes True

By Davide Castelvecchi

Testing Albert Einstein's ideas was never going to be easy, but Gravity Probe B (GP-B) turned out to be possibly the hardest—and certainly the longest-running—NASA experiment in history.

After more than 40 years of research and development, a Delta II rocket finally took the three ton, \$700 million probe into orbit on April 20. Its 18-month mission is to

[Awarded to UC Berkeley Student](#)

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)

massive energies needed.

[See whole story...](#)

Juneteenth Celebration: Best Party of the Year!

By Michelle Smith-Strand

Please join us for the 15th Annual Juneteenth Celebration at SLAC. This year we will be honoring the life of Bessie Coleman, the first licensed black female pilot.

[See whole story...](#)

measure some of the most subtle predictions of Einstein's theory of relativity.

[See whole story...](#)

Fourth Annual Employee Recognition Award

By Carmella Huser

The fourth annual Employee Recognition Award luncheon was held on May 26 at the Stanford Faculty Club.

[See whole story...](#)

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

BABAR Tests Matter-Antimatter Theory in New Ways

By Kate Metropolis

A physicist in the twenty-third century telephones her automobile mechanic. "Hello," she says, "I've been having trouble with my new car. It's a red Alpha Romeo. Any chance you can fix it? Oh, by the way, it's made out of antimatter."



Graphic by Alan Chou

The only repair manual the mechanic has is for the matter model. "No problem," he thinks. "I'll just follow the manual and substitute antimatter parts," so he tells his customer to bring in her car. Using a special tool kit to handle the antimatter, the mechanic works on the car, following precisely the instructions in the manual.

A few days later, the customer is back in his shop. She's not happy. "The car just doesn't drive the way it should," she complains.

"Ah," says the mechanic, "there's a subtle difference between the way matter and antimatter behave. The rules for the car just don't carry over perfectly to the anticar."

In fact, the universe would be vastly different if the laws of physics were precisely the same for all particles and their antimatter counterparts. The Big Bang, the explosion in which the universe was created, produced exactly equal amounts of matter and antimatter, and whenever they get close enough, they annihilate each other. If the annihilation had been complete, all matter, as we know it, would have been converted into light.

This dominance of matter in the universe, which most of us never wonder at, is bizarre. It is as extraordinary as measuring how long it takes a marble to roll down a board and discovering that your result depends on the time of day you do the measurement.

[Awarded to UC Berkeley Student](#)

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)

The laws that govern particle behavior might have been as blind to the difference between matter and antimatter as the law of gravity is to the difference between morning and afternoon. But the fact that they do distinguish matter from antimatter, a phenomenon particle physicists call CP violation, means that there's "a one in a billion imbalance in favor of ordinary matter," says BABAR physicist Christophe Yeche, from Saclay.

The current theory of particle physics, called the standard model, predicts that all the differences in the behavior of matter and antimatter can be expressed in terms of three angles—called alpha, beta, and gamma—that, like the angles of a triangle, add up to 180 degrees. (This is a strange-sounding prediction; it would take an article at least this long to explain it, so I hope you're willing to take it on faith.)

"Measuring each of these angles," says BABAR physics analysis coordinator Jeff Richman, "is a holy grail of this field."

The Quest for Alpha

B mesons and anti-B mesons provide the largest window into the phenomenon of CP violation. Their behavioral difference lies in the probability of their decays into particular particles: the B mesons decay into given states a different percentage of the time than the anti-B mesons.

Both BABAR and Belle, a collaboration in Japan, use B mesons to explore CP violation. The initial plan of both groups was to measure the angle alpha by looking at the very rare events in which a B meson (or an anti-B meson) decays into a pair of charged pions. However, while the experiments were being built, the CLEO collaboration at Cornell performed measurements suggesting that the pion approach was fatally flawed, at least for the amount of data that BABAR and Belle will acquire, because the decay process was so complicated to interpret. "Nature," says Yuval Grossman, a theorist at the Technion, the Israel Institute of Technology, "was unkind."

The hope of measuring alpha still burns bright in BABAR, thanks to kindness on the part of nature and hard work by members of the collaboration from LBNL, Liverpool, and Saclay.

The researchers discovered that the decay of a B meson to the particle pair $\rho^+ \rho^-$ is more likely than the decay to charged pions and the decay was well suited to measuring CP violation.

However, measuring this decay was challenging, according to Andrei Gritsan, leader of the $\rho^+ \rho^-$ team at LBNL. "We had to distinguish very rare decays, occurring only three times in a hundred thousand, and measure their parameters in the presence of a large background." BABAR's first results characterizing the $\rho^+ \rho^-$ decay were published in Physical Review, and the collaboration will present even better results this summer, after analyzing additional data.

Then the physicists measured alpha by comparing the time it takes a B meson to decay into rho+ rho- with the time it takes its antiparticle, an anti-B meson, to decay into the same set of particles.

"Our direct measurement is a first," says BABAR physicist Christos Touramanis, head of the Liverpool group.

These results have been submitted to Physical Review. The precision so far is limited, but the results are consistent with standard model predictions.

Or, as Richman puts it, "This is one more banana peel the standard model could have slipped on."

Grossman, who is not a member of BABAR, characterizes the results as "very important. A year ago, we didn't know you could use rho+ rho- to get a really fundamental parameter."

"A Physics Program, Not a Single Measurement"

BABAR has also obtained new results on another of the holy-grail angles: beta.

Four years ago, the first major result announced by both BABAR and Belle was the measurement of beta in a certain class of B decays, called the "golden modes" because the experimental measurement and its theoretical interpretation are so straightforward. The standard model predicts that measurements of beta in B decays will yield the identical value; yet many physicists expect some types of B decays to disagree with the golden-mode value.

"The goal is to try to conclude whether the data show signs of physics beyond our current understanding," says Zoltan Ligeti, a theorist at LBNL. "Evidence that the standard model can't account for data would do that."

Both collaborations have been pushing hard to analyze different classes of B decays to obtain measurements of beta. BABAR results so far are consistent with the standard model. Belle interprets one of its results as a possibly inconsistent with the standard model.

