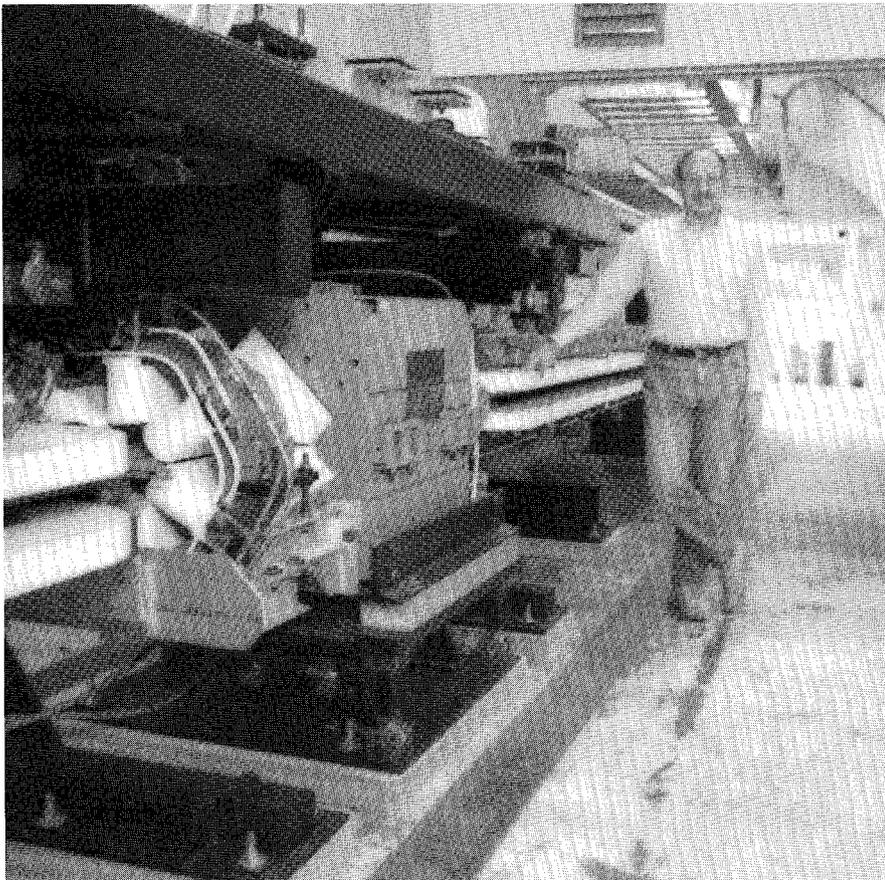




SLAC WINS *B*-FACTORY COMPETITION



B factory leader Jonathan Dorfan next to a mockup of the proposed *B* factory.

by Sarah Morisseau

ON OCTOBER 4, 1993, President Clinton said what all of us at SLAC had been waiting for months to hear: SLAC had won the battle for the *B* factory.

"It has been said that you can't create genius; all you can do is nurture it. There is a lot of that genius in California. If nurtured, it will help to bring about not only

an economic turnaround for California but for the entire nation," the President said.

On that note, Clinton formally announced the decision of Department of Energy Secretary Hazel O'Leary and his Science Advisor, Jack Gibbons, to award the *B* factory to SLAC.

Their decision was based on a review led by Stanley Kowalski, Director of the Bates Linear Accel-

erator Center at the Massachusetts Institute of Technology. The "Kowalski Panel," as it was called, visited the two final candidates for the project (SLAC and Cornell University, Ithaca, New York) in June and made its recommendation to the DOE at the end of July.

Although the Cornell proposal was less expensive, the panel's recommendation favored SLAC because it involved fewer risks. The panel suggested, and Secretary O'Leary agreed, that SLAC was more likely to keep to its proposed schedule and to stay within budget. The fact that SLAC is a DOE laboratory was also a factor in the decision.

"I have selected Stanford because the Department of Energy has a much higher margin of confidence in the ability of the Stanford proposal to meet the project's extremely high performance requirements, as well as to meet its proposed cost and schedule," O'Leary stated.

"The government has done the wise thing," *B* factory leader Jonathan Dorfan said with a smile. "SLAC is the premier electron lab in the world; a continued investment in this lab makes real sense."

In a conference committee meeting between the House and Senate on October 21, \$36 million was included for a *B* factory start in fiscal year 1994. This bill went to the floors of Congress for final approval during the last week of October.

Continued on page 6

On-site Childcare Task Force Formed



SLAC DIRECTOR Burton Richter recently formed a task force to examine the feasibility of a childcare facility for children of SLAC employees. The task force is made up of volunteer representatives from each division of SLAC and the user community. It is chaired by Bernie Lighthouse of Personnel and will report to the director by December 31.

In his charge to the task force, Richter asked its members "to conduct a feasibility study of childcare at SLAC which includes a review of needs analysis data gathered through the survey (in January); a review of possible childcare alternatives including on-site, off-site, and shared with other nearby employers; a projection of costs to SLAC of these various alternatives; the benefits of the various alternatives; a review of possible management arrangements for the various alternatives; a review of liability and insurance issues; a projection of costs (for each alternative) to employees who use childcare; recommendations on the age levels and types of services that should be provided by the proposed child-

care; and an overview of possible sources of financing for the various alternatives."

The formation of a childcare task force is the culmination of several years of effort. SLAC employees have been working for an on-site childcare center since 1969, when a childcare committee was first formed. Last October, the Women's Interchange at SLAC (WIS) asked the Personnel department

to take a site-wide survey of employees' childcare needs and their opinions on the subject. Personnel and WIS developed the questionnaire together; it was distributed in January. The results of that survey are described in the adjoining article.

