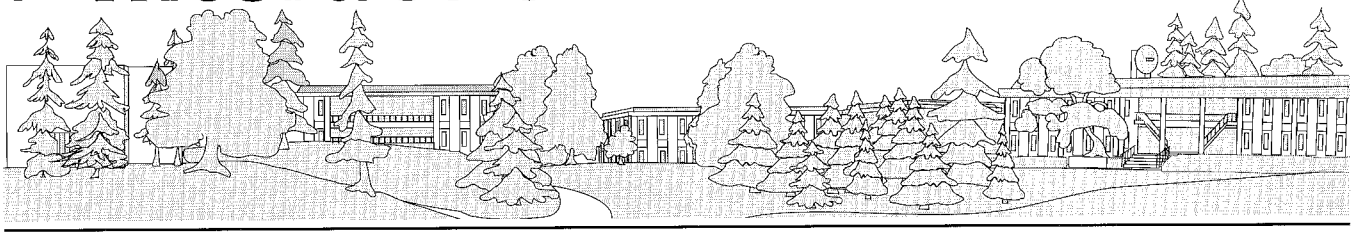
# The Interaction Point

Events and Happenings in the SLAC Community
April 1995 Vol. 6, No. 4

### Matter/anti-matter questions closer to answers

# BaBar detector moves to next stage

**by David Fryberger**

A FULL DAY OF TALKS (10 of them) by members of the BaBar collaboration, the group designing a detector for the SLAC *B* factory, was the highlight of the 1995 Experimental Program Advisory Committee meeting in March. The collaboration amplified on their Technical Design Report (TDR), which covers the design and capabilities of the detector proposed for IR 2 of PEP. The collaboration has nearly 500 members from 77 institutions and nine countries. Its composition is about half US and half foreign.

The detector is designed to detect the final states from the decays of the pairs of *B* mesons that will be produced from $e^+e^-$ collisions generated by PEP-II—the upgrade of PEP to a two-ring asymmetric *B* factory. "Asymmetric" here refers to the energies of the electrons and positrons, which will be different, 9 GeV electrons colliding with 3.1 GeV positrons. The reason for this asymmetry is to produce *B* mesons moving with velocities close to the speed of light. Then, because of an effect of relativity, their lifetime, as observed in the laboratory, is long enough that the separation of the two *B*-meson decays will be large enough for the detector to measure (typically about 250 microns). This distance then tells the physicists the time that elapsed between the two decays, which is an important part of what they need to know to observe the possible CP-violation effects for which they are searching.

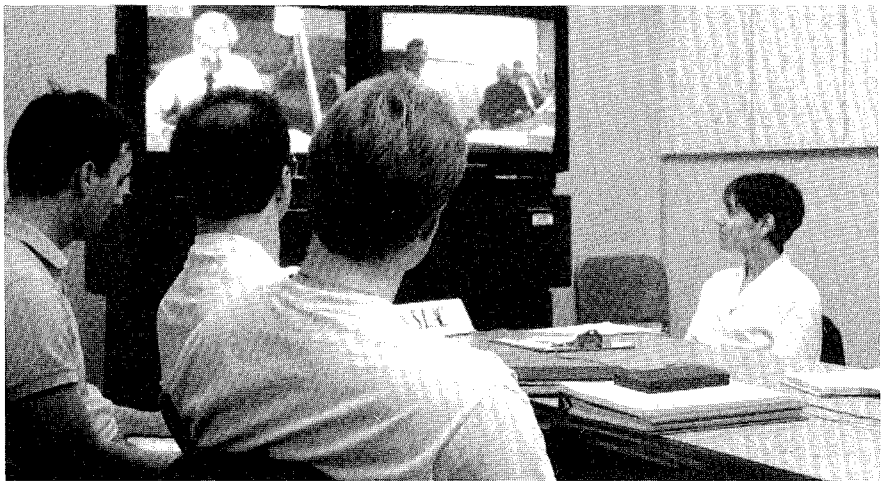
The BaBar detector can be viewed as layers of concentric cylindrical detector elements, each designed to collect specific information. The innermost layer of silicon strips provides the most accurate information of the position of the decays. Next the drift chamber tracks the particles and measures their momenta. Outside that is a detector called the DIRC which will help distinguish one type of particle from another (the novel DIRC detector was the idea of Blair Ratcliff at SLAC). Outside the DIRC, a layer of Cesium Iodide crystals measures the energy deposited by particles that are stopped by it (almost everything but muons and neutrinos). Next comes the solenoid, a superconducting magnet providing a 1.5 Tesla magnetic field for the entire region inside it. Finally, an outer layer called the "Instrumented Flux Return" will detect muons and neutral kaons and provide the "return yoke" of the magnet.

