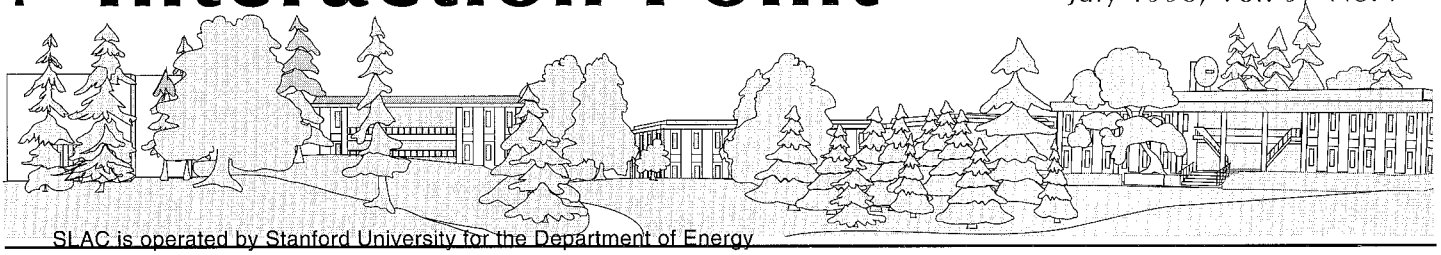
The Interaction Point

Events and Happenings
in the SLAC Community
July 1998, Vol. 9, No. 7



SLAC is operated by Stanford University for the Department of Energy

"Why Should the U.S. Remain a World Leader in High Energy Physics?"

(P.A. Moore)

Glen Crawford

Recently our colleagues at Fermi Lab sponsored a contest for the best answers to the question of why the US should remain a world leader in high-energy physics. Since this topic is near and dear to SLAC hearts, we (and anyone else) were invited to enter the competition, which was judged by an outside panel of experts: Robert Eisenstein, National Science Foundation; Peter Rosen, Department of Energy; Curt Suplee, Washington Post; *and Mike Witherell, HEPAP. We are reprinting here the winning entry by Glen Crawford of SLD, who, for his efforts will receive a bottle of champagne. In a future issue we will print the second place essay by Fermi theorist Joe Lykken.*

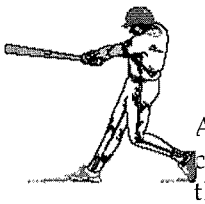
WE WATCH WITH WONDER the images beamed back to Earth by the Mars Sojourner probe: Wonder at the fact that we are seeing pictures of a new, largely unexplored world. It is a great tribute to our space program that we can see these pictures and wonder, that these images lead us to ask important questions about our place in the cosmos. Yet we are also exploring strange new worlds right here on Earth, worlds just as wondrous, worlds that require new and exciting technologies just to visit, worlds that ask and answer even more questions about how our universe came to be. These are the worlds of inner space, as far inside the structure of matter as we can see. Deep inside the atom there exists a world of tiny, invisible particles that are the building blocks of the universe; this is the world of particle physics.

If we could send back pictures from this world, it would look far stranger than Mars. We would see particles arise out of nothingness, fluttering into existence for a billionth of a billionth of a second, and then disappearing back into the void. We would see a world of amazing order and predictability, yet one whose fundamental patterns and symmetries are mysteriously broken. And we know that some day this world will give us answers to fundamental questions, such as: Why do things have mass? Why is there so much matter and so little antimatter? And why are there so many of these tiny "elementary" particles, anyway?

When people ask why we should continue to do research about a world so removed, so different from our own, I say the reasons are just the same as in the exploration of space, or any other new frontier. The journey is in some ways an end to itself: You never really know what you're going to find until you go. From Lewis and Clark to Aldrin, Armstrong and Collins we have explored new territories because they were exciting, challenging, and because we learned so many new things just getting there.

No one would have promoted building particle accelerators or detectors because it would save lives—yet much of today's medical imaging is based on technology developed to detect invisible particles. No one would ever have claimed particle physics would change the way we communicate—yet it was particle physicists and their need to share large amounts of information that gave birth to the World Wide Web.