WIS also sponsored two panel discussions on childcare in the workplace, one each in March and April, with representatives from several employer-sponsored childcare facilities. Out of these presentations grew the SLAC Parents' Group, which took on the issue of childcare as its focal point. Although the Parents' Group has since expanded its interests, several of its members have already researched some of the options for a SLAC childcare center.

The efforts of these various organizations and individuals certainly helped to speed up the process, but the establishment of Brookhaven National Laboratory's Childcare Development Center had the largest effect on the situation.

The childcare center at Brookhaven opened its doors two years ago, in September 1991. It is the

first childcare facility built with DOE funding. Fermi National Accelerator Laboratory and Lawrence Livermore National Laboratory (LLNL) also have childcare centers, but theirs operate in previously-existing facilities. The LLNL center, for example, is in a renovated elementary school one and a half miles away from the lab.

"It wasn't until the Brookhaven one came to our attention that we realized the Department of Energy would allow us to subsidize a childcare center," Lighthouse said. "In earlier years, there was no indication of support from the DOE."

Although nothing has yet been officially decided, Lighthouse says that SLAC would most likely pay for construction (or rent, if an existing facility were to be used) and for maintenance. Salaries for the center's staff would be paid by the SLAC employees who use the center. Many of the childcare facilities that were represented at the WIS presentations have a similar—if not identical—financial structure. At the LLNL center, for example, staff salaries and benefits make up as much as 94 percent of its \$610,000 yearly budget.

Members of the task force are: Lighthouse, Karen McClenahan, Mary Ross, Kathy O'Shaughnessy, Julie Greer, Rachel Howard, Teri Church, Mike Sullenberger, Denise Larsen, Achim Weidemann, Clifton Rogers, Chuck Boeheim, Mary Litynski, and Kathleen Sullivan, director of Stanford's Child and Family Services.

—Sarah Morrisseau

This newsletter is printed with soy-based ink and is recyclable.

Energy Forms and Transformations Workshop



LOCAL middle school teachers gathered at SLAC for a workshop on energy forms and transformations, lead by SLAC theoretical physicist Helen Quinn and teacher Beth Napier from Oakland Unified School District. As part of the activities, teachers were asked to analyze what type of energy was involved in making toast, then eating the toast. Participating in this activity are (l. to r.) Sherri Blatt, Beth Napier, Jose Argulo, Jane Scott Jones, and with her back to us, Kimberly Callan. All the teachers agreed that this is a great activity to use in the classroom with 30 hungry students!

—P.A. Moore

CHILDCARE SURVEY RESULTS

IN JANUARY, the Personnel Department sent out a questionnaire to the entire SLAC community. Its purpose was to survey the childcare needs of employees and users and to solicit their opinions on the possibility of a SLAC childcare facility. Five hundred seventy six completed forms were returned to Personnel in February, representing about thirty percent of the SLAC community. This article outlines the basic findings of that survey, based on the formal report from the Personnel office.

Forty-two percent of the respondents said that they had children under 12; a total of 297 children are represented in that group. All but 20 of the respondents with children said that they need childcare services. Eighty percent of the respondents who have children of a childcare age

said that they would use an on- or near-site childcare center; only 23 said that they would not use such a facility.

Of those employees with children under 12, 40 percent said that a SLAC childcare center would have to be on the site for them to use it, 30 percent said it would have to be within five minutes by car, and 27 percent said that they would use the center if it were within 10 minutes by car.

Ninety percent of those who currently need childcare said that they would use a center between the hours of 6:00 am and 6:00 pm, Monday through Friday. Few people (44) were interested in a SLAC childcare center during the weekend or after-hours.

Eighty-five respondents said they would enroll their children for after-school care, 79 for school holiday and vacation care,

60 for full-time preschool care, 54 for full-time infant care, 16 for part-time preschool care, 15 for part-time infant care, and 12 for some "other" childcare service. (Respondents could choose more than one of these options.) One hundred fifty-eight respondents indicated that they would use "an emergency child-sitting service if one were available during work hours through the Laboratory."

One hundred eighty-five of the respondents said that they plan on having children in the next ten years; 177 of them said that they would use a childcare center at or near SLAC. Of those who have no plans for children, 308 said they "think that a laboratory-established childcare center on or near the site is a good idea;" only 25 disagreed.

—Sarah Morisseau

DOE's Lab Programs for Women:

CAN WE DO MORE? CAN WE DO BETTER?



P.A. Moore

THE AUGUST WIS presentation was primarily a report on the third annual DOE review of lab programs for women. The conference took place May 11-13 in Oak Ridge, Tennessee. Katherine Cantwell of SSRL and P.A. Moore, SLAC education coordinator, attended the conference.

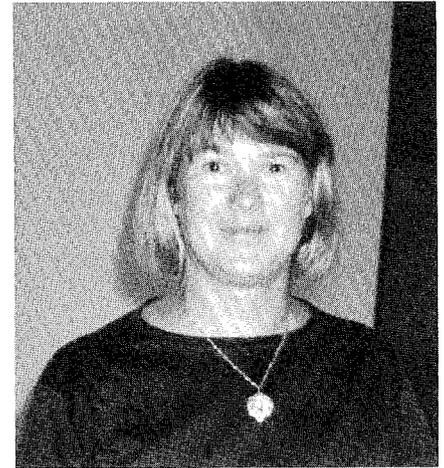
"It was very much a working conference," Moore said. The participants were divided into six "working groups," that looked at different problems for women—

specifically women in DOE labs—and developed a plan to combat those problems. On the third day of the conference, one representative from each lab gathered to talk about specific women's programs in their lab.