> **"Why is it that the Universe appears to be comprised of matter with essentially no antimatter?"**

The main thrust of this facility will be to study CP violation in the *B* meson system. This study is expected to lead to a critical test of the Standard Model for elementary particle physics. At a deeper level, it is possible that an understanding of CP violation will also lead to answers to the profound question, "Why is it that the Universe appears to be comprised of matter with essentially no antimatter?" A readable account, authored by David Hitlin and Sheldon Stone, that describes CP violation in *B* physics can be found in the winter 1991 edition of the SLAC *Beam Line*.

The BaBar TDR got especially close scrutiny at this meeting because the EPAC was joined by members of the SLAC Technical Review Committee on BaBar, which will monitor the progress of the BaBar detector through its construction and checkout phases. After a full review, and upon the advice of the EPAC, Director Burton Richter approved that the collaboration proceed to the engineering and construction phases of the project. The next step in the approval process is the DOE Lehman review, now in progress. The detector construction schedule is coordinated with that of the *B* Factory with the goal of doing physics in early 1999.

# Interactive classroom starts



Cole Carter

*Participating in the interactive audio/video class are, left to right, Brad Cowan, John Eichner, Zane Wilson, and Mary Byrne.*

THE LATEST in technological classrooms is now available at SLAC. As part of the Advanced Thermionics Research Initiative 2000 (ATRI) program, last month an interactive audio/video session linked students from UC Davis, Livermore, and SLAC. The goal of the interactive televideo approach is to enable geographically separated participants to receive instruction and interact with the professor. Anyone in the Stanford community may audit the quarterly two-hour class that is scheduled for Tuesdays and Thursdays at 1 PM. The video conferencing room is located on the first floor of the Computing building and managed by Janet Dixon-Dickens. Janet was instrumental in coordinating and overcoming the technical hurdles of linking multiple locations with different hardware and incongruent standards over telephone lines.

The multidisciplinary Masters- and Ph.D.-level program called ATRI is dedicated to training the next generation of microwave tube engineers, thereby ensuring continued US competitiveness in the microwave industry. The program, sponsored by the Air Force and administered through UC Davis, features a course on microwave generation and amplification.

The first lecture, "Formation of Electron Beams used in Microwave Tubes," was presented by Dr. Kurt Amboss at UCLA. UC Berkeley will be brought on-line later and other facilities may also be able to audit classes upon request. Students at each site are able to watch the lecture on a TV monitor in real time and ask questions of the professor. The TV monitors are partially controlled by microphones that switch active video to the location where people are speaking.

The Klystron Department will serve as a hands-on laboratory for students to design, build, and evaluate prototypes. Bob Phillips, head of the microwave tube R&D group of the Klystron Department, is the facilitator at SLAC who will oversee the work of students while they are at Stanford. George Caryotakis, head of the Klystron Department, was instrumental in bringing the ATRI program to SLAC.

—*Cole Carter*

## Welcome Guests and New Employees

**Sandra Bes,** Controls; **Urban Cummings,** AD Mechanical Support; **James Grippe,** Power Conversion; **Alexander Kagan,** Theory; **Raymond Larsen,** PEP-II *B* Factory; **Louis Rinolfi,** Accelerator; **Jon Rosell,** Director's Office; **Yolande Wackerman,** BSD/Information Resource Mgmt & Technology Transfer; **Wei-ming Zhang,** Experimental Facilities; **John Zummo,** ES&H Radiation Physics.

