

# F E R M I N E W S I

F E R M I L A B A U.S. DEPARTMENT OF ENERGY LABORATORY



Illustration by Studio R Co., Ltd. (Shibuya, Tokyo, Japan), reprinted from the JLC Project Executive Summary

## A Visit to Tsukuba 2

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# A Visit to Tsukuba

**COVER GRAPHIC:** In classical Japanese puppet theater, “Bunraku”, puppets are manipulated by human operators in black suits and hoods, which make them symbolically invisible. The Higgs field in the universe is considered to act somewhat as such an operator: It fills the entire universe and creates “the mass” of elementary particles. However, it is totally invisible in a conventional sense. Though the existence of the Higgs-field is one of the most important predictions in modern physics, so far the Higgs field has been completely evading experimental detection. Experiments in JLC hope to strip the hood of the Higgs-field and reveal its identity.

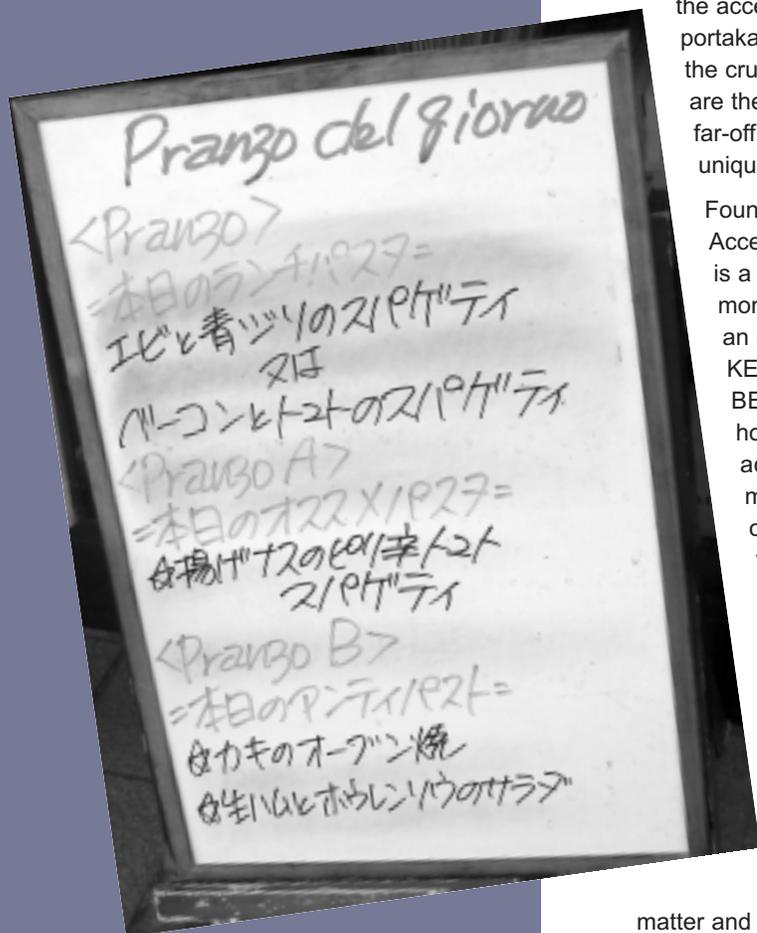
## Particle physics in Japan’s City of Science

by Judy Jackson

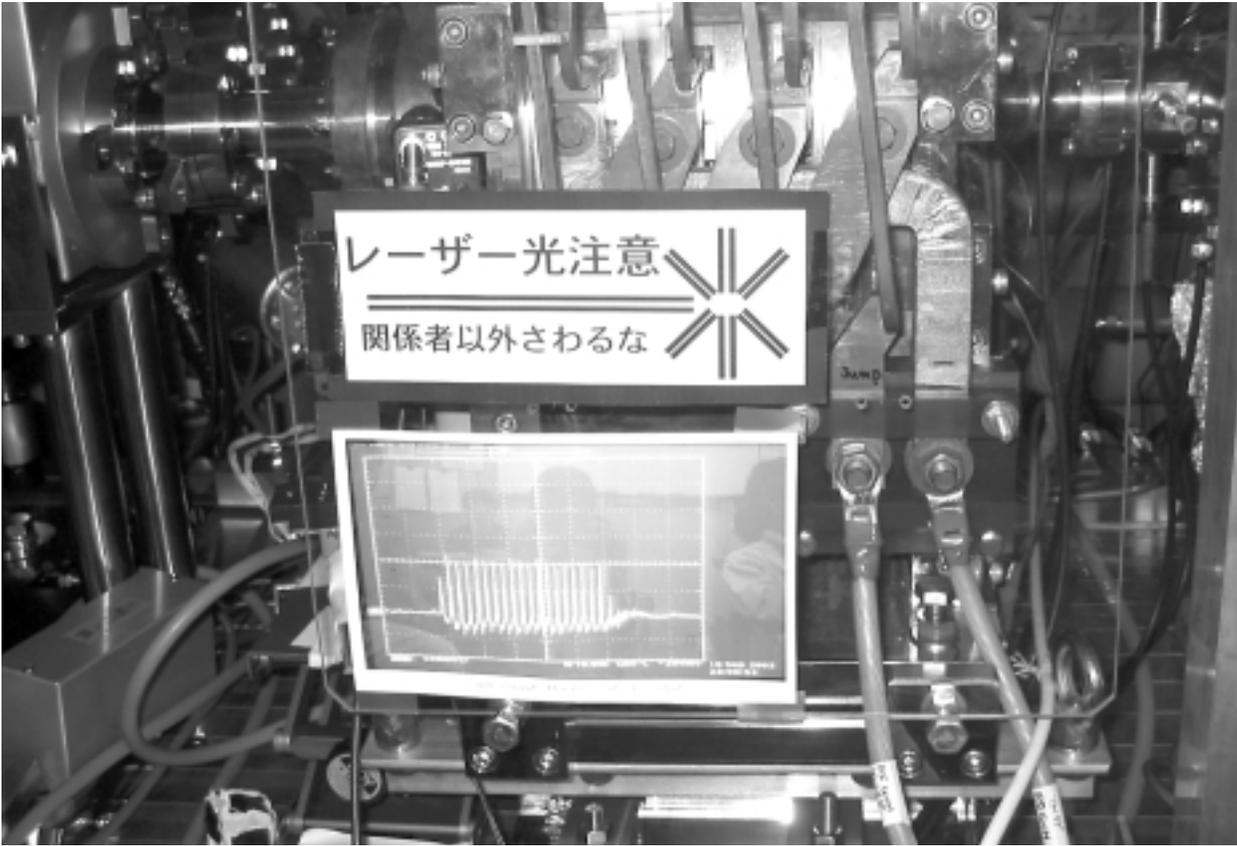
**W**hen you come from a high-energy physics lab, every other high-energy physics lab feels like home. Although Japan’s KEK laboratory is 6,000 miles from Chicago, a visitor from Fermilab instantly recognizes the hallmarks of a busy accelerator laboratory. The physicists in the control room tracking the accelerator’s performance, the graduate student at his terminal in a portakamp, the high-tech magnet test facilities painted in primary colors, the crumpled aluminum foil swaddling the light-source beamlines—these are the same at physics laboratories the world over. Seeing them in this far-off place, gives the visitor a new appreciation of the simultaneous uniqueness and universality of this undertaking called particle physics.