"We need to assess ourselves at SLAC and to give ourselves a challenge: Can we do more? Can we do better?" said Moore, who was SLAC's delegate to the Point of Contact meeting on the third day.

By the end of the conference, the participants had developed a mission for 1993: to implement "aggressive outreach programs to improve women's access to careers in science, engineering, and mathematics" and to make the DOE and its labs "an exemplary work environment for women to work and grow professionally."

"I have no idea what, if any, impact this conference has on the DOE," Cantwell said. "It seems to have some influence within the laboratories by inspiring people to go home and implement programs they have heard about, but there was no high-ranking DOE person at the meeting."



Katherine Cantwell

SLAC does not have a formal process or forum for addressing women's issues at the laboratory; therefore, it will be difficult to implement any of the conference's recommendations. Since WIS is a volunteer organization, it is always looking to the SLAC community for suggestions and assistance in its efforts. If you are interested in helping with any WIS projects, please contact Janet Dixon at ext. 3688.

—Sarah Morisseau

DEER CROSSING

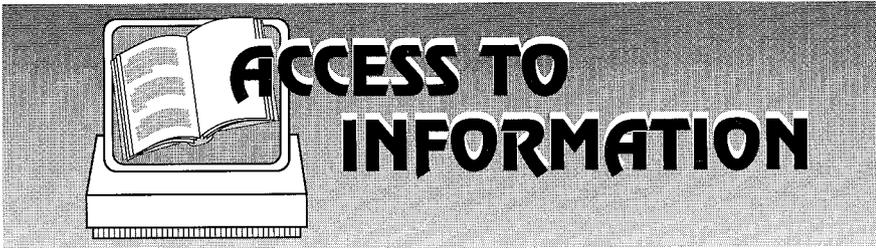
DEER ARE SEEN on and near the roads of SLAC throughout the year. They can pose a safety hazard. When driving around the site, please be careful of the wildlife. If you see a deer, or any other animal, in the road stop immediately. Most likely, the animal will run away; if it doesn't, try turning your headlights on or off for a brief moment. This will usually startle the animal into moving.

—Sarah Morisseau

22nd Annual SLAC Run/Walk

THE WIZARD RETURNS! Come join us and be greeted by the Wizard at SLAC's 22nd Annual Run/Walk on Thursday, November 11, at High Noon at Sector 30. Be a runner, walker, watcher, or cheering supporter, all are welcome! Visit with The Wizard! Participants should be early or prompt to register as the Run/Walk will begin very shortly after noon. Free drinks will be provided for all participants and available for a small fee for others. Surprise t-shirts featuring the Wizard will be sold for \$7.00. Be sure to wear your SLAC dosimeter—it's mandatory! Questions? Call Pat Wurster at ext. 3507 or Karen Fant at ext. 4466. We hope to see you there!

—Pat Wurster



Announcements of Future SCS Equipment Outages

SCS NOW USES a more streamlined method to present information about outages on equipment for which it is responsible (for instance, VM, network, central Unix, and VAX systems).

Starting September 1, the mailing list `comp-out@slacvm.slac.stanford.edu` and the NetNews group `slac.computing.outages` was used in conjunction with all existing methods for notifying you of upcoming outages. Starting October 1, only the mailing list and the NetNews group will be used.

To subscribe to the mailing list, send e-mail to: `listserv@slacvm.stanford.edu`. In the body of the message, include the line: **sub comp-out Your Name Here**. Type your own full name in upper and lower case on that line.

—Tim Streater

SLAC Computer Advisory Committee Report Available

THE SLAC COMPUTER Advisory Committee (SCAC) visited SLAC on December 16 and 17, 1992, to advise SLAC on its effort to revise and revamp its computing systems. Among the materials the Committee was given about computing at SLAC was the April 1991 report from the Future Computing at SLAC, which was made available to, and discussed by, SLAC staff last year.

You can pick up a copy of the SCAC report at the Help Desk in the Computer Building Lobby or access it as an online ASCII file on UNIX, VM, VMS, and the Mac Public Disk 1:

UNIX: `/usr/local/doc/futures/SCAC-report93`

VM: `scac.listing *` and `scac.memo *`

VMS: `slacvx::doc$:[futures]$scac$-report93`

Mac Public Disk 1: `scac report` in the folder Policies and Reports

You can also view the report online via the World Wide Web (WWW) on SLACVM, the SLD and SLVX VAXes, and machines connected to the central Unix cluster. Access WWW with the Web command, select the topic "General SLAC Computing," and then select SCAC.

Feel free to contribute your thoughts and comments on the report to the newsgroup `slac.scac.aug93`. This newsgroup is linked to the Listserv distribution list `scac-l`. That is, people who subscribe to `scac-l` will receive items posted in `slac.scac.aug93`, and, conversely, items they send via the distribution list will be posted to the newsgroup. So, if you prefer to read and issue your comments via mail rather than the newsgroup, here is how you can subscribe to `scac-l`:

Give the VM command: **tell listserv subscribe scac-l FirstName LastName** where **FirstName** and **LastName** are, in upper and lower case, the name by which you want to be known. If you misspell your **FirstName** or **LastName**, repeat the process, using the correct spelling.

If you are on other platforms, send e-mail to `listserv@slacvm.stanford.edu` with no subject line, and with the body of the mail containing only the line: **subscribe scac-l FirstName LastName**.

—Tim Streater

To unsubscribe, give the same commands as above except substitute **signoff** for **subscribe** and leave off **FirstName** and **LastName**.

—Ilse Vinson

No Tampering with Telephone, Networking Cables, or Equipment

WITHIN THE LAST MONTH three instances of users tampering with network cabling and equipment occurred. In one instance 50–60 users were affected and the network in that area was shut down for several hours. In another case, someone improperly installed, against SLAC policy, a Mac transceiver.