At the beginning of this century, few would have expected scientific research to fundamentally change the world. But continued and consistent investments in science by the United States have helped make it the economic, technological and research leader of the world at the close of the century. As we head into the new millennium, few would doubt that scientific research will remake our world yet again. It is our choice whether we want to help make this new world or retreat from it.



Fun Survey Leads to Fun Events

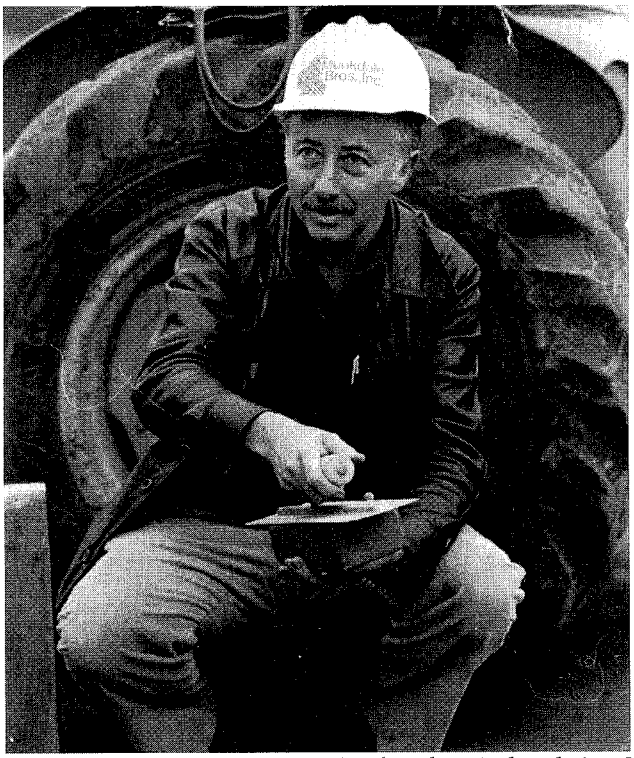
APPROXIMATELY 250 SLAC'ers completed a Five Minute Fun Survey this spring. The survey focused on SLAC's Day at the 'Stick (Giants Game) and Family Day. The results for the Giants Game indicated that, while most respondents do not attend the baseball game because they are not interested in baseball, the majority felt it was a worthwhile event for SLAC to support. The game this year will be on Saturday, August 8, 1998, when the Giants play Atlanta. Flyers will be mailed out soon.

For Family Day, the committee will use the survey responses when planning the event scheduled for October 24, 1998. We learned that the free lunch is the event that respondents and their families are most likely to enjoy, followed closely by young children's activities and big activities (like the human slingshot, climbing mountain, etc.).

If you have any questions about either event, please feel free to contact Karen McClenahan at x2265 or send email to kmac@slac.Stanford.edu.

–Karen McClenahan

From the SLAC Archives...



Who is this young man? And, what is he doing? It's Matt Allen in front of a Monster Machine in early SLAC years.

New Role for Patricia Kreitz

PAT KREITZ, MANAGER OF Technical Information Services at SLAC (which includes the Library, Archives, and Technical Publications) has recently been elected Vice Chair/ Chair Elect of the Science and Technology Section of the Association of College and Research Libraries which is part of the American Library Association. She will serve as Chair of the Section in the year 2000.

The Science and Technology Section provides a forum for the professional development and continuing education of its members and for leading-edge programs on and discussions of science librarianship. The Section publishes *Issues in Science & Technology Librarianship*, one of the first professional journals in the field to go electronic, administers and grants the Oberly Award, one of the oldest awards in the American Library Association, and manages one of the liveliest listservs in the profession.