Founded in 1971, Koo Energy Ken, the High Energy Research Accelerator Organization in Tsukuba (“The City of Science”), Japan is a high-energy laboratory in every sense of the term. At any given moment, there is a lot going on. On an early afternoon last month, an atmosphere approaching euphoria pervaded the control room of KEK-B, the electron-positron collider that creates B mesons for the BELLE experiment. The accelerator had just completed its 54th hour of continuous operation without a hiccup, a new record for the accelerator and a fire hose of data for the BELLE collaborators. The machine’s current performance was especially gratifying because of the slow start-up it experienced when it began operating in 1999. Initially far outpaced by its sister B factory, PEP II at the Stanford Linear Accelerator Center, KEK-B’s luminosity has steadily and convincingly risen to its present record-breaking levels. At the bottom of each of the screens monitoring KEK-B’s performance appears a window showing how PEP II is doing today. Just in case you wondered if anyone was paying attention.

The BELLE collaborators comprise some 300 physicists from 49 institutions in 10 countries, including the US. The BELLE experiment will use the deluge of B mesons from the accelerator to elucidate the mysterious difference between matter and antimatter. Earlier experiments at other laboratories have seen this matter-antimatter asymmetry, called “CP violation” in physics-speak, in subatomic particles called kaons. Between them, BELLE and BaBar will reveal how this phenomenon works in the realm of the kaons’ cousins, the B mesons. Papers at physics conferences this year will relate the next chapter of this unfolding story, one of the more exciting adventure sagas of 21st century particle physics.



On the menu at an Italian restaurant in Tsukuba, Japan, one day last month: spaghetti with shrimp and basil, spaghetti with bacon and tomato, and spaghetti with fried eggplant and spicy tomatoes. For *antipasti*, oven-baked oysters and salad with prosciutto and spinach.



A warning in KEK's Accelerator Test Facility reads "Laser Light. Caution. Unauthorized users prohibited."

Across the KEK campus at the Accelerator Test Facility, accelerator physicists from the U.S., Europe, Korea, Russia and China are collaborating with Japanese colleagues to develop ultraconcentrated beams of high-energy electrons and positrons for the next generation of linear colliders. For a linear collider to achieve the collision rates that experiments of the future will require, the beams of electrons and positrons must be focused at the collision point to dimensions as small as three nanometers, a degree of focusing that KEK's website understandably calls "almost outrageous."

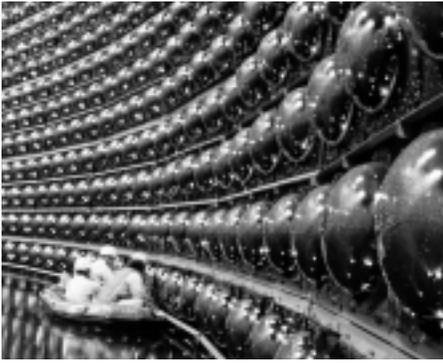
KEK also does neutrinos. In June, 1998, the Super-Kamiokande experiment, located 250 kilometers north of Tsukuba, announced evidence for neutrino oscillations, and hence neutrino mass, based on observations of atmospheric neutrinos. In 1999, the K2K (KEK to Kamioka) long-baseline neutrino experiment began sending a beam of accelerator-produced neutrinos from KEK's 12 GeV proton synchrotron to the Super-Kamiokande detector. Like the NuMI experiment that will begin operating at Fermilab in 2004, K2K also includes a "near" detector to characterize the beam of neutrinos as it leaves the laboratory site. Experimenters use the "far" Super-K detector to look for signs of oscillation in this controlled neutrino beam.



The KEK communication staff (Left to right: Youhei Morita, Shuji Higeta, Noriko Usami, Tokio Ohska and Yuichi Takayanagi) tell the laboratory's remarkable story in publications, press releases, news stories and a soon-to-be launched new website. Both Morita and Ohska are former Fermilab experimenters.