As a result, we wish to remind you of sections of a memo, entitled "Tampering with Telephone and Networking Cables and Equipment," that was issued by Steve Williams and the late Hugh Steckol in July 1991.

The memo states:

"Tampering with phone or data network cables or the wiring of individual phone lines or workstations or other network equipment is strictly prohibited without prior approval from Telecommunications or Network Operations. This includes re-routing, splicing, bridging, cutting or converting existing cables with other types of cables and/or phone jacks or network connections.

Costs for fixing a problem that results from user tampering with cables and connections will be billed to the user's group. Telecommunications, or Network Operations, as appropriate, will charge back all labor and other costs incurred for the repair."

If you need a network modification, please place a service call to the SCS Help Desk at ext. 4357. For telephone relocation or installation, contact your ATOM.

—Tim Streater

Continued from page 1

"I'll celebrate when we have the check in hand. This (Clinton's announcement) is a tremendous step, but we must be patient," Dorfan said. "When we get approval from the Senate and the House, then I'll drink my champagne. But for now, it's on ice."

The *B* factory is exactly what its name suggests—a factory designed to produce over 100 million pairs of neutral *B* meson particles per year. The *B* meson and its anti-particle, the anti-*B* meson, are created by colliding an electron with its anti-particle, the positron. The production of these *B* particles will help physicists to understand the nature of the universe.

According to the current theory, the universe contained equal amounts of matter and anti-matter at the moment of the Big Bang. But if that were true, the matter and anti-matter would have destroyed each other. Everything in our world—the earth, the chair you are sitting in, this newsletter—is made up of matter, and so we know that something was not truly equal at that moment the universe was born. As Dorfan puts it, there must have been "some small preference for matter."

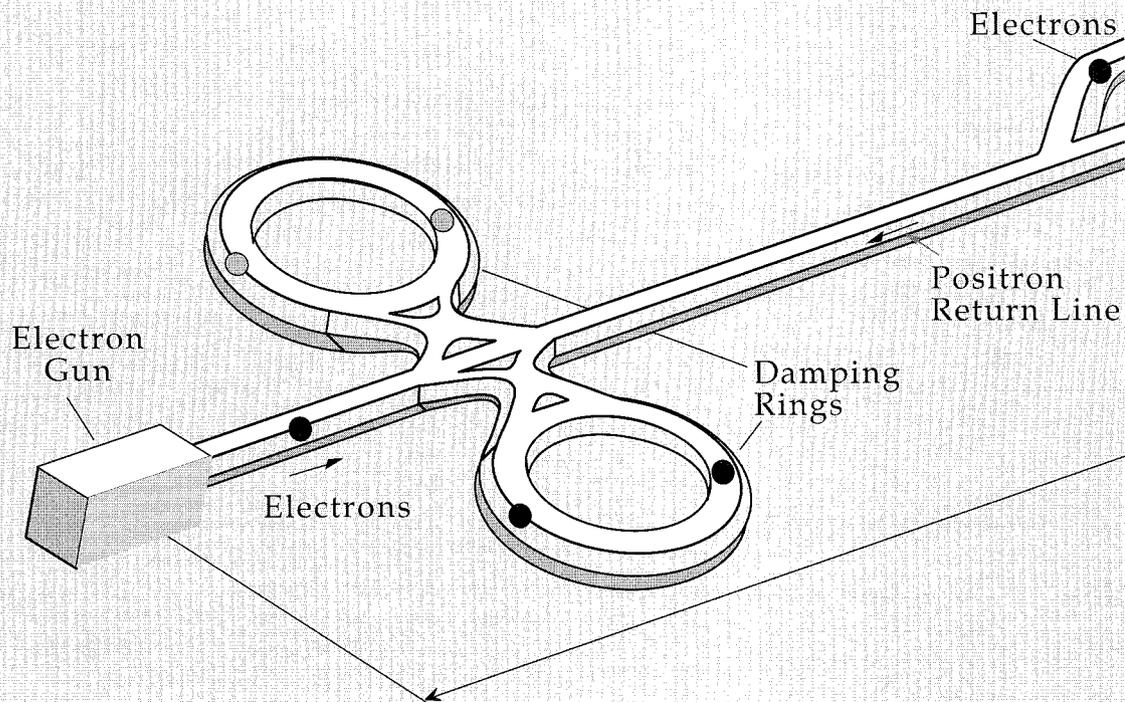
That preference is explained by the theory of CP violation, which is best tested by studying the decay of

\$237 million upgrade

- A** Upgrade of the existing PEP ring to store a beam of high-energy electrons.
- B** Addition of a new beam storage ring, which will house a beam of positrons, above the upgraded PEP ring. Both rings are to be housed in the existing PEP tunnel.
- C** Addition of a new detector designed specifically to detect CP violation.