"It's constructive to think about what Belle's result might mean if it becomes statistically significant," Grossman says, "but right now it is not statistically significant."

BABAR has found additional B decays that can be used to search for contradictions to the standard model, but initial measurements still agree with standard model predictions. "The measurement of the angle beta is not just a single measurement," Richman emphasized at the BABAR collaboration meeting in April. "It's a physics program."

Stay Tuned

BABAR and Belle have both started the marathon of preparing for the International Conference of High Energy Physics, to be held this August in Beijing. New data are pouring in (the PEP-II accelerator is now delivering B mesons at triple the rate it was designed to), and more data promise more accurate measurements.

"We've demonstrated that we can do these measurements," Richman says. "Now PEP-II has given us a lot more data. We could discover that everything still fits together, or that the new results can't fit into the simple standard model picture. A lot of us will be on the edge of our seats when the new results come out."

"Understanding the laws of nature is really what we are after," Grossman says.

"People sometimes think that the most important discovery is a new particle. That is particularly exciting when it teaches us something new about the fundamental laws. But experimental results like the measurements of alpha and beta, which could prove our theories right or wrong, are just as valuable."

The Stanford Linear Accelerator Center is managed by [Stanford University](#) for the [US Department of Energy](#)

Last update Thursday June 03, 2004 by [Emily Ball](#)

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

NLC Team Achieves Key Milestone for 'Warm' Linear Collider

By Heather Rock Woods

More than 2,600 physicists agree that the hunt for heavier particles, dark matter and supersymmetry requires an international linear collider (LC)—but the open question is whether to use 'warm' or 'cold' technology to accelerate the electrons and positrons to the massive energies needed.

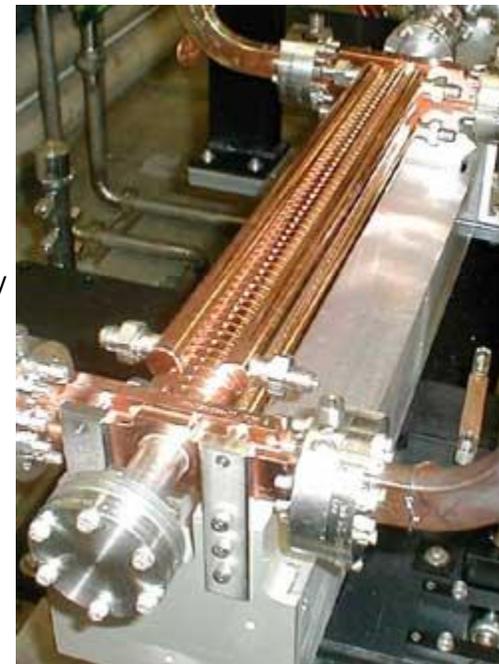
Displaying the impeccable timing that makes accelerators run, the Next Linear Collider (NLC) project has met both of its crucial technical goals—and clearly demonstrated the viability of the warm (called X-band) technology.

The achievement came just before an important visit in late April from the International Technology Recommendation Panel (ITRP), the group that will choose by year's end which technology to use.

Early last year, the separate International Linear Collider Technical Review Committee headed by Greg Loew (DO) identified the main hurdles, called R1 goals, each technology needed to clear in order to prove feasibility.

The NLC project is based at SLAC with collaborators from Fermilab, LBNL, Livermore and Brookhaven laboratories. In partnership with the Global Linear Collider (GLC) group at KEK in Japan, NLC has met its R1 goals for both a 500 GeV collider and a possible upgrade to a 1,000 GeV (or 1 TeV) machine.

"These are most impressive and timely achievements for the NLC/GLC," said Loew. The LC design calls for two linear accelerators (linacs) pointed at



One of the new 0.6-meter accelerator structures for accelerating electrons and positrons, designed by the NLC collaboration.

[Awarded to UC Berkeley Student](#)

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)

each other to smash together electrons and positrons each carrying 250 GeV, making 500 GeV 'center-of-mass collisions'.

(Courtesy of Chris Adolphsen)

The warm collaboration established the ability to reach 500 GeV some years ago when the NLC Test Accelerator (NLCTA) was built here, and had been aiming for the prized 1 TeV goal ever since. The warm, i.e., room temperature, technology uses radio frequency (rf) power in the X-band (11.424 GHz frequency), four times higher than the SLAC linac's warm rf technology at 2.856 GHz, in the S-band.

The cold rf technology, proposed by DESY, is based on superconducting cavities operating two degrees above absolute zero. This technology required no R1 demonstrations for a 500 GeV machine, and expects to meet the R1 goal for its upgrade to an 800 GeV machine in the next year.

First Goal Met

The first NLC/GLC goal, met in December, showed that rf supply stations can produce the power required to add 65 MeV of energy to the electrons for each meter they travel (see [TIP, February 6, 2004](#)).

The latest achievement shows that newly designed accelerator structures—the copper pipes the electrons travel in—can sustain this acceleration gradient of 65 MV per meter and that the rf power can be shaped into an ideal wave for the electrons to surf on, while keeping an extremely low breakdown rate.

"After a four-year effort to improve the operation characteristics of the accelerator structures, we've finally got the numbers we want," said Chris Adolphsen (NLC), head of structure testing and evaluation.

The acceleration gradient is a measure of how much energy per meter the electrons gain as they zip to the end of the linac. The design gradient, 65 MV per meter, is almost four times SLAC's current acceleration gradient, and the rf frequency is four times larger, in order to generate electrons and positrons with final energies five times higher—without making the linacs much longer and costlier.

"Going to 65 (MV) is a nice thing because it means your linac doesn't have to be too long," Adolphsen said. There were many challenges to building accelerating structures that could maintain the high gradient without breaking down too often or becoming damaged. It took dozens of tests and over 20,000 hours of high-power operation to arrive at 0.6 meter long structures, made of 55 shiny copper disks with about 1 cm irises (the hole the electrons stream through).

In April, the team reached the design requirement of only one breakdown every 10 hours on average. The breakdowns occur from sparking on the irises that shorts the rf power, shutting down the rf supply. It then takes 10 seconds to recover the full gradient.