## SLAC History

**1966**

• May 24, 1966 was a major milestone in SLAC history. On that day, the beam reached the full length of the accelerator for the very first time.

**1983**

• At a ceremony in Israel on May 8, 1983, the Wolf Foundation honored SLAC Professor Martin Perl for his discovery of the tau lepton in 1975. The award was shared with Leon Lederman, the Director of Fermilab, who discovered the fifth, or *b*, quark. The prize was $100,000.

**1992**

• On May Day of 1992, the Stanford Linear Collider created its first polarized Z boson. Although the SLC had been producing Zs for three years, this was the first Z made with a polarized electron beam. Three months later, on August 14, the SLC created its 10,000th Z.

—*Sarah Morisseau*

# Operating Safety Committee

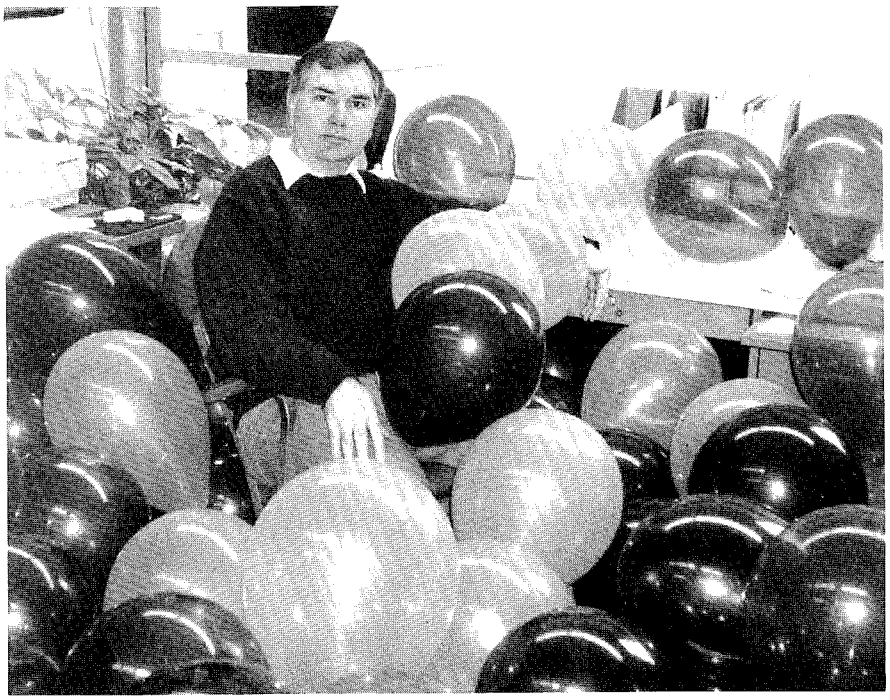
THE OPERATING SAFETY Committee at SLAC is a group formed to discover, analyze and propose solutions to hazardous situations excluding those technical areas addressed by SLAC's citizen committees (e.g., ionizing and non-ionizing radiation, earthquakes, hoisting and rigging, hazardous experiments, pressure safety). The committee presently consists of five members each from the Technical Division, Business Services Division, ES&H Division, and Research Division; two members from the PEP-II Division and one each from the SSRL Division and 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 that need to be addressed. Accident trends and injury rates are reviewed on an annual basis, based on documentation from the ES&H Division. 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 committee. (See the adjacent box for present membership.) You are strongly encouraged to contact your division's representatives with your concerns.

*—Janice Dabney*

# Inflated birthday for Ron Ruth



Rich Atkinson

RECENTLY, three co-conspirators in the ATSP Department (who will remain nameless) decided to celebrate Ron Ruth's birthday by giving him a "Big Bang" of a surprise. Arriving at 6:00 AM, the three blew up approximately 300 large balloons, filling Ron's office waist deep. "His reaction and the reaction of passersby was priceless!" reports Mary Litynski.

The question at the end of the day was what to do with the 250 balloons that had survived. Word went out to moms and dads in the building that balloons would make them a big hit at home that night. Angie Seymour of the Director's office contacted the East Palo Alto Senior Center, who picked up the remaining balloons to be used the next day for a member's 96th birthday. In the end the balloons spread a little joy and cheer not only at SLAC but in the community as well.