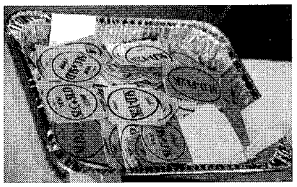
Kreitz came to SLAC from the now-defunct Superconducting Super Collider (SSC) in Texas where she spent five years building a library system and then dismantling it. SLAC was the beneficiary of some of the SSC castoffs. Before that, Kreitz was Head of General Reference for the Graduate Library at U.C. Berkeley. "I'm looking forward to working with my colleagues to prepare the Science & Technology Section for the next millennium," said Kreitz.

Work Safe, Work Smart

Two more claims that involved days away from work were filed since the last update (one in May and one in June), according to Sharon Haynes, Workers' Compensation Coordinator. There were 6 and 19 calendar days between days away from work claims. SLAC's record number of days between claims remains at 150 days.

The Interaction Point © 1998, is published by Stanford Linear Accelerator Center. Editor-in-chief, P.A. Moore; Production Editor, Vickee Flynn. Deadline for articles is the first of every month. Items are published on a space-available basis and are subject to edit. Submissions may be sent electronically to *tip@slac.stanford.edu* or by SLAC ID mail to TIP, MS 20. Phone 926-4208.

SLD Celebrates End of Record Run



ON MONDAY, JUNE 15, SLD hosted an end-of-run picnic at the SLD Collider Hall. In addition to SLD and SLC members, there were guests from all of the groups and shops that helped make this run a success. Approximately 350 people attended the picnic, which was organized by Vanda Sanzogni and Jamie Davis, with assistance from SLDers and Nan Phinney from SLC.

The picnic was scheduled to be the same day as the end of this year's physics run, but a problem with the positron target ended the run a week early. (Luckily, the problem was not as severe as first thought, so the accelerator will be ready for the start of PEP-II commissioning in early July). It was hard to find an SLDer who was too disappointed at the premature shutdown, as the run had been such a stunning success. Overall, the SLD detector logged 350,000 Z^0 events in the 12 month run, which is more than the number of events for the 1992, 1993, 1994-95, and 1996 runs combined. In the full last day of logging, over 5,300 Z^0s were recorded in 24 hrs.

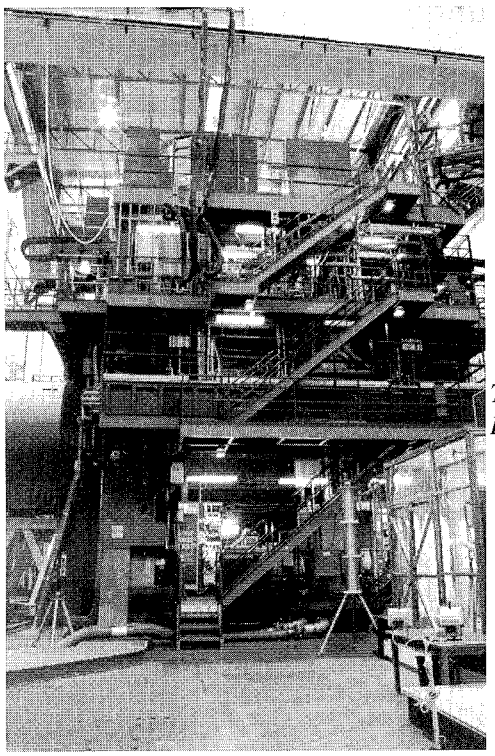
The SLD collaboration has already started to analyze the current dataset and plans on showing new results at conferences this summer. In light of the success of this run, SLD is making a request for an additional run, to start in late 1999, with the goal of accumulating ~700K more Z^0s.

By doing so, it is anticipated that SLD will be able to make the most precise measurements in the world for several quantities, including sin2 (Theta-w) and Bs0 mixing. As noted by Stephane Willocq, co-convenor of SLD's Heavy Flavors analysis group, "A significant increase in statistics would allow us to realize the outstanding Physics potential of the SLC/SLD and extend the already wide SLD Physics program."

–Ken Baird

(l-r) Ken Baird, SLD run commissioner and Marty Breidenbach, SLD Group Leader.