The neutrinos went that-a-way. Standing at the K2K near-detector complex, Professor Kenzo Nakamura points in the direction of the Super-K detector, 250 kilometers to the north.



The Super-K detector made headlines when it detected evidence for neutrino mass in the interactions of atmospheric neutrinos in June 1998; and again in November 2001 when about 7,000 of its 11,000 phototubes broke. Experimenters rebuilt the detector, which resumed detecting accelerator-produced neutrinos from KEK on December 22, 2002.

# Tsukuba

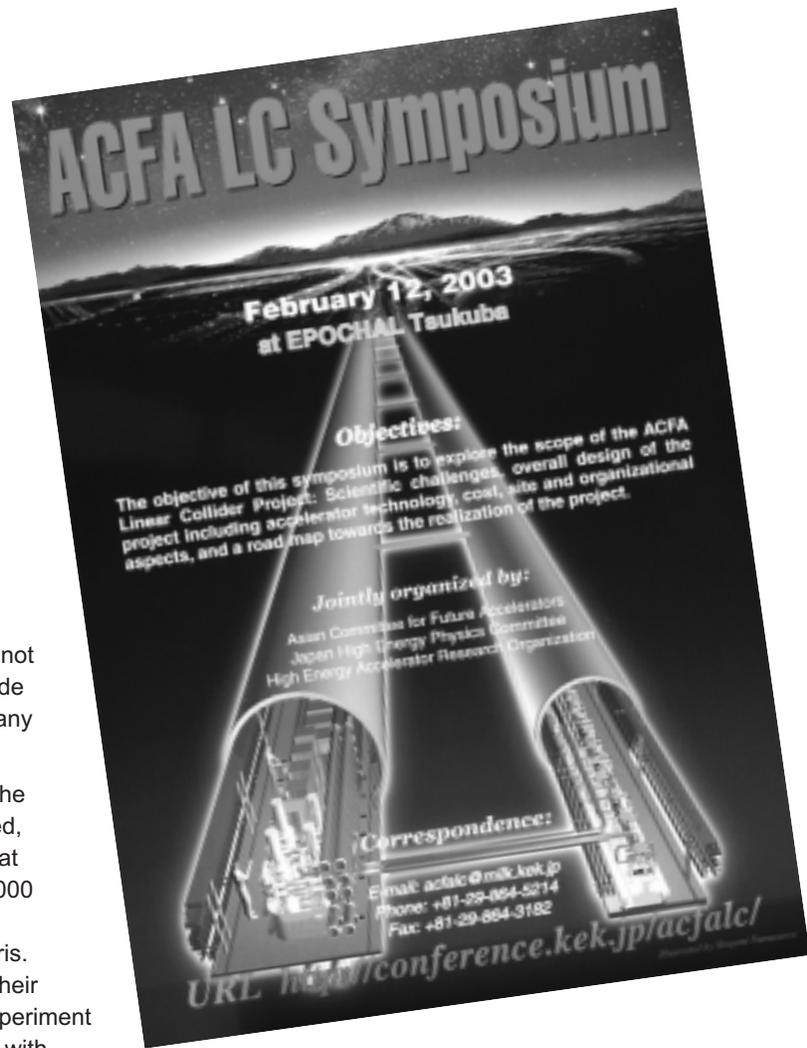
The course of the K2K experiment has not always been smooth. Collaborators made an extraordinary recovery from what many feared might be a fatal blow.

In the autumn of 2001, a phototube at the bottom of the Super-K detector imploded, causing a devastating chain reaction that broke about 7,000 of the detector's 11,000 phototubes and covered the bottom of the detector with broken glass and debris. Collaborators immediately announced their intention to rebuild the detector. The experiment resumed operations in December 2002 with about 50 percent of the phototubes replaced.

Besides its high-energy physics experiments and R&D facilities, KEK also operates the Photon Factory, a synchrotron light source whose many beamlines support dozens of experiments in materials science, protein crystallography, biomedicine, biophysics, x-ray lithography and photochemistry.