SLAC *B*- Upgrade]

Positron Sc
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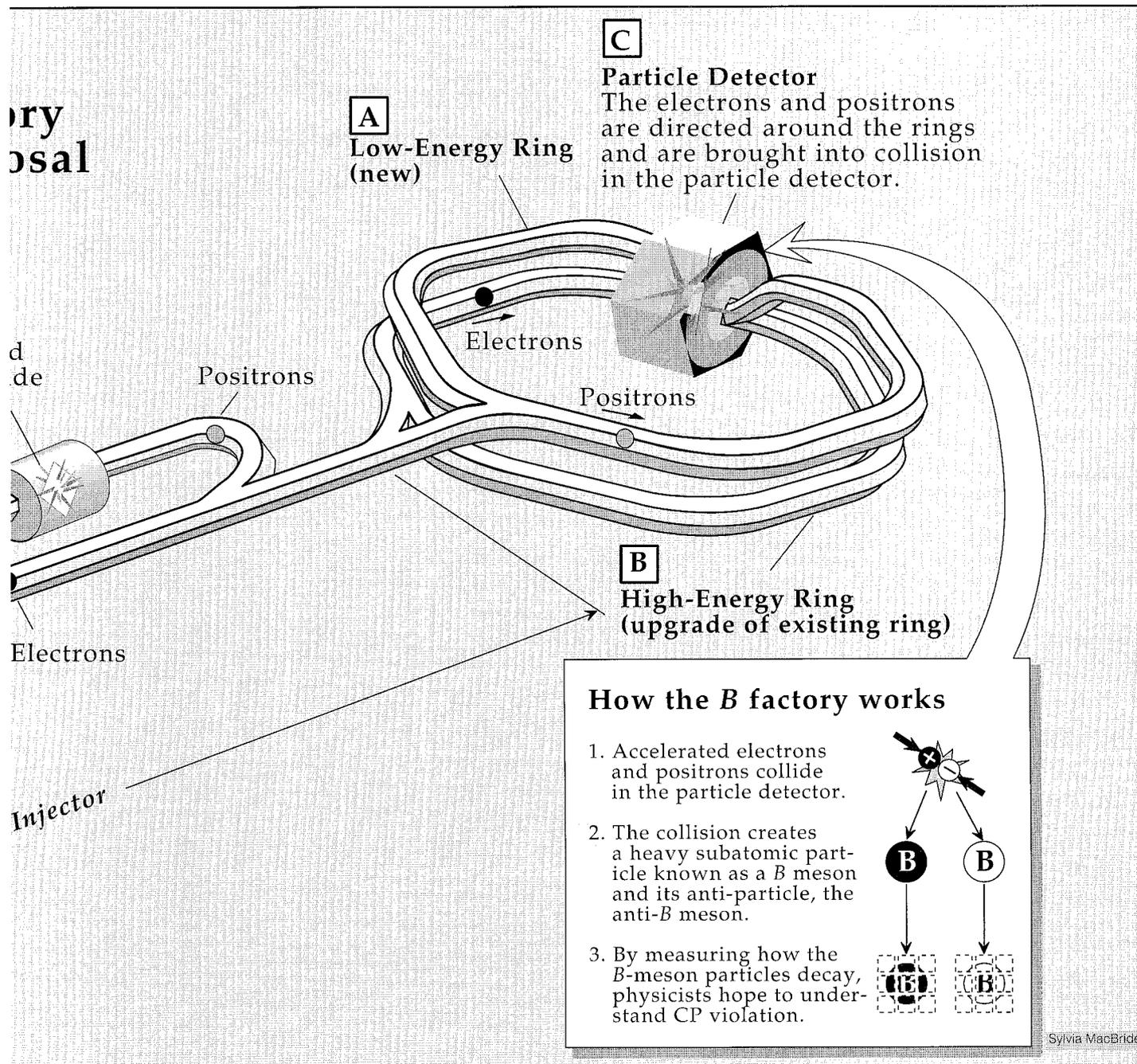
the *B* meson—or rather, the decay of 100 million *B* mesons. This is where the *B* factory comes in.

The *B* factory will not be a separate entity at SLAC; it is an upgrade of our existing facilities. The \$237 million project will require adding a new beam storage ring above the existing PEP storage ring, renovating the existing PEP storage ring, and adding a new detector specifically designed to study CP violation. The construction should be done by the end of 1998, and experiments could begin as early as 1999.

The *B* factory project, and the new detector in particular, will be “very much an international

collaboration,” Dorfan said. It will bring about 300 physicists from around the world to SLAC. Half of the money to finance the detector will come from Canada, Europe, and Russia.

“It is heartwarming to see how the staff of this lab has pulled together for the *B* factory. They have been tremendously supportive, and I am very thankful,” Dorfan said. “It has been a long haul—we couldn’t have made it without everyone’s support.”



California Professor of the Year

LYNN COMINSKY, a visiting professor in SLAC's experimental group K (Particle Astrophysics), has been named the California Professor of the Year by the Council for Advancement and Support of Education (CASE). The CASE award, which is presented annually, is regarded as one of the most prestigious awards given to university professors. Lynn is on sabbatical from Sonoma State University (SSU), where she is a professor of physics and astronomy.

"Dr. Cominsky exemplifies the qualities of the mind and spirit that are the mark of truly outstanding educators," says SSU President Ruben Arminana. "She has participated diligently in improving the curriculum in her department through the development of new courses and the revamping of several courses to emphasize student-centered learning."

Before taking a position at SSU in 1986, Lynn was a member of the staff at the Space Sciences Laboratory at the the University of California at Berkeley. Through her guidance, SSU has been recognized as the only undergraduate institution in the country to build its own radio telescope. In addition to being a gifted lecturer and faculty member, Lynn has demonstrated her expertise in research. She has secured more than \$250,000 in grants for the University. Eight of her students have won research awards. Beyond her contributions to the campus community, she has earned an international reputation for her work in X-ray astronomy.



Colleagues and students alike share a high regard for Lynn. Monika Ivancic, one of her former students and a former SLAC summer student and employee who is now pursuing a master's degree in biophysics at Oregon State University, says "Lynn has given me the impulse to develop a love affair with science. Her enthusiasm in the subject lends to her students' enthusiasm. Not only has she inspired me in the classroom, but outside of class she has been a close confidante and I have always felt comfortable discussing any problem with her."