(l-r) Ramon Berger and Phil Seward of SLD wait in line with Paul Stiles of Group B.



The SLD Detector

(Photos by Bob Reif)

Nan Phinney, SLC, serves up some barb-qued goodies.

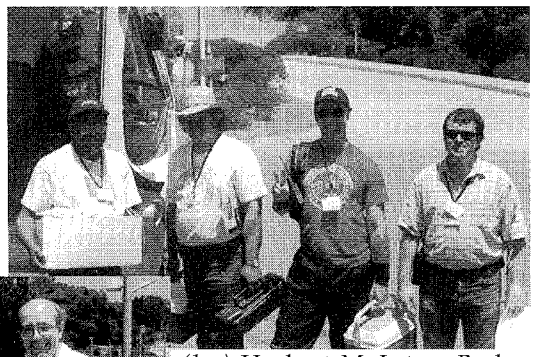
Master Chef Jamie Davis (second from right) takes his turn in line with others.

SLAC Ambassadors to the Community

(N. Stolar)

(l-r) Mike Woods (SLD), Greg Mitchell (ESA), Harvey Lynch (BaBar), Patrick Lui (BSD), Lee Sorrell (ESA), Lance Dixon (Theory Group), Barbara Johnson (Personnel), Al Menegat (Klystron Group) and John Irwin (ARD-A).

(l-r) Additional guide support was provided by P.A. Moore (Director's Office), Fred Murphy (BSD) and Martin Berndt (PCD). Antonia Bolton and Nina Stolar (Public Affairs) encouraged tour guides Robin Erbacher (ESA) and Jose Martinez (Gunn High School).



(Staff Photo)

(l-r) Herbert McIntye, Rodney Reape, Philip Miller and Mark Long were ready for a long, hot afternoon.

[Not pictured are Toni Bajic (BaBar), Dak Baltazar (PCD), Travis Brooks (Theory Group), James Clendenin (Accelerator Dept.) Tim Meyer (BaBar) and Walter Stolar (PAO).]

VOLUNTEER GUIDES GATHERED MID-DAY in the Visitor's Lot on Saturday, June 13, for the Stanford University Commencement tours of the Laboratory.

Literature packets in hand, these enthusiastic volunteers boarded the shuttle bus to campus in time to hear the pre-tour lecture at Memorial Auditorium by Doug Dupen (Director's Office).

On-campus support was provided by Public Affairs staff to help almost 1,000 visitors from Memorial Auditorium to where busses were lined up in front of Encina Hall for the trek to SLAC.

If you are interested in assisting with similar community events in the future, please contact Nina Stolar regarding the SLAC Ambassadors to the Community Program (x2282 or nina@slac.stanford.edu).

–Public Affairs Office

Telephone Scam Alert

OVER THE PAST FEW months, reports have been circulating about a scam where someone says that he or she is a telephone company technician. This person asks you to assist them with testing the line by pressing two numbers followed by the # key. In another version of the scam, someone pretends to be an irate customer or an important person. They insist that you transfer them to extension 9000 or some other invalid extension. In both cases, the person is attempting to gain access to an outside line, so that they can make calls at SLAC's expense.

These scams have been around for years. They are based on social engineering. We are trained to be helpful to callers and to assist them quickly, often without thinking about what we are doing. In fact, neither of the scams can be completed from most phones at SLAC.

If you receive a call like those described above, or any other questionable request, please refer the caller to the SLAC Main Gate, (650)926-2551 or transfer them to x2551. The guards are trained to assist callers, refer them to appropriate persons, and identify fraudulent requests.

If you have questions about telephone fraud prevention, contact Brenda Eberle on x2321.

OSC: Conduit of Safety Information

THE ES&HCC HAS NAMED the Operating Safety Committee as a primary conduit for safety information–a strong endorsement for OSC members! Matt Allen said that the Directors were concerned that the dialogue which occurs during the annual safety discussions be seen as a continuing process throughout the year, through each division's OSC representatives. Anyone wanting the name/phone number of their division contact should call Janice Dabney, x3603.