*—Mary Litynski*

## 1995 OPERATING SAFETY COMMITTEE MEMBERS

| | |
|---|---|
| Chair: | Janice Dabney |
| Safety Officer: | David Gordon |
| Recorder: | Sharon Haynes |

**Business Services Division:** Jerry Belk, Rick Challman, Karen Kruger, David Price, Rick Yeager;
**ES&H Division:** Richard Cellamare, Margaret Deanesly, M.D., Rich Huggins, Stan Mao, Mick McDonald (PAFD);
**Research Division:** Dan Alzofon, Tanya Boysen, John Broeder, Frank O'Neill, Brad Youngman;
**Technical Division:** Ali Farvid, Dave Ficklin, Rich Jones, Gerry Nelson, Ponciano Rodriguez;
**SSRL:** Ian Evans;
**Director's Office:** Nina Adelman Stolar;
**PEP-II:** Sandy Pierson, Connie Wai.

# DIET is a four-letter word

ALL THE WORLD is on a diet, that is, if we take the definition offered by Melinda Abraham, SLAC's former ES&H program manager and a registered dietitian. "A diet is a person's normal intake of food—and since we are all eating, we all have a diet," says Abraham. What people really mean, of course, is a weight-reducing diet. Abraham addressed a SLAC audience recently as part of the monthly seminars presented by WIS (Women's Interchange at SLAC).

To reduce weight takes a lifelong change in eating habits that considers such things as a person's physical, mental, and social health. "Birthday cake is good for my social well being, so yes, I eat birthday cake," according to Abraham. We need to recognize the tradeoffs involved when we eat different kinds of foods. Mental and social well being are so important to health that suicides are less common in overweight people. They have found another way to deal with their stress.

Another part of Abraham's presentation was the concern over body image and why women "hate their bodies." If one analyzes fairy tales, myths, and social conventions, we see that women are depicted as passive but beautiful, as evidenced by such stories as Sleeping Beauty and Cinderella. Females get the message from early childhood that self esteem is related to appearance.

In a modern context, an example was given regarding the difference between men and women when shopping for a suit. For a man, the suit sleeves may be too long or the waist too small, and it is the suit which is "wrong," says Abraham. Yet when it comes to fitting a woman, the message is "there's something wrong with your body."

These body image inequities between men and women are rife in our society, and until we can educate people that appearance isn't everything, the dirty word "diet" will remain with us as a fearful four-letter word.

*—P.A. Moore*

# P&E building construction still on schedule

The following questions and answers address the concerns that have been expressed about the move of PEP-II personnel into the Physics and Engineering Building.

*Is it true the contractor, PBS, has filed for Chapter 11 Bankruptcy?*

PBS has filed a voluntary bankruptcy petition; however, another contractor has been awarded a new contract to complete the building and work is in progress. The contractor anticipates a completion date of early May.

*Is it true the building has sustained water damage and, if so, what will be done to correct this?*

Yes, the building has sustained water damage, and the damage is being assessed both by the new contractor and SLAC's Plant Engineering Department. Water damage will be corrected before personnel are moved into the building.

*When will the Physics and Engineering Building be completed?*

The Business Services Division anticipates a completion date of early May.

*What will the process be for moving furniture and personnel into the P&E building?*

The move will take place in three stages. The first stage will involve moving in furniture received from the SSC from its location in storage. After this stage is complete you will be asked to look at your office and see what changes you would like to make. The second stage will coordinate the move of all personnel that will occupy the first floor (the pioneers) and the third stage will coordinate the move of all personnel who will occupy the second floor.

*How long will this take?*

The move of furniture, equipment and personnel will take place over a three- to four-week period.

*Will I be able to keep the phone number I have now?*

Yes, all phone numbers will be transferred in conjunction with your move-in date.

*How will my personal things be moved from my present location into the new building?*

SLAC has contracted with a professional moving company and instructions on the process will be forwarded to you as soon as a firm date is established for your move.