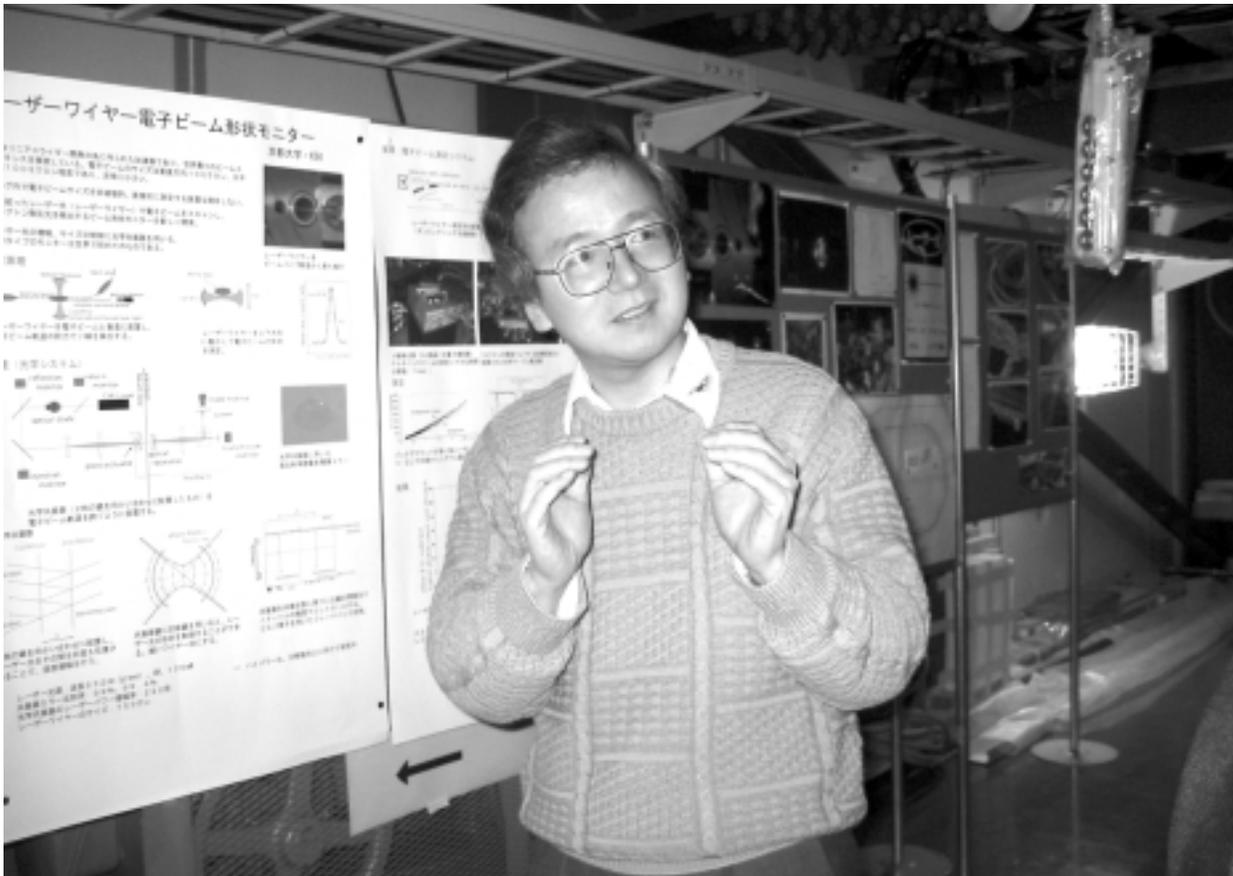
Boston University physicist and K2K collaborator Chris Walter watches over the experiment's near detector as it monitors the neutrino beam before it leaves the KEK site for its 250-kilometer trip to the Super-K detector.



## ACFA SYMPOSIUM

An epoch, says the dictionary, is a particular period of history, especially one considered remarkable or noteworthy. The Tsukuba Epochal, a conference center just down the road from KEK in the heart of the City of Science, thus seemed a fitting venue for a key event in this particular period of particle physics history, the Epoch of Linear Collider Proposals. On February 12, the Asian Committee for Future Accelerators, or ACFA, held a day-long symposium to present its vision for a future accelerator.

The Asians were continuing a tradition established at the *Deutsches Elektronen Synchrotron* Laboratory in March, 2000, when DESY officials held a symposium in Hamburg to present the Technical Design Report for the TESLA Project, that laboratory's vision for a German-based international linear collider. Now it was Japan's turn to present its proposal to society, the high-energy equivalent of a sort of coming-out party for linear colliders. A series of speakers beginning with KEK Director-General Hirotaka Sugawara filled in the picture of an internationally supported project to build the world's next-generation high-energy particle accelerator in Japan.



Physicist Junji Urakawa explains the groundbreaking accelerator research at KEK's Accelerator Test Facility where the X-band technology chosen for the proposed JLC is being developed.

The symposium's objective, as defined by the organizers, was "to explore the scope of the ACFA Linear Collider Project: scientific challenges, overall design of the project including accelerator technology, cost, site and organizational aspects, and a road map towards the realization of the project."

The complete road map for the JLC Project, including physics goals, technology, site studies, cost and proposed global organization, appears on the World Wide Web at <http://lcdev.kek.jp/RMdraft/>

In his opening remarks, Sugawara told the audience of more than 360 that the report "is not a proposal to our government, but we want our government to think about it. We are presenting our proposal to the world community, to officials and politicians to think about."

One of the first things to think about, speakers acknowledged, is what to call the project. Although the "J" in the term "JLC" was conceived to stand for "Joint," not "Japanese," symposium speakers

recognized the possibility of confusion. A sub-committee of ACFA, charged with choosing an appropriate name, was reported to be considering four dozen candidate proposals for a new title. In the meantime, a new abbreviation, "GLCC," for "Global Linear Collider Center," emerged to describe a proposed new form of international laboratory organized specifically to build and operate a new linear collider.

"Such a global laboratory," the JLC Project Report's Executive Summary says, "unprecedented in the field of particle physics, could serve as an outstanding center of excellence in Asia and would have considerable impact on the whole world."

Among the ACFA Symposium's most powerful messages were remarks by 2002 Nobel laureate Masatoshi Koshiba, of Tokyo University, who emphasized the imperative for nations and generations to work together for the success of a linear collider.

"From Asia to the world," Koshiba said, "let's get together!" 🇺🇳



2002 Nobel Laureate  
Masatoshi Koshiba

# CDF approves first Run II paper

by Kurt Riesselmann

**S**cientists at CDF have announced that they will soon release the first publication based on data obtained from Fermilab's Collider Run II. An internal CDF seminar scheduled for March 7 is likely to be the last step of an elaborate, six-month review process. Barring any last-minute objections from members of the CDF collaboration, scientists will submit a paper on a mass measurement of particles containing charm quarks to the science journal *Physical Review D*.

"It's not a major discovery," said CDF scientist Christoph Paus, assistant professor at MIT. "It's bread-and-butter physics. Our measurement of the mass difference between the  $D^+$  and  $D_s^+$  particles is competitive with the world average. Even more important, the paper indicates: 'Hello, CDF is back.'"

This is not to say that the CDF scientists or their colleagues of the DZero experiment had ever disappeared. Over the last ten years, both collaborations have published hundreds of papers based on Collider Run I, experiments that took place from 1992 to 1996. The new paper will be the first of a flood of publications expected from Run II, which started in 2001.