The SLAC Integrated Safety Management System

AT THE JUNE 9, 1998 MEETING of the SLAC Key Managers, Ken Kase, the Associate Director of the ES&H Division, presented an overview of the Integrated Safety Management (ISM) program. This program is a US DOE initiative to facilitate integration of ES&H concerns into the work done at all laboratories in the complex.

For SLAC, ISM is what we at SLAC claim to be doing; that is, managers, supervisors and staff take responsibility for:

- Defining the scope of work
- Identifying and analyzing the associated hazards
- Developing and implementing hazard controls
- Performing work within the controls
- Continuing to improve safety management

SLAC is specifically required to demonstrate an ISM program by the Department of Energy Acquisition Regulations (DEAR 970.5204-2) clause, which has been added to the contract between Stanford University and the DOE in order to integrate ES&H into planning and execution of the program. This contract clause requires SLAC to manage and perform work in accordance with a documented Safety Management System (SMS).

To meet this requirement, SLAC has produced a draft document that specifies our SMS in accordance with the seven principles, and that addresses the five core functions for ISM as defined in the contract.

The seven principles of ISM are:

1. Line management is responsible for the protection of employees, the public and the environment.
2. There are clear lines of authority and responsibility.
3. Personnel possess competence commensurate with their responsibilities.
4. Priorities are balanced.
5. Safety standards and requirements are identified.
6. Hazard controls are tailored to the work.
7. Operations require appropriate authorization.

The five core functions of ISM are:

1. Define the scope of work.
2. Identify and analyze hazards.
3. Develop and implement hazard controls.
4. Perform work within the controls.
5. Provide feedback to improve safety management.

The draft SLAC SMS document was reviewed by all six ES&H Divisional Coordinators, the Departmental ES&H Coordinators in the Technical Division, Building Managers, Steve Williams for SLUO, Ian Evans for SSRL users, all Citizen Committee chairs, OSC, Lee Lyon for the Local Safety Committee, the ES&H Division's Department Heads, and others with special knowledge of SLAC operations such as John Harris of the Technical Division.

The next step in the ISM process will be the visit at SLAC by a Verification Team of 5-6 persons, chartered by the DOE Site Office Manager, to assess the ISM system. This team is expected to be at SLAC the week of August 24, 1998. Although a specific agenda has not yet been developed, it is expected that the team will assess to what extent the integration of safety management as described in the draft SLAC SMS document is understood in the line organizations. However, they will not attempt to measure how well we are doing (that will be the mission of a later team, the Validation Team)

Copies of the latest revision of the draft SLAC SMS document were distributed to all of the Associate Directors on June 15, 1998. You will likely be hearing more about the ISM program at SLAC in the near future at your Department/Group meetings.

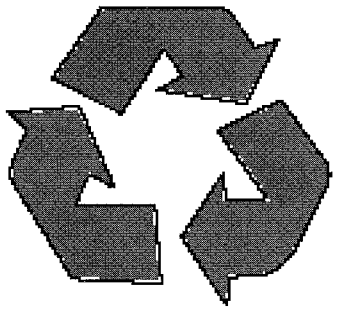
–Mike Grissom

Student Winners Visit SLAC

(Photo by N. Stolar)

Helen Quinn (r), SLAC theorist, recently hosted Connecticut high school teacher Victor Mazmanian (l) and his two students, David Peters and Thomas Beatty, for a special tour of SLAC. The two students were grand prize winners in a NASA competition for developing a plan for sustaining life in space and part of the award was a trip to NASA Ames, which as we all know, is next door to a more famous research center, namely SLAC. The group is pictured in the Visitor Center.

Pilot Recycling Project Update



SLAC HAS EXPANDED THE Pilot Recycling Project. (Oh yes, more green containers!) The Pilot Project has been in effect since December 1997 at the A&E and Central Laboratory buildings. As of April, the Pilot Project has been expanded to SLAC Computing Services (Building 50), Central Laboratory Annex (Building 84) and ES&H/Controls (Building 24). Building 24 is providing a unique opportunity to test a safe and efficient way of collecting and transporting recyclables in a two-story building without an elevator.