*—Dona Jones*

# Cooperation, communication resolve conflicts

THERE ARE TIMES when communication with others can be the most challenging and frustrating element within the workplace. For example, a comment made in the wrong tone of voice, an apology not made, and the ensuing misunderstanding can make for a difficult situation. Ignoring an unpleasant situation does not make it go away, as the Hazardous & Radioactive Waste Management Group (H/RWMG) of the Environmental Protection and Waste Management Department (EP&WM) discovered.

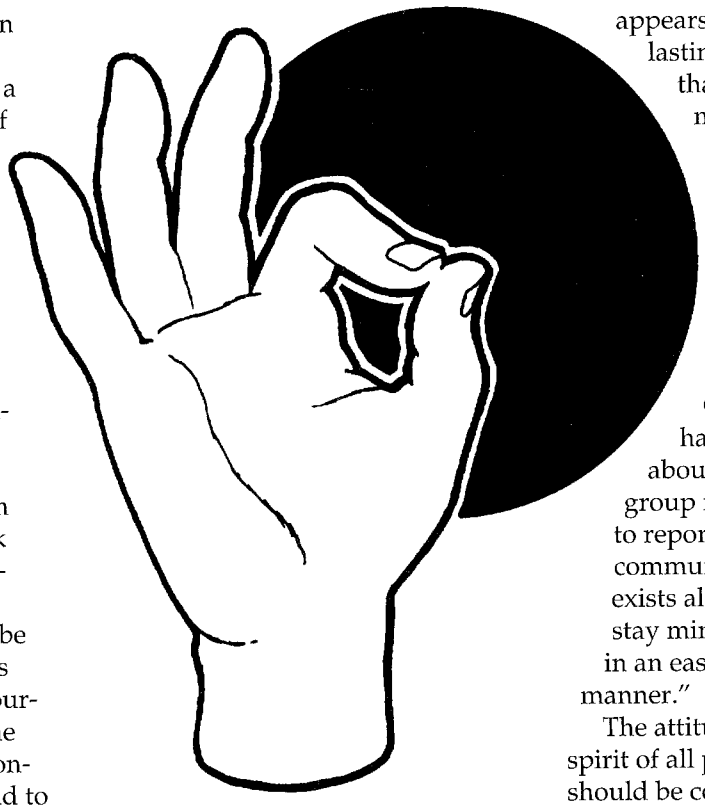
After a particularly troublesome set of dynamics had taken root, the H/RWMG decided to tackle the problem head on. In a special conference consisting of five separate meetings, the H/RWMG, along with Karen Holtemann (the EP&WM Department Head), met with Lee Lyon and Al Ashley of Personnel, and Field Representative Diana Gilbert of Local 680.

Lee Lyon facilitated the conference and set the ground rules at the beginning. The meetings were conducted as an open forum, allowing for frank discussion of the issues. Everyone was asked to discuss how they wanted the workplace to be in the future, while discussions about past conflicts were discouraged. Both sides were given the opportunity to express their concerns about their work area and to offer suggestions for improving the atmosphere and the working conditions.

The desire to achieve agreement on the issues was a constant for both sides. The ability to reach consensus was the direct result of the free exchange of ideas and information from all concerned. The conference led to an understanding by all parties on the best way to accomplish the tasks and goals within the H/RWMG.

**"The attitude of both parties and their willingness to move on the issues allowed us to come to a successful resolution."**

All those involved seemed to think that it was a productive and worthwhile process. Diana Gilbert stated "The attitude of both parties and their willingness to move on the issues allowed us to come to a successful resolution." Ron Sanchez Sr., the Shop Steward for the area, said that "the meetings went very well, and we were happy to be able to resolve the issues within the group."



Of the meetings, Lee Lyon commented that "The success was the direct result of two different groups that were willing to listen to each other and were able to look forward toward the future rather than backward toward the past. As a result of that willingness, the two groups were able to reach an agreement that made the workplace better for everyone."