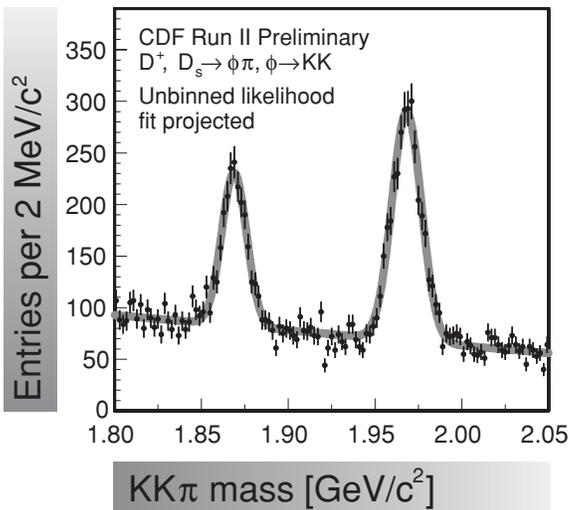
It often takes many months or even years before a team of particle physicists is ready to publish results of a specific analysis. Interestingly enough, it can take almost as much time to convince other members of the collaboration that an analysis was done right and that its conclusions are correct.

"Our collaboration has bylaws that govern the release of results," said Paus. "The bylaws are like the constitution of CDF. For data shown at conferences or other public events a blessing of the results by the entire collaboration is necessary."

Every time a scientist plans to share a new graphic or numeric value with someone outside the collaboration, other collaboration members must first have the chance to review the results and the methods that were used to produce the results. If an analysis is complicated and peer scientists voice many questions and concerns, this blessing process can take months, including the possibility that some results never get approved.

Graduate student Ivan Furic (left) and assistant professor Christoph Paus, both CDF scientists from MIT, carried out the analysis for the first publication of Run II results.





“In early summer, 2002 we calibrated the momentum scale of the detector,” said graduate student Ivan Furic, who works with Paus at MIT. “We had data on the decay of  $D^+$  and  $D_s^+$  particles, and we measured their difference in mass. We produced two blessed notes, one on the calibration and one on the mass difference.”

Blessed results are considered preliminary, and not every blessed result gets published in a science journal. Blessed charts and numbers often are just an intermediate step of a larger analysis.

In the case of the  $D^+$  and  $D_s^+$  results, the MIT scientists pursued the idea of publishing the results to document the capabilities of the upgraded CDF detector. On August 30, the CDF spokespersons agreed and officially initiated the publication process by assigning godparents, a team of usually three to four CDF experts. They named as godparents William Wester, who carried out a similar analysis in Run I; Stefano Giagu, an expert on the CDF silicon vertex trigger, a crucial piece of equipment in the data taking process; and Aseet Mukherjee, who has detailed knowledge of the analysis required for particle tracking.

Godparents carefully review the work proposed for publication. Once they approve the analysis, they help the authors to obtain all approvals and to get the work published. The godparents provide guidance for the first draft of publication, and they coordinate the internal collaboration review, a process with more scrutiny than the blessing of preliminary results.

It took Paus, Furic and their godparents about three months to converge on a first document.

“We released the first draft to the entire collaboration before Christmas,” said Wester, who chairs the godparents committee. “We got lots of comments

from individuals and groups. We then made sure that the authors addressed all issues. Our committee carefully reviewed all responses.”

The first round of comments focused on the scientific content of the publication. Collaboration members critically examined all aspects of the work, challenging methods and assumptions that Paus and Furic had relied on. Responding to all questions and comments took a lot of time. When all issues had been resolved, a revised draft went to the entire collaboration, asking scientists to carefully review the wording and the conclusions drawn in the paper.

On March 7, Paus and Furic will present what is probably the final version of the publication. If approved, the CDF collaboration will submit the paper within a few days. The names of all 638 CDF scientists will appear on the publication. But that’s not all.

“For the first publication, we also wanted to recognize engineers, technicians and other non-physicists who have made significant contributions to the CDF Run II upgrade,” said spokesperson AI Goshaw. “The first author list will include an additional 169 names.”

Seven years after the conclusion of Run I, CDF is back. ☼



Photo by Reidar Hahn

William Wester (left), Stefano Giagu and Aseet Mukherjee (not shown) are the three godparents that reviewed the first CDF publication of Run II. Awaiting approval from the whole 600-member CDF collaboration, the paper will be submitted to a physics journal and an electronic physics archive in March.

## ON THE WEB:

**CDF homepage:**  
[www-cdf.fnal.gov](http://www-cdf.fnal.gov)

**B physics group at CDF:**  
[www-cdf.fnal.gov/physics/new/bottom/bottom.html](http://www-cdf.fnal.gov/physics/new/bottom/bottom.html)

**Preliminary results on  $D^+ - D_s^+$  mass difference:**  
[www-cdf.fnal.gov/physics/new/bottom/020711.ct-deltam/](http://www-cdf.fnal.gov/physics/new/bottom/020711.ct-deltam/)

# DESY Gets



# on TESLA X-Ray Laser

German government  
awaits international  
developments before  
making site proposal  
for TESLA collider



Photo courtesy DESY-Hamburg

Superconducting accelerator structures (resonators) of niobium are at the heart of the TESLA project.