Because the LC will have spare rf supply stations, "the 0.1 per hour breakdown rate means there is effectively never any down time," Adolphsen said.

In addition, the structures easily surpassed the requirement to achieve full acceleration 99 percent of the time. Testing and tinkering continue, but the pipeline for supplying high-energy collisions is already in great shape.

See the press release on 2,600 physicists supporting the LC: www.interactions.org/cms/?pid=1011605

The Stanford Linear Accelerator Center is managed by [Stanford University](#) for the [US Department of Energy](#)

Last update Thursday June 03, 2004 by [Emily Ball](#)

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

Cafeteria Picnic Area to be Revamped

By Mason Inman

The Cafeteria's outdoor seating area is headed for an overhaul this summer. Site Engineering and Maintenance (SEM) will resurface the area and replace the tables to make a cleaner, more pleasing eating area that should stay in good shape for years to come.



The area outside the Cafeteria will be overhauled and updated this summer. (Courtesy of Tom Sherry)

contours of the ground. Interlocking stones will pave the half of the seating area closest to the building. These stones should stay flat and intact for the long-term, rather than tilt and break like the concrete tiles there now. Crushed, gold-colored rock, compacted to form a hard surface, will cover the other half of the eating area. The same rock borders the SLAC Guest House's main walkway and covers the bike parking area.

The new tables, some of which will be wheelchair accessible, are hexagonal and made completely of

"It's time to refurbish the place because it's a safety hazard," said Steve Williams (RD). "It's such a popular place."

The dates for the construction project aren't yet final. SEM tentatively plans the work to last from July to late August. While the project is underway, the current wooden picnic tables will be moved to the nearby grass or concrete walkway, so outdoor seating will be available at all times.

The work shouldn't disrupt people's meals, according to Tom Sherry (SEM). A back hoe will be used during the first two to three weeks of the project, and SEM will make every effort to keep from inconveniencing the Cafeteria patrons.

The project will make the eating area somewhat level, though it will still follow the existing

[Awarded to UC Berkeley Student](#)

recycled plastic. According to the manufacturer, each table is made of 96 percent post-consumer plastic, the equivalent of 3,200 recycled milk jugs. The tables will sport umbrellas.

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

A 1960's Dream Comes True

By Davide Castelvecchi

Testing Albert Einstein's ideas was never going to be easy, but Gravity Probe B (GP-B) turned out to be possibly the hardest—and certainly the longest-running—NASA experiment in history.

After more than 40 years of research and development, a Delta II rocket finally took the three ton, \$700 million probe into orbit on April 20. Its 18-month mission is to measure some of the most subtle predictions of Einstein's theory of relativity.

The successful launch was a remarkable personal achievement for Francis Everitt, the project's leader and driving force. The British-born physicist joined Stanford in 1962 during what was supposed to be a short visit to the U. S., and he has devoted almost his entire career to GP-B.

Several generations of physicists and rocket scientists, family and fans were on hand at Vandenberg Air Force Base on April 19 to see the launch.

NASA could not verify whether some last-minute data had been loaded aboard the rocket, so the launch was put on hold until the next day. But at 9:57 a.m. on April 20, the wait was over.

"When it finally lifted off, when it wasn't going to be one more day, it was a tremendous feeling," says Robert Cannon, a Stanford Aeronautics and Astronautics emeritus who helped initiate the project in 1959.

An expert in gyroscopes and other navigation systems, Cannon joined the late William Fairbank and Leonard Schiff in a series of brainstorming sessions to figure out how to do what most experts thought impossible. Another scientist had the same idea just weeks before. "[It] was independently suggested



Pief Panofsky's great-grandson, Julian Pardeilhan, watched the launch from San Luis Obispo. (Photo courtesy of W.K.H. Panofsky)

[Awarded to UC Berkeley Student](#)

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)

by George Pugh of the Department of Defense in a little-known document," Everitt says.

The three Stanford scientists realized that to achieve their goal they would have to invent much of the technology from scratch.

While orbiting 400 miles above earth GP-B will test two predictions of General Relativity, Einstein's theory that mass and energy deform space and time. The geodetic effect says that apples falling to earth and satellites going around earth are following the shortest path in the deformed space. Although previously confirmed by less precise measurements, GP-B will improve precision by a factor between 2.5 and 12.5.

The frame dragging effect says a rotating mass (earth) causes nearby space itself to rotate with the mass. This will be directly tested for the first time ever to a precision of one percent by measuring deviations in the rotations of four gyroscopes. The tricky part is, those deviations are so tiny that it would take more than a million years for the axis of rotation to go around in a full circle. GP-B will need to see deviations in the order of a millionth of a degree, comparable to seeing the width of a human hair from 10 miles' distance.

An on-board telescope will keep the probe aligned by pointing at the center of a star with an unprecedented precision of one ten-thousandth of the star's diameter.

In 1964, NASA began supporting the project. Its long history has brought advances in several fields, including cryogenics and superconductor and telescope technology, churning out 79 PhDs at Stanford and 13 at other universities in the process.

In 1984, Stanford hired Lockheed Martin to build the spacecraft. Jack Goodman (now at SLAC working on GLAST) was on the original Lockheed GP-B team for 11 years. "I was very elated that the launch was successful. Gravity Probe B was a large part of my career at Lockheed," he says.

Over the years, GP-B has generated much controversy because of its technical boldness, its delays and its enormous budget, and NASA had threatened to cancel it as many as seven times. Just last year, after a technical problem during some tests, the agency appointed two independent review panels, and space science administrator Ed Weiler asked "if the time has come to put an end to GP-B," Science magazine reported.

Now one month into the mission, the spacecraft is performing well, NASA says, and is ready to enter into the science phase of the mission this month.

For more information, see: einstein.stanford.edu/

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BaBar Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

Is Dark Matter Actually Black?