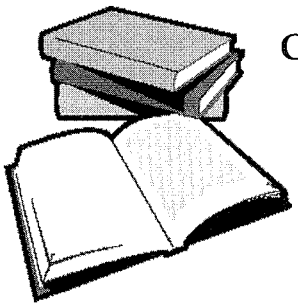
Employee participation has been key to the project's success and in helping SLAC achieve DOE performance goals. Thus far, the project has shown an estimated 10 % overall increase in recycling of paper (white, mixed, and newspaper) and the various redeemable beverage containers during the first quarter of 1998. Based on current projections, the project has an estimated two to three year payback if expanded site-wide.

Essential to the success of the Pilot Project has been the planning and conscientiousness of the Building Managers and associated employees in developing collection system layout. The Labor Pool has been most helpful in installing containers and smoothing out project glitches. Purchasing has been essential to successful contract negotiations with the recycling subcontractor and making the project show a monetary return. Safety, Health and Assurance helped develop collection methods with reduced lifting hazards to reduce potential accidents and liabilities to SLAC. As a project coordinator, I really appreciate the teamwork.

As a reminder, please do not overfill recycle containers. If you are planning an office cleanout or a special event that will generate recyclable paper or beverage containers, please estimate your quantity of recyclables and call Facilities (ext. 2207) to obtain temporary containers. Continue to help SLAC obtain good monetary returns on recyclables by separating white paper from other papers and newspaper when practical. Check with your Building Manager on how to best handle corrugated cardboard in your area.

Funding is currently being sought to expand the program site-wide. If you have any questions or would like to provide feedback about the Pilot Project, please call Rich Cellamare at ext. 3401 or email at rcellamare@slac.stanford.edu.

–Rich Cellamare



On-Line Ordering through SLAC Library

DID YOU KNOW THAT there is now a web form you can use to suggest a purchase for the Library or to order an item for your department at <http://www.slac.stanford.edu/library/orderonline.html>?

If your browser does not support forms, you can order via email (vsha@slac.stanford.edu), by fax (x4905), or by mail (MS 82). For immediate assistance with questions during business hours, come to the Library and talk to the staff, or call x2411.

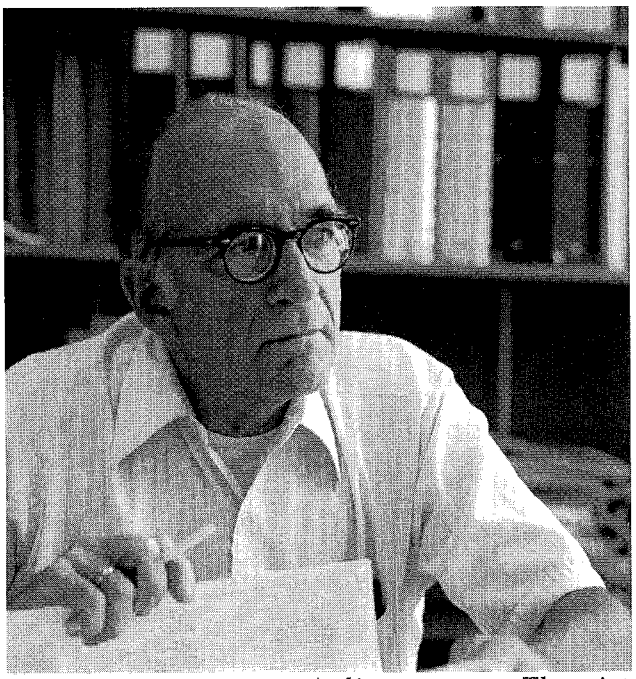
The SLAC Library handles all purchases of subscriptions, books, and other publications for SLAC use. Your purchase suggestions bought by the Library will be loaned to you first. If you need some publication always at hand, then you may request that the item be purchased with your own departmental funds for your use. While Departmental loans will not be recalled, they are part of SLAC's information resources and you may be asked to share those resources by permitting another staff member to consult an item housed in your office. Remember, if you don't require the item for regular and sustained use, it is more beneficial for SLAC if it is a Library purchase, so that others can also take advantage of the resource.