## ON THE WEB:

German Scientific Council  
[www.wissenschaftsrat.de](http://www.wissenschaftsrat.de)

Press Release (in German)  
of the Federal Ministry of  
Education and Research (BMBF)  
[www.bmbf.de](http://www.bmbf.de)

Deutsches Elektronen-  
Synchrotron (DESY)  
[www.desy.de/html/home/index.html](http://www.desy.de/html/home/index.html)

TESLA Project  
[tesla.desy.de](http://tesla.desy.de)

by Petra Folkerts  
DESY Office of Public Affairs

**H**AMBURG, Germany— *Deutsches Elektronen-Synchrotron* (DESY) has been given the go-ahead on the X-ray laser for the TeV-Energy Superconducting Linear Accelerator project, but the German government will not make a proposal at this time to host the TESLA collider.

The two TESLA projects, the X-ray laser and the linear collider, were assessed by the German Science Council with excellent results in November, 2002 and the Federal Minister of Education and Research, Edelgard Bulmahn, announced the government's two-part decision on Feb. 5:

- 1) The X-ray laser will be built as a European project, and Germany will bear half the costs because of the advantage of location;
- 2) Before making a decision on a location of the TESLA linear collider, the German government will wait for developments on the international level within the high-energy physics community. The current research work for the project will be continued by DESY within an international framework, to enable German participation in a future global project.

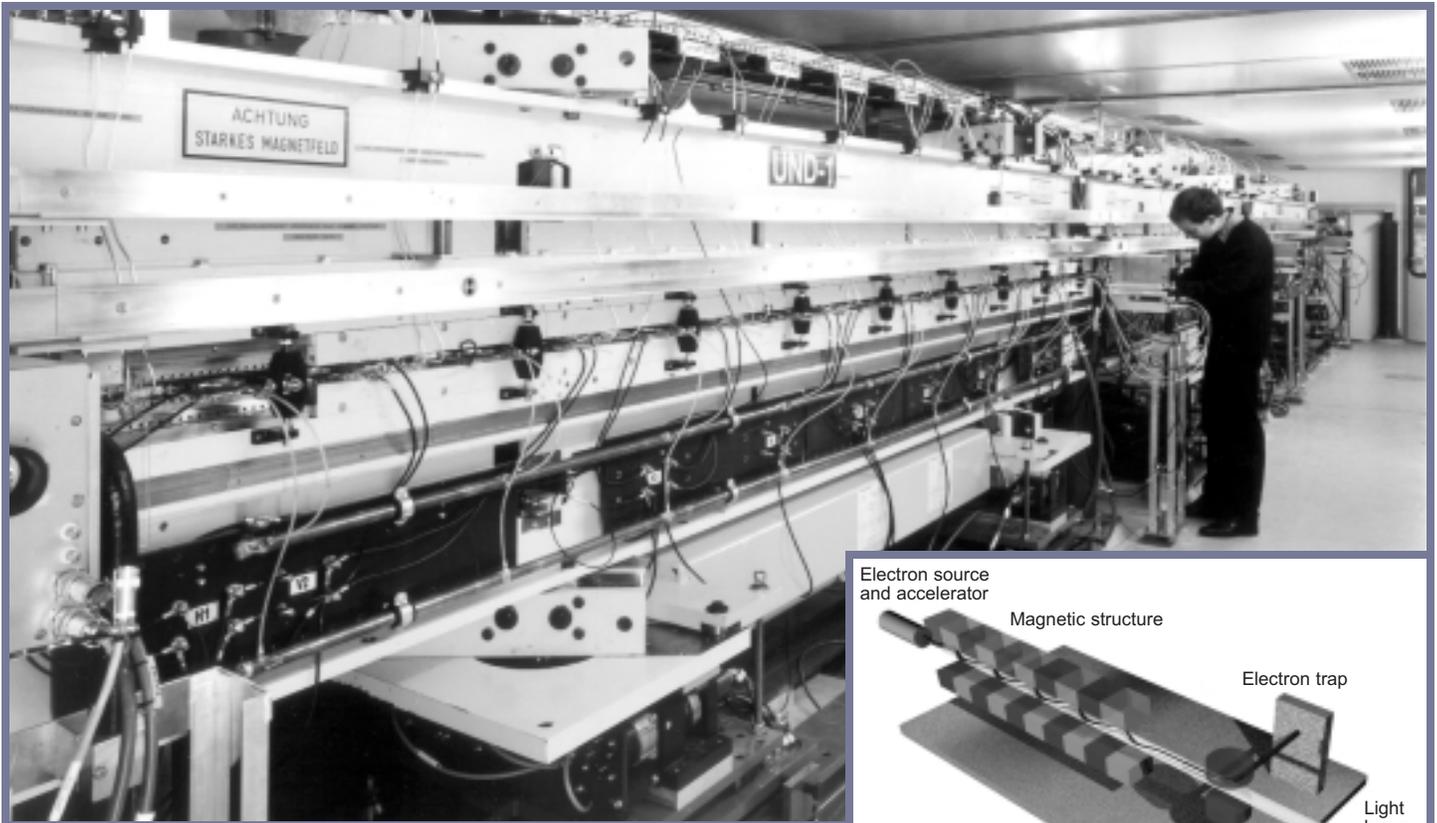
"DESY welcomes the rapid and trend-setting statement of the Federal Government on the large-scale research facilities and sees it as a tremendous chance for TESLA," said the Chairman of the DESY Directorate, Professor Albrecht Wagner. "It strengthens the Helmholtz Association [of National Research Centers] playing the role of an operating agency for large-scale research facilities. The possibility to realize the TESLA X-ray laser as a European project at DESY opens up outstanding research possibilities for Germany. For the linear collider for particle physics which is being planned on a longer-term basis, DESY is able to continue the international research work."



DESY Director  
Albrecht Wagner

On the basis of Buhlman's decision, preparations for TESLA will now enter a new phase: Concerning the X-ray laser project, the first step will be to work out the financial, technical and organizational framework with the interested European partners.