By Mason Inman

Gravity is the glue that holds together huge objects such as planets and galaxies. After looking at scores of galaxies, however, physicists realized something was amiss. On the outskirts of rotating galaxies, for example, stars were moving too fast for the galaxies to hold together by the gravity from the stars alone. They proposed that there must be a much greater amount of so-called dark matter that orbits alongside the stars, carrying them along by gravitational attraction, but otherwise showing little sign of its presence.

Though this notion of dark matter is now well established, the nature of this material is still up for grabs. Theorists have advanced many exotic particles and bodies like neutralinos and axions as candidates, but experiments haven't pinned it down yet. At the Beyond Einstein conference at SLAC in May, Pisin Chen (ARDA) put a new spin on an old candidate for dark matter: black holes. Rather than giant black holes that voraciously consume matter and light, Chen is proposing much more benign objects, vastly smaller than atoms, called black hole remnants.

Several Big Bang theories propose that at the end of a phase called inflation in which the early universe grew enormously, multitudes of tiny black holes naturally arose, Chen says. According to Steven Hawking's theory of black hole evaporation, however, it seemed these tiny black holes would quickly disappear. But the behavior of black holes as they approach nil hadn't been worked out, Chen says. "It's been a long standing question how the Hawking evaporation would end."

Chen and his collaborators—Ronald Adler and David Santiago (both at Stanford)—began work on this problem simply to understand black holes better. They addressed black hole evaporation using the so-called generalized uncertainty principle, which is supported by string theory and melds quantum properties with gravity. The outcome: small black holes would evaporate almost completely, but would stop when they reached the Planck length, a theoretical lower limit on the size of anything. The Planck length is so miniscule, the gulf between it and an atom's breadth is roughly the same as the difference between your height and the size of the visible universe.

The generalized uncertainty principle alone may not be enough to stabilize the black hole remnants so they'd survive indefinitely. Chen, along with his other collaborators Keshav Dasgupta (Stanford) and Marina Shmakova (ARDA), are now checking whether survival of black hole remnants requires

[Awarded to UC Berkeley Student](#)

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)

additional symmetry principles from theories of supersymmetry and supergravity. These theories modify the idea of black hole evaporation, with the end result called an extremal black hole.

Several models of inflation, a hypothesized stage of the very early universe in which it quickly grew by leaps and bounds, naturally produce small black holes. These would then quickly evaporate until only tiny remnants were left. The hybrid inflation model, proposed by Andrei Linde (Stanford), in principle can produce just the right amount of small black holes so their remnants could account for all the dark matter that's needed to explain the structure of galaxies, Chen says. But he speculates dark matter may turn out to consist of a variety of particles and bodies.

It's unclear whether Planck-size black holes can be detected. They could collide with other objects or each other, thus growing into somewhat larger black holes. But since they're so small, these collisions would be very rare. Most of the time these remnants would simply fly, ghost-like, through all other objects. This makes them good candidates for dark matter, but also poses a challenge for physicists who want to find them. "How can you ever capture such elusive objects?" Chen asks.

To detect these objects, if they exist, physicists may have to rely on indirect cosmological signs. If tiny black holes were created in the early universe, they would leave behind gravity waves. These could show up as subtle fluctuations in polarization of the cosmic microwave background, and might be visible in the data from the highly-sensitive Planck Surveyor, a NASA-European Space Agency joint project in the works. "Hopefully that will show something," Chen says. But he cautions that his idea is just a plausible hypothesis, and not yet a self-consistent theory. "Before the theory of black hole remnants is further developed," Chen adds, "it may be premature to ponder too much on its observation."

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

Ten Years Ago, SLAC Brought the Internet to China

By Davide Castelvecchi

May 17 was the tenth anniversary of the People's Republic of China's first Internet connection to the world, through a satellite link between SLAC and the Institute of High Energy Physics (IHEP) in Beijing.

Establishing a stable channel of communication had become a pressing need after 1990, when the Beijing Electro-Spectrometer (BES) collaboration began between IHEP and SLAC and other American institutions. "We realized that computers were becoming more and more important in a collaboration," says Les Cottrell (SCS).

Working with his Chinese counterparts and with the help of Charles Granieri (SCS), Cottrell set up a dial-up connection during his first trip to China in 1991. Dedicated phone lines had to be installed at IHEP which would be able to make direct international calls.

Cottrell personally carried a 9600bps (bits per second) modem to China, which allowed him to log on to a SLAC VAX computer from Beijing using the DECnet protocol, an early competitor of today's Internet Protocol.

With the new connection, the researchers working at IHEP were able to send and receive e-mails. At effective transfer rates of 900 bps and at a cost of about \$100/hour, the connection was too slow and too expensive for serious research needs.

"When I came back, I talked to DOE to see if they were interested in funding a satellite connection," Cottrell recalls. The funding was granted, but the U.S. government had concerns over human rights in China—and there were fears that Chinese users could access sensitive information stored on other U.S. servers. "The DOE said we could not forward traffic from China to the Internet," Cottrell says.

Meanwhile, the Department of Commerce had restrictions on the export of high speed routers to China, so the link was limited at 64Kbps. At a cost of \$10,000 per month, evenly split between the two countries, the connection would be only slightly faster than today's domestic 56Kbps dial-up modems. Even so, getting it to work turned out to be much harder than expected.

A 35-kilometer microwave radio link would get the signals from the satellite dish at Beijing's Capital

[Awarded to UC Berkeley Student](#)

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

International Airport to the local phone exchange. After unsuccessful attempts to use the existing lines, a dedicated copper link was laid to cover the last two blocks between the fiber-optic network and the IHEP.

Two years later on March 14, 1993, the link was finally up and running, and a number of Chinese researchers would use it to exchange an average 2,500 e-mails a day.

A year later, the U.S. government approved a special license for exporting a Cisco TCP/IP router—the add-on that would enable IHEP's computers to send and receive data using the Internet Protocol. After formally announcing (to meet a Department of Defense requirement) that IHEP would be joining the Internet, on May 17, 1994, the satellite link became China's first Internet connection.

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

Environmental Management System on the Horizon

By Mike Grissom

We all recognize that we can adversely impact both human health and the environment if we don't properly manage activities to protect the environment, such as driving a smoke-belching vehicle or dumping hazardous waste in a municipal sewer.



