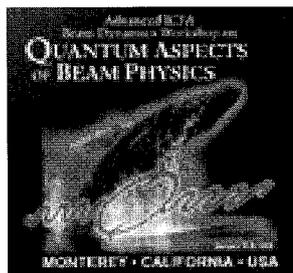




Quantum Beam Physics and Sunshine in Monterey

(Courtesy of Terry Anderson)



THE FIRST WEEK OF the year is often a slow time in academia; however, over 100 scientists gathered at the Monterey Plaza hotel in Monterey, California to discuss Quantum Aspects of

Beam Physics. In the midst of one of the rainiest winters in California history, the weather stayed clear through most of the week with a blue sky. The mid-week field trip provided an excellent

important role they may potentially play in the next century, this workshop attracted a broad spectrum of experts from beam physics, particle physics, laser science, astrophysics, condensed matter physics, nuclear and atomic physics. Participants came from 10 countries around the world as well as from the United States, representing a diversity of laboratories and universities.



(Photos courtesy of Nina Stolar)

Chairman Pisin Chen opens a memorable week in appropriate attire.

As a member of the ICFA Beam Dynamics Panel chaired by Kohji Hirata (KEK), Pisin Chen (ARDA) was asked to organize a workshop on a relevant topic. In the fall of 1996, he proposed the topic of Quantum Aspects of Beam Physics. There was a spontaneous reaction to this proposal and support was soon offered from DOE, ICFA, SLAC and the Center for Beam Physics at LBNL.

Pisin Chen was chair of the workshop, with the strong support of Ron Ruth (SLAC/CERN) and John Irwin (ARDA). Eleanor Mitchell (Technical Division), acted as the Conference Administrator along with assistance from Joy Kono (LBNL), Tracy McGee (Technical Division) and Nina Stolar (Public Affairs Office). The hard work and tireless efforts of Scientific Secretaries Andy Charman (UC, Berkeley), Zhirong Huang (ARDA), Sameen Khan (INFN, Padova) and Anatoly Spitkovsky (UC, Berkeley) also contributed to the success of the conference. A computer network set up by Patrick Kwok (UCLA/ARDA) provided on-line service for participants.

The plenary session on the first morning was chaired by Vladimir Baier (Budker Institute). Following a welcoming address by Kohji Hirata (ICFA/KEK), Pisin Chen's (ARDA) overview

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(l-r) Pisin Chen, Mayor and Mrs. Albert, Irina Sharogradsky, Michail Gelfandbein, David Sutter.

opportunity for international visitors to see the ocean and wildlife of the area. By the end of the week, history had been made; the term "Quantum Beam Physics" was born.

According to the workshop bulletin, the frontiers of beam research point to ever higher energy, increased brightness and lower emittance beams with ever increasing particle species. These demands in turn have triggered a rapidly increasing number of beam phenomena that involve quantum effects. Concurrently, the violent accelerations which are becoming available through novel accelerator research may, perhaps, help to investigate fundamental physics associated with general relativity.

With these exciting developments and the

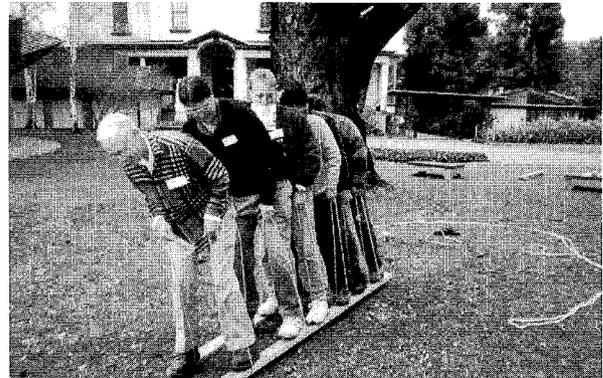
Annual Training Survey Gets Results!

AT THE NOVEMBER, 1997 SLAC Benefits Fair over 140 employees filled out the annual training survey. Highly-desired courses included: Creativity and Innovation, Team-building, The Science of Human Behavior (also known as Bringing Out the Best in People), Giving Yourself Credit, Humor in the Workplace, and the Leadership Institutes. Supplementing the survey were informal discussions with managers, with many of them mentioning similar themes: "If I go to a class it better be worth it. Usually classes are a waste of time. It's worth it to me if I learn a couple things I can immediately apply back in my department."

WHAT HAPPENED NEXT?

The Training Department sought out the best trainers in the areas designated as most desirable by SLAC employees, and arranged a series of experimental Winter and Spring course offerings. These offerings received powerful positive post-class evaluations, plus ideas such as "Have class participants use the training session to focus on real workplace issues" and "Have an intact work group - or department - take this class together for the shared experience and for the ability to work on one of their departmental issues."