The Library cannot buy personal copies of non-work related books for staff members. However, we can help you locate the information you need to order a book yourself. Call acquisitions specialist Victoria Sha, x4396, or send an email to vsha@slac.stanford.edu for information on local and on-line bookstores.

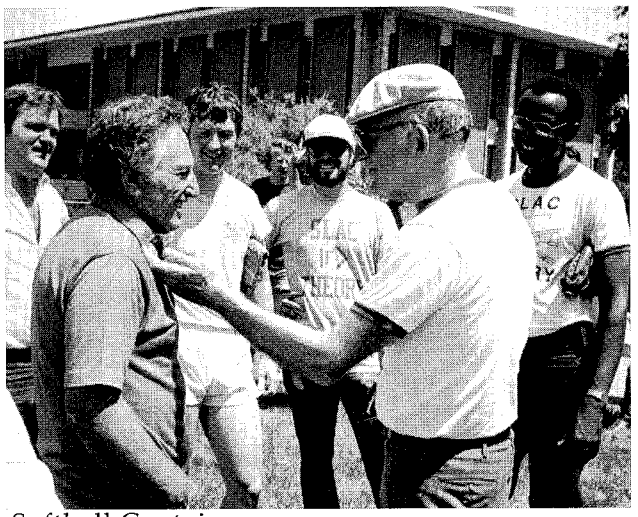
The on-line ordering form is just part of the "new look" for the Library home page–drop in and have a look at some of our other new features at: http://www.slac.stanford.edu/library.

–Ann Redfield

Sid Drell Symposium



DON'T FORGET...JULY 31 is the date of the Sid Drell Symposium. For more information, see http://www.slac.stanford.edu/conf/drell98 or contact Nancy Hendry at x3989 (email sidfest@slac.stanford.edu).



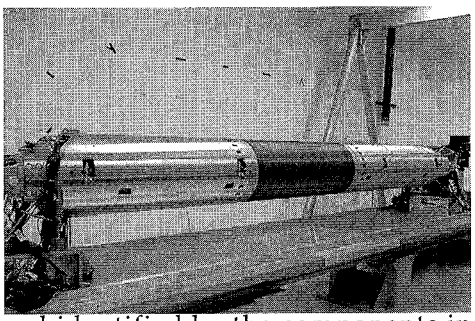
A diverse man: Theorist and Softball Captain.

PEP-II Beam Interaction Region Installed

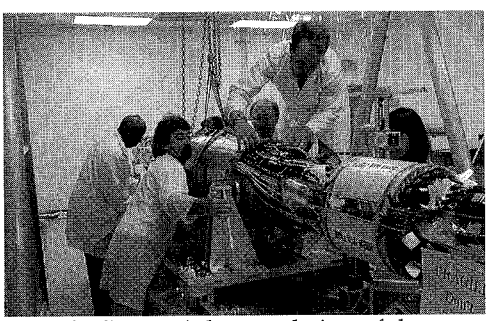
THE LAST TWO MONTHS HAVE seen the completion of the elements of the PEP-II B-Factory that surround the collision point of the accelerator. The magnetic elements (bending and focusing magnets) and the vacuum chambers were put together in a clean room in the Vacuum Building across from the Sector 30 gate.

The magnets are made from about 2500 permanent magnet blocks that were carefully placed and epoxied together into 72 slices (rings). These slices were then bolted together to form a strong (about 8 kG) bending magnet (B1) and a strong focusing magnet (Q1). The B1 magnets are only 21 cm from the collision point and they steer the beams into collision. The Q1 magnets steer and focus the beams toward the collision point. The B1 and Q1 magnets are the only elements in the B-Factory that are shared by both beams.