Rich Cellamare is the staff person for the EMS Working Group. (Photo by Diana Rogers)

The nation—and federal agencies including the DOE in particular—was pointed in the direction of managing on-going operations in an environment-friendly manner when the President signed Executive Order 13148, 'Greening the Government through Leadership in Environmental Management,' in 2000.

SLAC has been managing the environmental aspects of its operations for many years by:

- Maintaining operations within permit requirements
- Establishing environmental goals with the DOE
- Improving the energy efficiency of operations
- Correcting problems that have or could have impacted environmental quality

Executive Order 13148, however, requires all DOE contractors, including SLAC, to establish an environmental management system (EMS) that shows they are formally addressing those operations and activities that have a significant impact on the environment and that objectives and targets have been set to reduce those impacts.

In response, on March 8, 2004 the ES&H Coordinating Council approved an EMS plan-of-action and the formation of an EMS working group (EMSWG) to meet the requirement that SLAC

<ul style="list-style-type: none"> • Awarded to UC Berkeley Student 	<p>have a DOE-verified EMS program in place by December 31, 2005.</p>
<ul style="list-style-type: none"> • SPIRES Website Has a New Look • DOE Pollution Prevention Award • Certificate in Supervision Program • Medical Department Offers Preventive Medicine • TIP Transitions • Looking for a Great Career Opportunity? • Milestones 	<p>Core EMS Team</p> <p>Since the latter part of 2001, a core EMS team has been reviewing materials, undergoing training and considering the options for development of a SLAC EMS. The team currently is comprised of:</p> <ul style="list-style-type: none"> • Butch Byers (EP), lead person for the Chemical Management System project • Rich Cellamare (EP), lead person for the Waste Minimization and Pollution Prevention program • Luda Fieguth (SEM), lead person for the Energy Efficiency program • Mike Grissom (ES&H), lead person for ISMS and EMS • Bill Kroutil, (ESD), Chair, Environmental Safety Committee
<p>POLICIES AND PROCEDURES</p>	<p>EMS Working Group</p> <p>The EMSWG, formally announced to DOE by the Director on March 24, includes the core EMS team as well as:</p>
<ul style="list-style-type: none"> • New Mileage Rate 	<ul style="list-style-type: none"> • Richard M. Boyce (SSRL) • Rick Challman (BSD) • Brian Choi (SSRL) • Janice Dabney (TD) • Frank King (RD) • Elsa Nimmo (ESH) • Sandy Pierson (RD) • Michael Scharfenstein (ESH) • Susan Witebsky (ESH)
<p>EVENTS</p>	<p>Mike Grissom is the chair of the EMSWG and Rich Cellamare is the staff person. Cellamare will essentially be performing the role that the U.S. Environmental Protection Agency calls the environmental coordinator, which includes gathering documents, coordinating meeting agendas and monitoring the project schedule.</p>
<ul style="list-style-type: none"> • Employee Recognition Award Recipients • Fourth Annual Employee Recognition Award • Juneteenth Celebration: Best Party of the Year! • Upcoming Events 	<p>Your Suggestions Encouraged</p>
<p>ABOUT TIP</p>	<p>You are encouraged to contact any of the working group members with ideas on how to make operations at SLAC more environmentally friendly. In addition, a website is being developed. Suggestions for improving this site will be carefully considered. See: www.slac.stanford.edu/esh/isms/ems.htm</p>
<ul style="list-style-type: none"> • Staff/Contact • Submission Guidelines 	

The Path Forward

Over the next several months the EMSWG will hold meetings at which program managers will give presentations and operational activities will be evaluated regarding their impacts on the environment and how these can be further reduced.

Periodic articles in TIP and regular website updates will provide details, including how individuals and managers can participate, and report progress throughout the formal EMS development process.

The Stanford Linear Accelerator Center is managed by [Stanford University](#) for the [US Department of Energy](#)

Last update Thursday June 03, 2004 by [Emily Ball](#)

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

Pope Fellowship Awarded to UC Berkeley Student

By Davide Castelvecchi

SLAC welcomes Lauren Alsberg, recipient of this year's Katherine E. Pope Summer Fellowship. Starting June 2, the UC Berkeley sophomore physics student will spend two and a half months doing research on E-158, under the supervision of Berkeley's Yury Kolomensky (BABAR).

Alsberg will work on the Beam Position Monitor for the fixed-target, electron-electron collision experiment, helping to develop technology for the future Linear Collider. She says she is looking forward to getting experience on both the hardware and data-analysis aspects of the instrument, which, she says, is based on what is essentially a "very sophisticated AM radio."

In her physics honors classes, Alsberg has displayed scientific curiosity and work ethic, the qualities that will make her an excellent scientist. Kolomensky says, "I am happy that the fellowship will give Lauren a chance to participate in a cutting-edge research project at SLAC, and help start her scientific career."

Although she doesn't know yet what she would like to specialize in when she goes to graduate school, Alsberg says it will definitely be some branch of physics. "I like the thought process," she says. "Plus," she adds, "I like working with physicists. They have these crazy little quirks I just find terribly amusing."

The Katherine E. Pope Summer Fellowship was established to remember the Smith College, Mass., undergraduate student who was working at SLAC when she tragically died in a bicycle accident on Sand Hill Road in July 2001. The fellowship honors Pope and encourages other undergraduates with an interest in



Lauren Elizabeth Alsberg, Pope Fellowship recipient for summer 2004. (Courtesy of Diana Rogers)

[Awarded to UC Berkeley Student](#)

science, especially physics, to pursue their academic interest at SLAC.

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

SPIRES Website Has a New Look

By Kimberly Sutton

The SPIRES website has a new crisp, clean look. After brainstorming, reviewing other sites, poring over Web statistics and considering vast quantities of user comments, Library staff members Ann Redfield, Kim Sutton and Travis Brooks came up with a basic sketch. At this point, a real designer was needed, so Chip Dalby from SciArts Media was brought on board. He created the very appealing design, color scheme and logo. Over 100 SPIRES Web pages had to be revamped and the content reviewed.