In 1991 Lynn received the Excellence in Education Award given by the Santa Rosa Chamber of Commerce, and in 1992, she was named SSU's Outstanding Professor.

—Linda Lee Evans

THE WAY WE WERE—NOVEMBER 1974

Burton Richter announced the discovery of a particle three times heavier than the proton and with a lifetime 10,000 times longer than could be predicted by prior discoveries. He named the particle psi because, he said, "it's the only unassigned Greek letter in physics." At the same time, Samuel Ting discovered the same particle in a completely different experiment. He called it J. These discoveries caused such excitement in the international physics community that the period was named "The November Revolution." The J/psi particle, as it is known today, is created by an electron-positron collision.

—Sarah Morisseau

All meetings are held in the Orange Room, unless another location is listed. Larger meetings and conferences have a contact listed. Please notify the Public Affairs Office of any additions or changes by calling ext. 2204 or sending e-mail to NINA@SLACVM.

November 2

SU Alumni Assn. Workshop
Auditorium

November 2-5

IEEE Nuclear Science
Symposium
E.J. Lampo, LBL
San Francisco

November 3-5

SU Alumni Assn. Course
Auditorium

November 8-12

SLD Week
TBA

November 9

SU Alumni Assn. Workshop
Auditorium

November 10

Health Fair
Auditorium Breezeway
G. Printup, Benefits Office

November 11, Noon

22nd Annual SLAC Run
Klystron Gallery Road

November 11-12

SU Alumni Assn. Workshop
Auditorium

November 16-17

DOE Electronic Industry
Association Workshop
G. Caryotakis, D. Sutter
Auditorium

November 12-13

EPAC Meeting
D. Fryberger, V. Flynn

November 30-December 4

B-Factory Workshop
J. Dorfan, D. Hitlin,
A. Pacheco
Auditorium

December 6-10

SLD Week
TBA

December 14, 8 AM-3 PM

SUBB Mobile Blood Drive
Auditorium Lobby

December 17, 11:30 AM

SLAC Holiday Celebration
TBA

EVENT CALENDAR: November-December 1993

Operating Safety Committee

THE OPERATING SAFETY Committee at SLAC is a group formed to discover, analyze and propose solutions to hazardous situations excluding those technical areas addressed by SLAC's citizen committees (ionizing and non-ionizing radiation, earthquakes, hoisting and rigging, and hazardous experiments). The committee presently consists of five members each from the Technical Division, Business Services Division, ES&H Division, and Research Division. There is one representative from the SSRL Division and a person representing the Director's Office.

Members are asked to share safety concerns and recommendations from their division's safety representatives and to ensure that all groups in their division are informed of committee concerns, decisions, and recommendations. An annual work plan is developed for each calendar year, although agendas are always open to new topics which need to be discussed. Some of the topics the committee will review in the next few months are operational lock and tag procedures, possible trends in accident/injury rates at SLAC, emergency preparedness, and personal/office security. Though the committee does not set policy, it can review situations and make recommendations to the ES&H Coordinating Council when policy issues are involved and/or when the gravity of a problem warrants this level of attention.

Any employee can bring safety matters to the attention of the Operating Safety Committee in the interest of ensuring the general safety of the lab population. The members of the committee are as listed below; you are encouraged to contact your division's representatives with your concerns.

—Janice Dabney

OPERATING SAFETY COMMITTEE MEMBERS

Chair: Janice Dabney
Safety Officer: David Gordon
Secretary: Sharon Haynes

Business Services Division

Jerry Belk
Rick Challman
Glenn Tenney
Rick Yeager
Janet Dixon

Research Division

Dan Alzofan
Barbara Barrera
John Broeder
Brad Youngman
(appointee pending)

SSRL Division

Ian Evans

ES&H Division

Margaret Deanesly, M.D.
Rich Huggins
Mick McDonald (PAFD)
Stan Mao
Martha Curran

Technical Division

Wes Asher
Dave Ficklin
Rich Jones
Gerry Nelson
Ray Pickup

Director's Office

Nina Adelman-Stolar

Summer Science Institute

TWO HUNDRED and twelve physicists from around the world descended upon SLAC this summer for the twenty-first annual SLAC Summer Science Institute (SSI), a combination summer school and topical conference for graduate students and postdoctorates in physics.

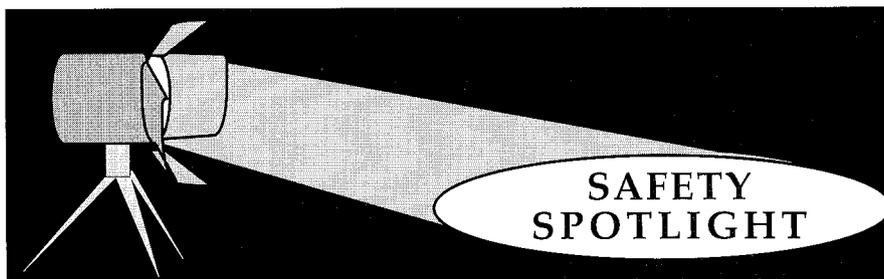
"There is a big gap between what students can learn in their coursework and what they really need to know to do research at the frontier of the field. One of the roles of the Summer Institute is to fill that gap," says Lance Dixon, who directs the program with David Burke and David Leith.

The first week of the Institute is a series of lectures centered on an overall theme for the entire conference—this year, the subject was Spin Structure in High-Energy Processes. Dixon explains that "most particles carry spin, or angular momentum," and so the object of this year's theme was to examine "the ways in which you can use spin—or polarization—to learn something about the basic nature of particles."

"For the participants of the Institute, this is the opportunity to study in depth a specific subject in physics," says Lilian Vassilian, who coordinates the yearly event.