The beam pipe (pictured right) between the two B1 magnets is a cylinder of thin-walled beryllium which allows the particles created in the collision to escape from the beam pipe. The particles are then measured and identified by the components in the BaBar detector, which is scheduled to roll onto the beam line early next year. The accelerator components (magnets and beam pipes) together with some temporary detectors to study backgrounds are surrounded by a support tube. The tube has three sections: two outside sections of stainless steel and a center section that is a carbon fiber composite. The tube, which is held only at the ends, supports all of these components and will eventually be threaded through a hole in the center of the BaBar detector. In preparation for an accelerator run in July, the support tube (together with two rafts on either side that hold the other three final focusing magnets) have been installed in Interaction Region 2 of PEP-II. Many thanks to the technicians, machinists, surveyors, designers, engineers and physicists who worked very hard over several years to make this all come together.



(Photos from PEP-II Project)



Putting on the first stainless steel piece of the support tube

–Mike Sullivan

Parenting from the Heart

EVERY DAY IS CHILDREN'S Day around the Clay household. Fred Clay (who works in Facilities), and his energetic wife Shirley, have been fostering children since they were married 12 years ago. They were recently commended by the organization FamilyFirst for their dedication and commitment and received a write up in the *San Jose Mercury News*.

Not only are the Clays foster parents through this program, they also serve as mentors by offering support groups to the program as well as recruiting others to become foster parents; to date, they have involved another 20 families in the program.

"We love children," said Fred Clay. In addition to their adopted son and their biological daughter, they are currently foster parents to three children under the age of 8. Most of the children in the home are very active in school activities and sports, so the Clays have a busy schedule driving to functions in their 10-passenger van. In addition, the Clays run a day care center for about 12 more children in their home in East Palo Alto. In an understatement, Fred says, "There are always children in our home."

Fred has worked at SLAC for 16 years and before that he worked for the University for ten years. Shirley received her BS in business and an AA in Sociology from San Jose State but as you can understand, she now spends her time at home with the children.

FamilyFirst is a foster care agency that serves abused and neglected children in Santa Clara County. In addition to finding foster placement for children up to age 18, the organization helps with job placement for children over 18 and/or sends them on to further their education. Ask Fred Clay for more information about the FamilyFirst foster care agency but look out, you may gain some children!

SSRL Beam Delivery Milestone

ON THURSDAY, JUNE 18TH, beam was delivered to BL9-2. This DOE OBER-funded station will be dedicated to protein crystallography and, in particular, multiwavelength anomalous dispersion experiments. Commissioning of experimental apparatus in the hutch will now commence. Special features include a Huber Kappa goniometer, a Quantum 4 CCD detector and an automated detector positioner.

–Lisa Dunn

FactinOs

It's Crunch Time

Yes, summer is here and we need phones, offices and housing for our visitors, plus lots of cheerful cooperation. If you know of an unused phone, contact your ATOM. If you have a spare room for a couple of weeks, contact SLAC Housing.

Catch the New Home Pages

They're here. While that line may come from a movie and refer to space invaders, what we are referring to are the new, revised SLAC home pages on the Web. Take a look at the new graphics, design and layout. We're in a continuous improvement mode, so feedback is welcome.

For Levity, Try Gravity

Ah, summer...a time for junk books, beach walks, and...gravity. Gravity? Yes, the SLAC Summer Institute will investigate gravity from the Hubble length to the Planck length. Want to know more? Look at the new feature on SLAC's revised Welcome Page.

Computer Fixes in the Works

We can expect substantive changes in Lab-wide computer security in the near future. For the short term, the process for changing passwords will be simplified and more logging and tripwires will be set up to detect unauthorized activity. The opening and closing of computer accounts will be more closely monitored and WinNT security policies strengthened.

Yet Another Area Code Change

Effective July 11, 1998 the 408 area code will split in two. Santa Clara County remains unchanged. Santa Cruz, Monterey, and San Benito counties will be assigned to the new area code 831. Update those programmed dialers!