The team (l to r): Chip Dalby, Kim Sutton, Ann Redfield and Travis Brooks (all TIS). (Photo by Diana Rogers)

The SPIRES site is the single most used Web resource at SLAC, usually accounting for 15-20 percent of the SLAC Web traffic. The last design changes took place in the late 1990's, eons ago in Internet time. This database, maintained by the SLAC Library staff for the last 30 years, made its on-line debut in 1991 as the first website in the United States. From its inception the HEP Literature and related databases have been extraordinarily useful to the high energy physics community. In March, there were over one million SPIRES searches, most of them coming from physicists at other institutions around the world.

The process of making sure everything is consistent with the new look is ongoing. You may still find a few 'old-look' pages in the site. Contact the SPIRES team at library@slac.stanford.edu with questions or comments.

For more information, see www.slac.stanford.edu/spires/about/

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

DOE Pollution Prevention Award

Lawrence (Butch) Byers (EP) received a DOE award for his efforts in educating the SLAC and DOE communities and in providing opportunities through use of a chemical management system (CMS) model. He is shown left with Jonathan Dorfan, Director and John Muhlestein, DOE Site Office. The CMS model involves effecting substantial culture changes in hazardous materials management and the business model that an organization uses to procure and manage chemicals. His outstanding leadership is a credit to SLAC and represents outstanding service to the Laboratory and DOE.



Photo by Thanh Ly

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

Certificate in Supervision Program

By Erin Smith

The next Certificate in Supervision program begins in early June.

This nine-class training program is designed to teach supervisors and managers effective leadership skills to meet the demands of SLAC's workplace and to promote optimal performance from employees.

This program is offered to new supervisors, experienced supervisors who want to improve their management skills and other SLAC employees who want to learn about the supervisory role. Participants have two years to complete the training series in order to earn the Certificate which certifies that they have successfully completed the program.

Graduates of the most recent Certificate in Supervision program received their certificates from the Director at an awards luncheon on April 7.

For more information on this Training & Development Program, see: www-group.slac.stanford.edu/hr/t/supervision.html

[Awarded to UC Berkeley Student](#)

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)



Graduates enjoyed an awards luncheon. First Row (l to r): Herbert McIntye, Sr. (PAO), George Kallabis (KLY), Forrest Brown (SEM), Greg Johnson (ASD), Anthony Tilghman (ESD), Clifton Whitton (SEM).

Second Row (l to r): Tim Miller (SCS), Maravic Co-Garcia (ACC), Sandra Henderson (ACC), Ute Hayes (HR), Bernadette Espiritu (ACC), Barbara Blum (ESD), Stephanie Carlson (SSRL), Carol Tam (ACC), Angie Seymour (ARDB).

Third Row (l to r): Thomas Porter (ESD), Dave MacNair (ESD), Merle Cramar (MD), Travis Brooks (TIS), Adrienne Higashi (EB), Armin Busse (ESRD), Carsten Hast (EFD), Howard Page (ASD), Robyn Mosset (HR).

Fourth Row (l to r): Jonathan Dorfan (Director), Thanh Ly (DO), Karen Fant (MFD), Natalie Cramar (REG), Roger Boyer (ESD), Tu Ly (KLY), Martina Datu (ACC), Olaf Muller

(MD), Matt Hayes (MFD), Laura O'Hara (TIS). (Photo by Diana Rogers)

Not Pictured: Antonio de Lira (ESD), Noel McMahon (SEM), Joseph Olszewski (ESD), Roslind Pennacchi (DO), Carlos Pereira (SEM), Hector Prado (ASD) and Serge Ratkovsky (ESD).

The Stanford Linear Accelerator Center is managed by [Stanford University](#) for the [US Department of Energy](#)

Last update Thursday June 03, 2004 by [Emily Ball](#)

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter- Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

Medical Department Offers Preventive Medicine

By Linda DuShane White

Prevention is the watchword for the Medical Department's Maria G. Gherman, M.D., MPH. In her seven years at SLAC Gherman has spearheaded numerous programs to increase the opportunity for each employee to take care of his/her own health.

Health Promise

Gherman is delighted to acquaint employees with Health Promise. This program, approved by ES&H, increases the opportunity for each person to monitor his/her own health.

"In addition to the complete physical examination offered to employees, we want to offer Health Promise as a commitment to improve health for a period of one year."

Participants measure biometrics for weight, BMI (Body Mass Index), blood pressure, EKG, blood tests for cholesterol and blood sugar. In the final analysis, Gherman explains, "We hope that by increasing health improvement we will contribute to fewer injuries at SLAC." Watch for Health Promise on the Medical Department website.

Heart Card

Come by the waiting room any time to use the Heart Card machine, a great help for weight or blood pressure management, as well as BMI and pulse rate. No appointment is necessary and there is no charge.

Prevention Ideas

It is no surprise that the dedicated Gherman has more prevention ideas. "For reducing ergonomic injuries, 20 people will participate in a pilot program called MouseKey Do," said Gherman. Physician's Assistant Raylene Blandino added that MouseKey Do, self-paced keyboarding and mousing CD classes



On staff are (left to right): Synday Aguilar, Administrative Assistant/Medical Assistant, Vincent Valencia, Medical Assistant, Raylene Blandino, Physician's Assistant, and Maria Gherman, MD.

Not pictured are Carol Kubiak, RN and Geraldine Roach, RN. (Photo by Diana Rogers)

[Awarded to UC Berkeley Student](#)

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)

to prevent injury, start in June.

Stretch Break and Vision Break software will also be tested. Be sure to let Medical know how you like them.

Free trial of Stretch Break: www.paratec.com

For Vision Break information: www.visionbreak.com

Ten medical surveillance programs are on the ES&H Employee Training Assessment (ETA) website. Use the Exposed Employee Medical Monitoring Program to see if you are in OSHA compliance.

The staff provides consultations to the Community Emergency response team, SERT, CPR/First Aid, Recertification CPR, Asbestos awareness, Ergonomic Evaluation and Back School for back conditioning.