The decision of the Federal Ministry of Education and Research (BMBF) to await the course of the international developments before recommending a site for the TESLA linear collider, while renewing its support of the research and development work for such a collider, allows DESY and its partners to continue with the political and technological coordination and decision process which is currently in progress at an international level. The declared goal is to operate a linear collider as an international research facility for particle physics in the next decade either in America, Asia or Europe, possibly at DESY.



The undulator (above) is an array of magnets producing laser light with short wavelengths in the TESLA X-Ray Laser. The intensive laser light (right illustration) is produced when electrons are brought to high energies in a superconducting accelerator, then slalom through the undulator and emit laser-like bundles of radiation.

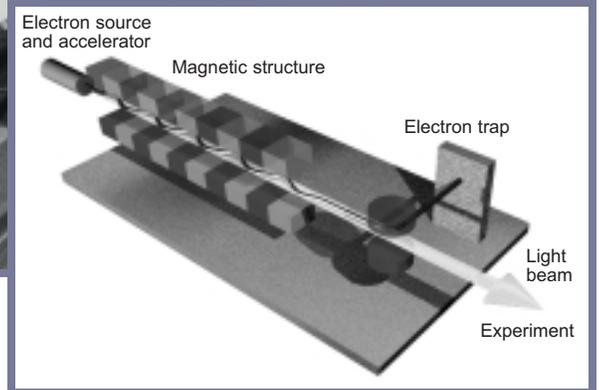


Photo courtesy DESY-Hamburg  
Source: DESY Hamburg

TESLA is a particle accelerator operating at extremely high energies (Tera electron volts). The unique feature of the TESLA concept is the use of superconducting acceleration structures which have to be cooled down to minus 271 degrees Celsius. DESY initiated research and development 10 years ago for TESLA, and the project is now being carried out as joint effort by 46 institutions from 12 countries at a test facility in Hamburg.

Both projects employ superconducting technology. In the 33-kilometer-long TESLA linear collider, it will provide the means of producing particle collisions at the highest energies, allowing physicists to take a closer, more detailed look than ever before at the smallest dimensions and the origins of matter and the universe. The superconducting electron accelerator of the TESLA X-ray laser will serve as a source of intense and extremely short X-ray flashes with laser properties that will open up completely new research opportunities for the natural sciences.

The wavelength of the laser light is so small that even atomic details become discernible; the wavelength can be varied in the range of six to

one-tenth of a nanometer. The highly intense, ultra-short X-ray flashes enable researchers to record what are essentially films from the microscopic world—monitoring, for example, how a chemical reaction progresses from atom for atom—to study the processes occurring inside materials or to unveil the structure of biological molecules. 🌟

### Witherell: DESY announcement furthers global outlook

Fermilab Director Michael Witherell views the stance of the German government on the TESLA linear collider as another step toward realizing the next big machine of high-energy physics as a global effort.

“This decision means that the next step on a linear collider is up to the international high-energy physics community,” Witherell said. “Everyone now agrees that if a linear collider is to be built, it will be done by a new type of international collaboration in which no single country takes the dominant decision-making role. The International Linear Collider Steering Committee, which met recently in Japan, is thinking about how to organize a global linear collider project, how to create an internationally distributed accelerator design effort, and how to engage government funding agencies in supporting the project.”

# Good-bye, BUDGET CODES

by Kurt Riesselmann

**I**n April, Fermilab will join the world of modern project accounting. After months of intensive testing, Fermilab's Business Services Section will "switch on" the lab's new Oracle Projects software system.

"For several years the Fermilab directorate has favored plans to improve the financial management of our laboratory," said Bruce Chrisman, associate director for administration. "The old budget code system, introduced more than 30 years ago, is no longer up to the task of providing answers to the questions that Fermilab managers and group leaders have about projects, from overall budget performance to the status of individual tasks."

The old system, which is closely tied to the organizational structure of the laboratory, has been ineffective in handling complex projects that involve people from different organizations within the laboratory, such as the NuMI construction.

"At present a manager sees, for example, just one big number for the cost transfer for labor between two groups," said Brad Trygar, the project manager responsible for implementing the new system. "In the future, authorized people will have immediate access to the details behind this charge. They can, for example, easily retrieve the list of names of people who worked on the project. In the past, it would have taken hours to find the information. The level of detail just wasn't readily available."

In future, lab managers will be able to "drill down" into the reports they obtain, and they'll have access to many resources on-line. Rather than emphasizing the organizational structure of the lab (divisions, departments, sections, etc), the new system promotes budgeting by activity, recognizing the increasing number of lab-wide projects. Within a project, managers will define tasks and task numbers. Employees working on a specific task or making a purchase related to a certain task use the corresponding project and task number to charge an account.

"You can use the concepts and tools [of project accounting] to manage virtually any type of effort, from the construction of a shopping mall to the development of software," said Ann Nestander, a NuMI budget manager who worked for 15 years in private industry before joining Fermilab. "In a way, the lab is jumping on the bandwagon that a lot of companies are already on."

"The new system will help people to become more effective project managers by providing information that will enable them to identify potential budgetary problems sooner. In particular, it will be a big help to be able to quickly see where they stand with respect to a project's labor efforts because they will now be able to make direct comparisons between man-hours spent and actual cost versus the cost estimate. The new system will put everyone in the same mode, thinking in terms of budgeting by activity versus budgeting by organization."