The conference not only helped resolve immediate conflicts, it appears to be having long-lasting effects. Karen said that she had found the meetings so valuable that she plans to use the same approach in some other areas of EP&WM. Michael Scharfenstein (Group Leader of H/RWMG), in a memo to Lee Lyon and Diana Gilbert, stated that he has been doing a walk-about, talking to various group members, and is happy to report that the "good line of communication that now exists allows (the issues) to stay minor and be dealt with in an easy and professional manner."

The attitudes and cooperative spirit of all parties involved should be commended. They exemplify what can be achieved if we all work together toward a common goal.

*—Gene Holden*

# Working smarter saves time, pleases clients

Doug Kreitz

*The Accounts Payable Process Improvement Team standing, left to right: Taj Gulamani, Ana Valencia, John Dadzie, Mary Mathew, Dana Cummings; sitting, left to right: Charles Ikekwere, Vilma Ramelb, and Irma Frank.*

THEY DID IT, and they're proud. An internal analysis of the work processes in the Accounts Payable department resulted in new ways of handling the workload that will potentially save 2,000 work hours per year. Accounts Payable is encouraged by the results, and their customers say they already see the difference!

The Accounts Payable Process Improvement Team, composed of Dana Cummings, John Dadzie, Irma Frank, Taj Gulamani, Charles Ikekwere, Dawn Malmstrom, Mary Mathew, Vilma Ramelb, Ellen Remerata, and Ana Valencia, met for two hours every week from July through mid-December. The meetings were facilitated by Doug Kreitz.

Over that five-month period, the team analyzed current work processes, conducted customer interviews, reported on their findings, discussed process changes/improvement options, and made on-the-spot improvements in some key areas.

As a result of this team effort, twenty-two work processes in the Accounts Payable area are changed, with another sixteen scheduled for review within the next few months. An additional seventeen key areas that need further investigation by management and/or other follow-on process improvement teams were identified.

Where time savings can be confidently estimated the team calculated a potential for saving 2,000 hours annually and elimination of a number of unnecessary tasks. Many of the recommendations are still to be quantified, but similar time savings are expected to be the result. By freeing up this time, the Accounts Payable department feels that additional attention and effort can be spent on accomplishing work that truly meets customer needs.

A comprehensive report of this efficiency study, "The Accounts Payable Process Improvement Team Report," January 1995 is available at the Accounts Payable office on the second floor of the A&E building.

Overall, the Accounts Payable Team sees this experience as very positive. The approach used helped them to understand better both their role, and others' roles and responsibilities. This understanding allows them to do a better, more efficient job for their SLAC customers and the hundreds of vendors they work with each day.

*—Doug Kreitz*

# Construction causes temporary obstruction

CONSTRUCTION on the new Physics & Engineering building has temporarily made getting to the Medical Department from the entrance by the Mail Room more difficult. People who need to use that entrance should take extra care in entering the area and perhaps even call ahead if they have a disability which does not enable them to enter the area easily.

*—Janice Dabney*

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# Psst! Wanna be in the movies?

HAVE YOU EVER LIVED in a rural area, away from the sights and sounds of the city? Peet's Coffee? Kepler's Books? Movies? A national physics lab?

What do you do if you are a science teacher who's expected to be on top of your field?

Help is at hand. SLAC is now producing its second tutored video instruction (TVI) project, which will videotape a teacher workshop on the topic of electricity and magnetism. An edited version will then be sent to our education partners in isolated parts of the state.

P.A. Moore

*Helen Quinn, left, SLAC physicist, and teacher Lisa Wright Davis, from the Oakland Unified School District, test the strength of magnets on iron filings. Lisa has cleverly put the filings into a plastic bag to prevent a mess in her classroom.*

P.A. Moore

*Teacher Don McKenney clowns around with FOSS co-director Linda DeLucchi. They are experimenting with the use of a water pump, but Don decided he needed his ears washed! Don is testing how his students will respond to this kind of activity.*

The first video, on the topic of energy forms and transformations, has been in use in schools throughout the state for the past year. The new video will be completed by August, in time to be used by teachers returning to school in the fall.