This feedback prompted the Training Department to offer customized work group sessions. Thus far the ARD-A, Technical Publications, and Waste Management Groups have taken advantage of these special programs. Photographs from these and other sessions are displayed on the Training Department bulletin board outside the Personnel Office, Room 240 in the A&E Building.



Gordon Bowden (l) leads a team-building exercise.

Want to be in the Loop?

The Training Department has an email list, and periodically sends out course agendas and announcements. You can subscribe to this list by sending a message to: majordomo@slac.stanford.edu. In the body of the message type: "subscribe slactrain-l".

Flyers announcing courses will also be distributed to all mail stops. Contact Karen McClenahan or Frank Topper with questions, if you need assistance, or if you'd like to discuss having a customized course delivered to your department.

Pizza! Pizza! Pizza!

If 30 new people sign on to the email list by 3/31/98, three list members will be chosen at random to receive a pizza.

-Karen McClenahan

We Slipped...

In the Jan/Feb issue of The Interaction Point article entitled 1998 SLAC Safety and Environmental Discussions: February 27, 1998, by Jack Hahn, the following information was inadvertently omitted. We apologize for this oversight.

Slips, Trips, and Falls

Top causes of slips, trips, and falls were twofold: insufficient lighting in parking lots and walkways and poorly maintained paths. Funds were budgeted for improving these items and staff should see changes. In addition, any broken lights discovered by Security are now reported to Facilities within 24 hours.

Work Safe, Work Smart

An incident occurred on 1/26/98 that involved days away from work. It was the first such claim since the Workers' Compensation claim of 8/29/97 involving days away from work was filed, according to Sharon Haynes, the Workers' Compensation Coordinator. The number of calendar days between the 8/29/97 claim and the 1/26/98 claim is 150 days, which beats SLAC's previous record of 77 calendar days between claims.

Quantum Beam Physics *(continued)*

presentation set the tone of the conference. This was followed by a talk by Ron Ruth on "Radiation Reaction and Fundamental Limit of Beam Emittance." Claudio Pellegrini (UCLA) then presented "Collective and Coherent States in Beam-Radiation Interaction." Rudolf Grimm (Max Planck, Heidelberg) reviewed "Laser Cooling of Stored Ion Beams," while Valery Telnov (Budker Institute) talked about "Electron-Photon Interaction in High Energy Beam Production and Cooling."

While these topics may be more down to earth, the afternoon session, chaired by Kirk McDonald (Princeton U), was designed for more lofty subjects. Bill Unruh (U of British Columbia) talked on "Black Holes, Acceleration Radiation and Beams." Toshi Tajima (U of Texas, Austin) then discussed the "Laboratory



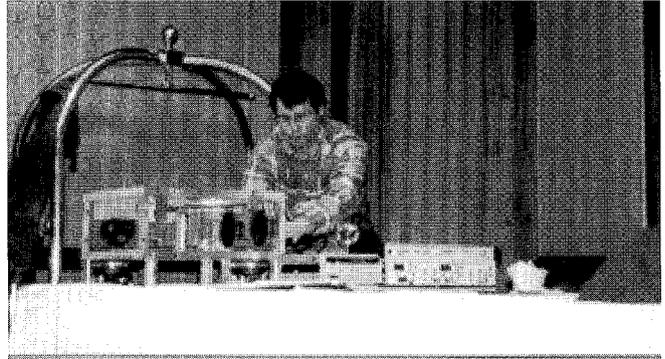
On-site Conference Team: (l-r) Nina Stolar, Tracy McGee, Joy Kono.

Production of Violent Acceleration," followed by McDonald's survey on issues relevant to physics under strong fields. Other highlights included Tony Leggett's (U of Illinois)

disposition on "Coherent Atomic Beams from Bose Condensate."

The Tuesday morning plenary session, chaired by David Jackson (LBNL), focused on beam-phenomena under strong fields. Kaoru Yokoya (KEK) reviewed "Beamstrahlung and Other Nonlinear QED Effects in Linear Colliders." Walter Greiner (U of Frankfurt) talked about "Nonlinear QED Effects in Heavy Ion Collisions." Yuri Kononets (U of Aarhus) then reported on the latest results of "Crystal Channeling of High Energy Beams."

Working groups were ably led by Kwang-Je Kim (LBNL/Argonne) on "Quantum Fluctuations in Beam Dynamics," and by Swapan Chattopadhyay (LBNL) on "Photon-Electron Interactions in Beam Production, Cooling and Monitoring" and "Production and Handling of Condensate Beams." Adrian Melissinos (U of Rochester) and Kirk McDonald chaired the working group on "Beam



Even in hotels, physicists must experiment! Andrés Larraza demonstrates the acoustic Cassimir effect while participants are astounded.