The second week of the SSI, the topical conference, is a time where experimenters and theorists present their latest results. Several recent SLAC projects examining spin structure through polarization—such as the E142 experiment in End Station A, and the creation of Z bosons in the SLC—were highlighted during the topical conference this year. A polarized electron beam is used in the E142 experiment to help determine which

Continued on page 10



Don't get fired up!

THE GOLDEN BROWN HILLS surrounding SLAC are gorgeous this time of year. Yet they serve as an ominous reminder that the grass and vegetation are parched and that the risk of fire is high. Soon, fall winds will kick up and increase the risk even further.

Although SLAC has an extensive formal Fire Protection Program, designed to protect personnel and property from fire hazards, to identify special fire hazards for specific work sites, and to educate SLAC personnel in fire prevention and fire response, the most important player in this program is you.

You can help by becoming informed about potential fire hazards in your work area, and by practicing common-sense fire safety. Many jobs performed at SLAC involve combustible, solid materials or flammable liquids and gases. Proper handling and storage of these potential fire hazards is critical to fire prevention. Spontaneous combustion can ignite a fire simply from the chemical reaction between certain materials. Spontaneous combustion occurs most frequently when fuel-soaked rags are left in a pile. The chemical reaction between the fuel and the rag fibers produces heat, causing the rags to burst into flames. Storing used rags in closed, metal containers can prevent fires. Knowing the specific fire hazards in your work area is an important step towards fire prevention.

Managers and supervisors can help by ensuring that personnel are trained in the use of portable

fire extinguishers; they should also ensure that portable fire extinguishers are selected, purchased, properly located, and replaced as needed. All managers and supervisors should encourage a reasonable number of personnel in their area to take the onsite fire-extinguisher training. (See the ES&H Training Calendar or call ext. 2688 for more details about registering for the training.) In addition, all managers and supervisors should continuously monitor the activities in their area to assess the fire hazard.

Building Managers can help by ensuring that fire extinguishers are inspected on a regular basis, and by ensuring that their buildings are inspected for fire safety at least twice a year. The Palo Alto Fire Department (PAFD)—which operates the SLAC Fire Station—performs an annual safety inspection of SLAC. Building Managers facilitate any corrective actions necessitated by the findings of the Fire Department.

The main elements of the formal Fire Protection Program include:

- Fire protection equipment
- Fire safety inspections
- Fire safety reviews of proposed projects
- An onsite fire station operated by the PAFD
- Guidance on how to limit fire hazards
- Permits for specific types of high fire-risk activities
- The Fire Protection Safety Committee

For more information about the SLAC Fire Protection Program, contact Jim Scott of the Occupational Safety and Health (OSH) Department at ext. 4509.

If a fire does occur, dial 9-911 to report the fire. After the fire has been reported and, if the fire is small, trained personnel may use fire extinguishers to try to extinguish the blaze. SLAC policy states that only personnel who have completed fire-extinguisher training may use fire extinguishers (see ES&H Bulletin No. 12A, "Portable Fire Extinguishers at SLAC").

Enjoy the beauty of our grounds and please help keep the hills golden brown rather than all fired up and blackened.

—Jack LaVelle and Melinda Saltzberg

SSI *Continued from page <None>*

part of the neutron—the quarks or the gluons—carries its spin, and the use of the polarized electron beam in the SLC allows physicists to test the Standard Model of elementary particle physics. Vassilian says that this combination of a lecture series and a topical conference is "very appealing" to students. "It's the perfect combination," she says. "It doesn't exclude anything."

Eighty percent of the SSI participants were from the United States, primarily the western region of the country. "About half" of the conferees were from SLAC, Vassilian says. The forty-three foreign participants came from 11 different countries—Germany, with 12 delegates, and Switzerland, with nine, had the largest representations. Italy and Japan each sent six participants; Canada, Costa Rica, and France sent two, and England, Finland, Russia, and Taiwan sent one.

—Sarah Morrisseau

SSRL COMPLETES PLUTONIUM EXPERIMENT

SEVERAL MONTHS AGO, SLAC Director Burton Richter sent out an all-hands memo announcing a series of plutonium and neptunium experiments at the Stanford Synchrotron Radiation Laboratory (SSRL). The first of these experiments is now complete, and the people involved with the project are “really pleased” with the results, says Steve Conradson, a technical staff member of Los Alamos National Laboratory’s Electronics Research and Exploratory Development Group, which is conducting the experiments.

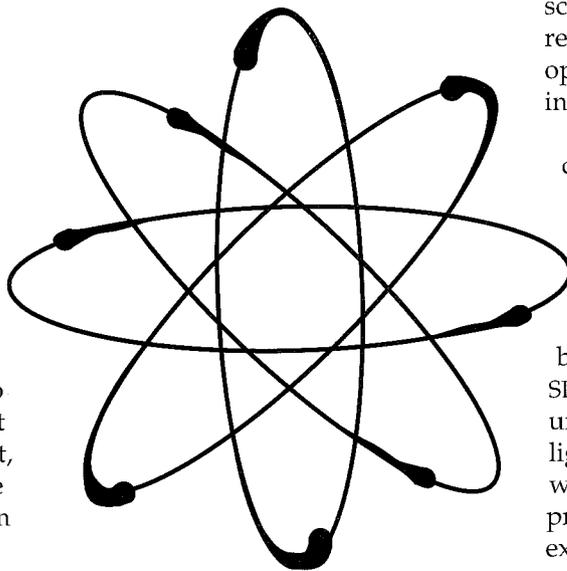
“We were told that we had to get results, that the results had to be useful, and that there could be absolutely no incidents,” Conradson said. That was an extremely tall order—but, as it turns out, not an impossible one. The project was a success on all three counts.