The topic of electricity and magnetism was chosen because it fits with a program called Full Option Science System (FOSS), a series of science kits on topics geared to different grade levels. FOSS is administered from the Lawrence Hall of Science at the Center of Multisensory Learning. Oakland Unified School teachers are partners in this project as well, since FOSS kits are in use throughout the district.

Tutored Video is a concept initiated by Dr. James Gibbons at the Stanford School of Engineering. Helen Quinn, SLAC physicist, saw this concept as adaptable to education at other levels and in other subject areas in public schools. Helen and education coordinator P.A. Moore received a grant from the State Eisenhower Project for the first video. The Department of Energy, recognizing the merit of the project, has funded SLAC's education office to produce the second video. FOSS co-directors Linda DeLucchi and Larry Malone, and Oakland teachers Don McKenney and Lisa Wright Davis are part of Helen's planning team.

—*P.A. Moore*

# *COMING SOON*: New Computing Support Center

THE SLAC COMPUTING Service Desk came into being during the mainframe computer era, and its user support and services focused primarily on VM. In time, support was extended to the network and centralized VAX computing.

Recognizing that we have left the mainframe era behind and are increasingly moving toward distributed computing on UNIX, Macs, and PCs, SCS Operations Services is transforming the Service Desk. The Service Desk's new name will be SCS Computing Support Center (SCSC). Its six-person permanent staff of Computing Associates will offer a full range of services for distributed computing support.

Although the SCS is in transition and new staff is being trained, no services will be cut. Look for details about the grand opening of the SCS Computing Support Center (SCSC) in the next *Interaction Point*. The SCSC staff will be looking forward to meeting you.

*—Sandra Crawford, Billie Bennett, and Ilse Vinson*

# News about The World Wide Web at SLAC

## Did you know...

- ...There is a mailing list at SLAC for information, questions, and announcements pertaining to use of the World Wide Web at SLAC? To join the **www-l** mailing list, send e-mail to **listserv@slac.stanford.edu** and include the message `subscribe www-l` in the body of the message.

- ...There is a SLAC newsgroup for accessing the same sort of information? Next time you read netnews, check out the newsgroup **slac.www.general**.

- ...The SLAC WWW Users Group (SWUG) meets the third Wednesday of every month to discuss page authoring and maintenance, WWW authoring tools, and other issues relating to use and development of the WWW at SLAC? For more information, send e-mail to **bebo@slac.stanford.edu** or **gennari@slac.stanford.edu,** or check out the SWUG home page at **http://www.slac.stanford.edu/grp/techpubs/olp/SWUG/SWUG.html**

- ...*The Interaction Point* (TIP) is now available in PDF (portable document format) on the Web? The URL of the TIP Web pages is **http://www.slac.stanford.edu/pubs/slaconly/tip** or check out the *The Interaction Point* home page at **http://www.slac.stanford.edu/grp/techpubs/deptpages/text/tip.html**

## EVENT CALENDAR: May 1–June 15 1995

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 updates by calling ext. 2204 or sending e-mail to **nina@slac.stanford.edu**.

**May 1–3**
REXX Symposium
Auditorium
C. Dager

**May 4, 9 AM, 10 AM, 11 AM**
State of SLAC Talks
Auditorium

**May 8–12**
SLD Week
TBA

**May 12**
SLUO Executive Committee
SSRL 2nd Fl. Conf. Room

**May 16**
Stanford Telecommunications Symposium
Auditorium
D. Harris, SU EE Dept.

**May 17–18**
BaBar Technical Board
TBA

**May 19**
BES Collaboration Meeting

**May 19–20**
BaBar Executive Board
TBA

**May 20**
Science Teachers Meeting
J. Venuti

**May 21, 6:00 AM**
Bay to Breakers Run
SRI Int'l bus to SF
S. Hensman, 859-3449

**May 22, 7 PM**
OS/2 Users Meeting
Auditorium

**May 31–June 2**
SLD Week
TBA

**June 12**
BaBar Technical Board
TBA

**June 14**
SU Alumni Assn. Workshop
Auditorium

**June 15, 8:00 AM–3 PM**
SUBB Mobile Blood Drive
Auditorium Lobby