Take advantage of our Medical Department. Use the website, with the monthly Wellness Calendar of exercise and sports program schedules. Updates on a range of programs and issues are in the bimonthly newsletter, New Options for Wellness. Short term counseling is available by appointment with Rosan Gomperts, LCSW and Kevin Carr, MFCC. Massages are provided for a fee and by appointment with Mer Baldoza, CMT.

With the recent expanded programs added, Gherman has hopes for even more improvement—the space and added facilities for an on-site physical therapist and ergonomic lab. Despite SLAC's already rich array of medical and fitness options, Gherman dreams of still more to offer.

For more information, see: www-group.slac.stanford.edu/esh/medical/

For available training, see: www.slac.stanford.edu/esh/training

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

TIP Transitions

By Kate Metropolis

The Interaction Point team has said goodbye to our layout designer, Nicolle Rager, who is moving to Washington, D.C., to become a scientific illustrator for the National Science Foundation (NSF). Rager will be working full-time on a new web site, to be launched in October, that will highlight various scientific investigations funded by NSF.

Rager came to the Communications Group last summer as an intern illustrator from the UC Santa Cruz graduate program in science communication and stayed on as a graphic designer.

The illustrations she did for SLAC include dark matter warping gravity, the expanding universe and a future linear collider. They can be downloaded from the Interactions image bank at: www.interactions.org/imagebank/

Taking over the layout is Alan Chou. An illustrator from the UC Santa Cruz graduate program in science communication, Chou has the software savvy to continue our publication in the style to which you have become accustomed.



Photo by Diana Rogers

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter- Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

Looking for a Great Career Opportunity?

By Carmella Huser

The Alonzo W. Ashley Career Development Fellowship is an opportunity to spend one year engaging in full or part-time activities that will enhance the employee's career and contribute to SLAC's needs and mission. Activities may include:

- Development and implementation of programs/projects
- Job exploration
- Coursework or other training
- Other activities proposed by the Fellow

Who is Eligible?

Anyone who has:

- Been employed by SLAC for at least three years.
- Demonstrated interest in promoting diversity at work or in the community.
- Ability to manage own time.
- Approval of Supervisor.

Application Deadline is June 30

The fellowship must take place between October 1, 2004 and September 30, 2005. Application forms are available on-line (www-group.slac.stanford.edu/hr) or from Human Resources. Finalists will be interviewed by a selection panel, and the person selected will be notified by July 23. For more information, call Carmella Huser (Ext. 2358).

Past Recipients

Proposals from past recipients are available on-line: www-group.slac.stanford.edu/hr/er/fellowship/2004/pastproposal.html

For application forms and further information, see: www-group.slac.stanford.edu/hr/er/fellowship/2004/ashley.html

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter- Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

MILESTONES

Service Awards

5 Years

Hasan, Adil (SCS), 5/10

Schuh, Peter (AD), 5/17

Vega, Alex (PUR), 5/10

10 Years

Acosta, Anthony (SEM), 5/23

Bordas, Zoltan (MFD), 5/23

Harwood, Lester (EFD), 5/23

Jones, Darrell (PUR), 5/23

King, Janet (MFD), 5/23

Salgado, Guadalupe (RD), 5/23

15 Years (corrected!)

Corbett, William (ASD), 6/1

Holtemann, Karen (MFD), 5/29

Miller, Edward (ESD), 6/15

Nguyen, Giovanni (KLY), 5/22

Rokni, Sayed (RP), 6/15

Simmons, Robert (ESD), 6/5

20 Years

Liang, Shiu Yic (EFD), 5/16

Thompson, Marshall (BLS), 5/16

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>

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

New Mileage Rate

Effective May 24, the standard rate for official travel by privately owned vehicles (POV) was increased to 37.5 cents a mile. The new rate applies to travel that originated on or after May 24.

Please note that travel originating before May 24 and ending after the change went into effect will be reimbursed at the previous rate of 34.5 cents a mile for the duration of that trip.

Although the Federal Travel Regulations (FTR) have allowed payment of 37.5 cents a mile since January 1, the SLAC Travel Reimbursement Office follows Stanford University guidelines, which made the increase effective May 24 for SLAC travelers.

The new rate is reflected on the updated Travel Reimbursement website: www-group.slac.stanford.edu/travel/slac_travel.html

Contact: Alison Twombly, Travel Reimbursement Office, Ext. 4346, atwombly@slac.stanford.edu

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

Congratulations to all of the 2004 Employee Recognition Award recipients!

World Class People Make a World Class Laboratory.

FEATURES

(Photos by Diana Rogers)

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)



Linda Ahlf (HR)



Perry Anthony (EFD)



Nick Arias (NLC)



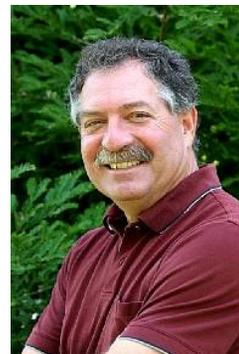
Terry Ash (KM)



Uwe Bergmann (ESRD)



Irene Boczek (ESH)



Richard M. Boyce (ASD)



Toni Campos (HR)

[Awarded to UC Berkeley Student](#)

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)



Maura Chatwell (COM)



Jeff Corbett (ASD)



Max Cornacchia (ASD)



Natalie Cramar (REG)



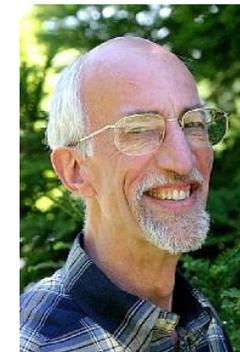
Mary Crume (SCS)



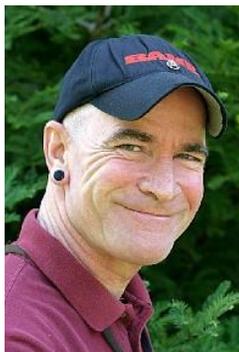
Raymond Cuadrado (SEM)



Ginger DeContreras (ESD)



Skip Ethier (ACC)



Chris Hall (EK)



Karen Holtemann (MFD)



Sharon Jensen (THP)