The purpose of these experiments at SSRL was to study the chemical properties of plutonium, which is the major ingredient in many nuclear weapons. By itself, plutonium is not very hazardous unless it is inhaled or injected into the bloodstream. You could, in fact, hold a chunk of it in your hand without much danger—provided you managed not to breathe.

The real problem with plutonium is that it decays into other elements that are potentially much more dangerous. “Plutonium has to be recycled,” Conradson said. That is why scientists are studying the element—to find a way to “convert it to a (safer) mechanical or chemical form.” They are also studying it in order to develop ways of purifying plutonium-contaminated soil.

Scientists have long used gallium to physically stabilize plutonium; however, they have not

understood how this works. The recent experiments at SSRL showed that the gallium-plutonium bond is stronger than the plutonium-plutonium bond. This information will help in the development of long-range storage strategies for plutonium.



The group also discovered that the neptunium present in the ground water at Yucca Mountain, Nevada, a high-level radioactive waste deposit site, is a neptunyl species, not a simple carbonate complex. This means that its chemical makeup—and therefore, the rate at which it is transported through the soil—is radically different than they had previously thought.

“For us at SSRL, it’s really exciting to be able to use synchrotron radiation to deal with one of the nation’s biggest problems,” said Katherine Cantwell, manager of User Research Administration at SSRL.

SSRL is one of three places in the country with an x-ray absorption fine structure (XAFS) facility. “The XAFS will find out the chemical state for any element in a sample...and tell me if it has changed

from one chemical species to another,” Conradson said. That information is necessary to develop a plan for dealing with the plutonium.

“This project was funded not only because it is interesting science, but because it is necessary science,” Conradson said. “The real point of the project is to help optimize the safety of the people involved and of the environment.”

Safety was, of course, a major concern for everyone. The proposal included a 700-page hazards analysis report, which took almost two years to write. It was approved by the associate director at Los Alamos and by Director Burton Richter at SLAC. The total amount of plutonium on site was only 130 milligrams—about two thirds the weight of an ibuprofen tablet. The project also included a similar experiment on six milligrams of neptunium, one of the elements into which plutonium decays. Each sample was kept in three containers nested within themselves at all times and were observed around-the-clock by health physicists from Los Alamos.

“From a safety point of view, the experiment was extremely successful,” Ian Evans, SSRL’s Environment, Safety, and Health coordinator, said.

Conradson and the other experimenters are now back in Los Alamos, analyzing the data they collected and making plans for another set of experiments. “I anticipate that there will be more of these experiments,” said SSRL Director Arthur Bienenstock, who expects the Los Alamos group and possibly others to perform similar experiments at SSRL as soon as next year.

—Sarah Morisseau

Meet GERT (General Employee Radiological Training)



THE ES&H DIVISION is pleased to announce that after many years of exceptional service, the General Employee Training (GET) course and the traditional GET video tape have both retired. They are rumored to be catching a few Zs in the Bahamas.

Luckily, the DOE has helped SLAC find a suitable replacement for this perennial training favorite. General Employee Radiological Training, affectionately known as GERT (GERTie to her really close friends), has been designed to comply with recent changes in DOE radiological training requirements and the recently published *Radiological Control Manual*. GERT has taken up the old banner: ES&H course No. 115.

Generally, you must receive radiological training if you expect to work at SLAC for more than 30 days. You must be retrained every two years. After successfully completing radiological training, you will be

granted unescorted access to one or more specific types of radiological areas.

There are two types of radiological training at SLAC. The type of training that is required depends upon your job duties.

Radiological Worker Training (RWT): This training is appropriate if you work in Radiation Areas, High Radiation Areas, or if you handle radioactive materials.

General Employee Radiological Training (GERT): This training should be taken by all other personnel, i.e., those who will not enter Radiation or High Radiation Areas, and who will not handle radioactive materials. After you have completed GERT, you may enter Controlled Areas, but you may not enter Radiation or High Radiation Areas, nor may you handle radioactive materials.

If your GET will expire before the end of January '94, please phone the ES&H training team soon to arrange a time to meet GERT. Although GERT classes are being offered frequently, GERT is so popular that you need to make your reservations soon. All attendees should pre-register for this course. Phone ext. 2688 to arrange to attend GERT.

All GET-trained personnel must be trained in the new GERT program by the time their current GET expires.

Classes for RWT are currently being revised to comply with recent changes in DOE radiological training requirements and with the recently published *Radiological Control Manual*. The ES&H Training Team expects a full revision of this class to be completed by January '94. At this time, RWT continues to be offered the first Thursday of each month. After the revised course is available, additional class sessions will also be announced.

—Jim Allan and Melinda Saltzberg

Welcome Guests and New Employees

Klaus Behrndt, Theoretical Physics; **Eric Boman**, Computing Services; **Miguel Chacon**, SSRL; **Arnd Brandenburg**, Theoretical Physics; **Crystal Grimes**, Accelerator Theory; **Michael Hernandez**, SSRL; **Maria Herrero**, Theoretical Physics; **David Hull**, Computation Research; **Brian Jones**, Group K; **Pavel Martyshkin**, Director's Office; **Roberto Massetti**, SLD; **Werner Meyer**, Experimental Group A; **Anneli Munkholm**, SSRL; **Michael Pejic**, Group B; **Boris Podobedov**, Accelerator Theory; **Anton Rodionov**, Director's Office; **Nobuo Sasamoto**, Radiation Physics; **Daniel Segel**, Group A; **Tsumoru Shintake**, Experimental Group I; **Clemens Wermelskirchen**, SSRL; **Hua Holly Zhang**, SSRL.