Phenomena under Strong Fields" and "Fundamental Physics under Violent Acceleration," and Alex Dragt (U of Maryland) organized the sessions on "Quantum Methodology in Beam Physics."

The parallel session discussions were intense, and gathered momentum throughout the week. For example, stimulated by Unruh's plenary talk and related presentations, David Jackson generated a lively debate on the nature of Unruh radiation in one of the working groups. The warmth of the working group sessions can also be exemplified by an unprecedented experimental demonstration. Andrés Larraza (Naval Postgraduate School) brought along his equipment and demonstrated the acoustic analog of the well-known Cassimir effect.

Social programs contributed to the excellent style of this workshop. Plus, the famous Monterey Bay Aquarium was reserved exclusively for workshop participants mid-week for a banquet and a special lecture.

In the closing sessions, there were short toasts made by the conference chairman followed by brief words by David Sutter (DOE) and Lee Teng (Argonne). The combination of pioneering work and the developing need for refinement in this field led Teng to urge the audience to turn this very successful workshop into a series. His sentiments were warmly echoed by the participants. Will the next workshop chairman please step forward?

-Nina Stolar

(Ed. Note: Further information can be found at the workshop website: <http://www.slac.stanford.edu/grp/ara/qabp/qabp.html>.)

Swedish Nobel Laureate Visits SSRL



(l-r) Herman Winick confers with Kai Siegbahn during his visit to SSRL.

PHYSICISTS KAI AND ANNA-BRITTA SIEGBAHN visited the Synchrotron Division in January to get an update on current research. Siegbahn is the editor of *Nuclear Instruments and Methods in Research* and in that capacity monitors activity in various scientific fields. He also works with ESCA Laser Lab in Uppsala and was the winner of the 1981 Nobel prize in physics (shared with Schawlow and Bloembergen).

Their host, Herman Winick, prepared an ambitious agenda in which the Siegbahns met with John Arthur and Roman Tatchyn for discussions on X-ray optics in general and a more in-depth review of the Linac Coherent Light Source (LCLS), the proposed SLAC X-ray Free Electron Laser. A short tour was planned to visit the gun test facility where work is underway to develop a photocathode RF gun to meet the LCLS requirements. The Siegbahns also met with Zhi-Xun Shen and Ingolf Lindau to discuss the latest in science with soft X-rays.

Kai Siegbahn was fully aware of the DESY activities in Hamburg and plans for linac-based free-electron lasers, but he remarked that "SSRL has great potential since you have the linac...if you hurry you can be first."

Winick said that the LCLS was still in the research stage and had not yet been funded. The SPEAR3 update is the more immediate project. The Siegbahns also visited LBNL and LLNL before flying back to their native Sweden.

Welcome Guests and New Employees

The following people joined SLAC through mid-February: **Adeyemi Adesanya**, SCS; **Christopher Barnes**, EC; **Lee-Chung Chu**, SCS; **Finis Clendinning**, Klystron; **Mikhail Dubrovin**, DO; **Gia Dvali**, Theory; **Ruy Farias**, SSRL; **Brian McCandless**, ARD-A; **Gavin Nesom**, EE; **Paolo Palazzi**, BaBar; **Pierluigi Paolucci**, BaBar; **Jose Pelaez**, Theory; **Michael Phillips**, OHP; **Nels Runsvick**, SSRL; **Tarek Saab**, EE; **Philip Strother**, BaBar; **Jane Tinslay**, BaBar; **Tomasina Trautwein**, SSRL; **Joan Valine**, ARD-A; **Klaus Wille**, SSRL.

FactinOs

T-Shirts and More

Did you miss out on the sale of SLAC hats, mugs and shirts last fall? The Campus Bookstore will hold another sale of items on Monday, March 9 starting at 10am in the Auditorium Lobby and Breezeway. Items for sale include t-shirts, sweatshirts, polo shirts, mugs, magnets and more. Bring cash, checks or credit cards.

Student Help Needed

Some high school science students want to find out what it's like to be a physicist or engineer. If you would like a student to follow you around for a day in April, please contact P.A. Moore, x2605.

PEP-II Walking Tours

PEP-II walking tours resumed on February 18, 1998 and will continue until the end of April. Conducted by Chief Engineer Lowell Klaisner, the 50-minute lunch tours begin at Sector 30 gate and end at the Sector 17 gate. To reserve space, contact Jennifer Huang-Le (email jhuang@slac.stanford.edu, or phone x2763).

Safety TIP - Red Light Runners

Protect yourself from speeders running red lights by following a few simple rules. First, don't assume that just because the light is green and you have the right of way, that the road is clear. Look at other cars at or near the intersection. Are any of them accelerating? If so, better to give way than to get into an accident. Proceed through an intersection only when safe to do so. Look left, right, and left again, then proceed. Be especially alert for pedestrians or animals.