Hope Johnson (SHA)



Terri Lahey (ESD)



Karen Lawrence (HR)



Jan Louisell (RD)



Douglas McCormick (NLC)



Chris Mayfield (ASD)



Caolionn O'Connell (ARDB)



Rebecca Reitmeyer (TIS)



Diana Rogers (DO)



George Sandoval (SEM)



Joan Scott (PUR)



Javier Sevilla (NLC)



Erin Smith (HR)



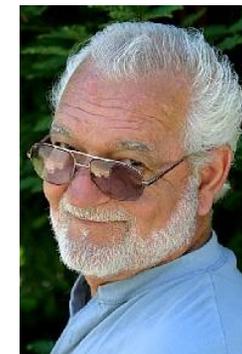
Glenn Stewart (AD)



Frank Topper (BSD)



Terry Tuck (EFD)



Barry Webb (HR)



Kathy Webb (BABAR)



Mike Woods (EA)



Anahid Yeremian (ARDA)



Norman Yeung (SEM)

The Stanford Linear Accelerator Center is managed by [Stanford University](#) for the [US Department of Energy](#)

Last update Thursday June 03, 2004 by [Emily Ball](#)

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

Fourth Annual Employee Recognition Award

By Carmella Huser

The fourth annual Employee Recognition Award luncheon was held on May 26 at the Stanford Faculty Club. The 40 employees honored this year were nominated by their peers and selected for the award because they demonstrated one or more of the following qualities:

- Pitching in when help is needed
- Working cooperatively with others
- Going out of their way to help others
- Showing unusual grace under pressure
- Treating others with courtesy and respect
- Volunteering at SLAC activities not directly related to their job
- Doing a variety of positive things to make the work environment more inviting

For more information, see: www-internal.slac.stanford.edu/hr/er/default.htm

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

Juneteenth Celebration: Best Party of the Year!

By Michelle Smith-Strand

Please join us for the 15th Annual Juneteenth Celebration at SLAC. This year we will be honoring the life of Bessie Coleman, the first licensed black female pilot.



Bessie Coleman (Courtesy of Michelle Smith-Strand)

Bessie Coleman was born in Texas in 1892. During WWI, she read about the air war in Europe and became interested in flying. She became convinced that she should be up there and not just reading about it. She started looking for a flying school, but had two strikes against her—she was a woman and she was black.

Coleman heard that Europe had a more liberal attitude towards women, so she learned to speak French and earned enough money (along with other support) to go to Paris and learn how to fly. She encountered many problems, but held on to her dream and earned her license on June 15, 1921.

Come on and join the celebration, let's make this a memorable event. There will be food including desserts, drinks, music, a jumper for the kids and displays. A high-spirited live gospel group will be playing instruments and singing—party time! Also, our very own Robert Moore (EFD-Cryogenics) will be part of the choir. Hallelujah!

Menu

Barbecue ribs, chicken, hot links, salads, baked beans, corn-on-the-cob, green beans, desserts and beverages.

For tickets, contact:

Jasmine Rogers (Ext. 4336), Sandra Henderson (Ext. 5107), Bldg. 41
Director's Office, Admins (Ext. 3700), Bldg. 40
Vickeye Flynn (Ext. 4208), Bldg. 280A

[Awarded to UC Berkeley Student](#)

- [SPIRES Website Has a New Look](#)
- [DOE Pollution Prevention Award](#)
- [Certificate in Supervision Program](#)
- [Medical Department Offers Preventive Medicine](#)
- [TIP Transitions](#)
- [Looking for a Great Career Opportunity?](#)
- [Milestones](#)

Henry Gray (Ext. 2181), Bldg. 15
Lovetta Dunn (Ext. 2388), Sharon Oden (Ext. 4460), Bldg. 24
Glena Stewart (Ext. 2838), Al Baker (Ext. 4849), Bldg. 5A
Ben Smith (Ext. 2738), Bldg. 280
Sandra Pickrom (Ext. 4247), Bldg. 81
Michelle Smith (Ext. 4154), Bldg. 211
George Maclin (Ext. 3808), Bldg. 50

Friday, June 18, 3:00 to 6:00 p.m. Cafeteria Picnic Area

Adults: \$10
Kids (12 & under): \$5

POLICIES AND PROCEDURES

- [New Mileage Rate](#)

EVENTS

- [Employee Recognition Award Recipients](#)
- [Fourth Annual Employee Recognition Award](#)
- [Juneteenth Celebration: Best Party of the Year!](#)
- [Upcoming Events](#)

ABOUT TIP

- [Staff/Contact](#)
- [Submission Guidelines](#)

INTERACTION POINT

June 4, 2004

[Back to SLAC Homepage](#)

About Us:

[Back to TIP Homepage](#)

In this issue:

[FRONT PAGE](#)

FEATURES

- [BABAR Tests Matter-Antimatter Theory in New Ways](#)
- [NLC Team Achieves Key Milestone for 'Warm' Linear Collider](#)
- [Cafeteria Picnic Area to be Revamped](#)
- [A 1960's Dream Comes True](#)
- [Is Dark Matter Actually Black?](#)
- [Ten Years Ago, SLAC Brought the Internet to China](#)

ANNOUNCEMENTS & UPDATES

- [Environmental Management System on the Horizon](#)
- [Pope Fellowship](#)

The Interaction Point

Editorial Team

Neil Calder

[Nina Adelman Stolar](#)

Katherine Bellevin

Vickee Flynn

Ziba Mahdavi

Writers

Heather Rock Woods

Linda DuShane White

Kate Metropolis

Davide Castelvecchi

Mason Inman

Photography/Graphics

Diana Rogers

Michael Hyde

Alan Chou

Distribution

Tineke Graafland

Charlotte Los Banos

On-line Edition

Emily Ball

The Interaction Point is published twice monthly every first and third Friday. Submissions are due the second and fourth Tuesdays of each month. Send submissions to tip@slac.stanford.edu, or mail to TIP Editor, MS 58, Stanford Linear Accelerator Center, 2575 Sand Hill Road, Menlo Park, CA 94025.