Fermilab

introduces

new Project

Accounting

System in April

## ON THE WEB:

**Business Systems at Fermilab:**  
[www-bss.fnal.gov/BusinessSystems/](http://www-bss.fnal.gov/BusinessSystems/)

**Presentations and FAQs related to Project Accounting at Fermilab:**  
[www-bss.fnal.gov/project](http://www-bss.fnal.gov/project)

**Conversion of budget codes to task numbers:**  
[www-bss.fnal.gov/apps.html](http://www-bss.fnal.gov/apps.html)



Photo by Reidar Hahn

The Project Accounting team had members from many different divisions and sections. In back (from left to right): Rich Karuhn, Marsha Liczwek, Shaji Zechariah, Mike Smith, Brad Trygar, Dean Hoffer, Mike Rhoades, Mike Kaiser. In front (from left to right): Suzanne Pasek, Bob Willford, Scott Nolan, Al Dhimar, Wei Gao, Cheri McKenna, Debbie Griffin, Linda Finks, Ann Nestander, Phill Miller. Not pictured: Joanne Hall, Sherie Landrud.

The new system will replace a proliferation of homegrown tools in different groups throughout the lab. The introduction of a common set of tools will allow for easier transfer of data among various applications and organizations. Setting up new project accounts and providing cost-estimates for a new project will also become easier.

To find the best software system, a core team of advisors surveyed lab employees who regularly use accounting tools, and developed a desired-features list for the new system. The team then began to evaluate software packages, looking for off-the-shelf software that required little customization. With financial support provided by Universities Research Association, which manages and operates Fermilab for the U.S. Department of Energy, the laboratory implemented the Oracle Projects system.

Switching to the new system will require various levels of training. The most noticeable change will be the demise of the old budget codes.

"Everybody knows and loves their three budget letters," said Connee Trimby, budget officer in the

Directorate. "We have come to the limit of what we can do with our three-letter system. Our accounting system hasn't changed since the laboratory started. The new system represents a complete overhaul of our accounting process. There are extensive behind-the-scene changes."

Relatively few people will need to learn the details of the system. For most people, it is sufficient to know the project and task numbers that replace their budget codes. Employees can look up those numbers on the Web at [www-bss.fnal.gov/apps.html](http://www-bss.fnal.gov/apps.html). A series of town hall meetings, held in February, provided key employees in different divisions and sections with additional information. (The presentations are available at <http://www-bss.fnal.gov/project/>.) People who need specific information will receive hands-on training.

"Hopefully we won't feel too big a hiccup when we roll this out at the beginning of April," said Chrisman. "It is a very important project for the lab. Although switching to the new system will require some adjustments and training of employees, the pay-offs will be substantial." ❄

# Good Neighbor Policy

New Energy Subcommittee chairman Rep. Judy Biggert hopes to boost funding for basic research

by Mike Perricone

In chairing the Energy Subcommittee of the House Committee on Science, Congresswoman Judy Biggert of the 13th District in Illinois has moved to the forefront of efforts to reshape national priorities in basic research funding—including the work at Argonne National Laboratory in her home district, and at Fermilab a few miles to the west.



Congresswoman Judy Biggert

During the 107th Congress in July 2002, Rep. Biggert introduced HR 5270, the Energy and Science Research Investment Act, which would increase the budget for the Department of Energy's Office of Science by 60 percent in four years, to more than \$5.3 billion. In addition, the act restructures DOE by elevating the Director of the Office of Science to the level of Assistant Secretary of Science, and creates an Undersecretary for Energy Research and Science.

As chair of the Energy Subcommittee, appointed on February 10, Biggert now leads the panel with jurisdiction over the federal government's civilian energy and science research, development and commercialization activities. Biggert re-introduced the Energy and Science Research Investment Act as HR 34 for the 108th Congress, and she sees the restructuring as critical to the future of research.

"It is my hope that this reorganization will improve the integration and coordination of DOE's basic science and applied energy research programs by vesting authority for all such programs with the new Under Secretary," Biggert told *FERMINEWS*. "The bill also establishes an overall science advisory board, consisting of the chairs of the advisory panels for each of the Office's programs, to give guidance to the new Assistant Secretary in prioritizing and coordinating research within the Office of Science."

Biggert, who has also introduced bills to strengthen elementary education in science and math, has a growing bipartisan list of cosponsors from coast to coast for the Energy and Science Research Investment Act. Currently numbering 74 co-sponsors, the list includes Reps. Vern Ehlers of Michigan and Rush Holt of New Jersey, the two physicists in Congress; and seven members of the Illinois delegation, Reps. Bobby Rush (1st), Bill Lipinski (3rd), Danny Davis (7th), Jerry Weller (11th), Jerry Costello (12th), Tim Johnson (15th) and John Shimkus (19th).

## ON THE WEB:

### Rep. Judy Biggert

<http://judybiggert.house.gov/>

### House Committee on Science

[www.house.gov/science/welcome.htm](http://www.house.gov/science/welcome.htm)

### Universities Research Association, Inc.

[www.ura-hq.org](http://www.ura-hq.org)

“*I support **Fermilab’s** pursuit of the MOST AMBITIOUS COURSE— not just for Illinois, but for the **U.S. high-energy physics community’s** rightful place among the LEADING THINKERS of the world.*”

Biggert’s proposal for funding increases in the Office of Science, and her support for a substantial increase in funding for the physical sciences, preceded a report released in late August of 2002 by the President’s Council of Advisors on Science and Technology (PCAST). The council, chaired by Georgia Institute of Technology president G. Wayne Clough, recommended that R&D funding for the physical sciences and engineering should be brought to parity with the life sciences over the next five budget cycles.

“PCAST’s recommendation was based on the fact that, just a little over thirty years ago, support for the three major areas of research—namely the physical and environmental sciences, life sciences, and engineering—was equally balanced,” Biggert said. “Today, the life sciences receive 48 percent of federal R&D funding compared to the physical sciences’ 11 percent and engineering’s 15 percent.

“Even a simple imbalance could have long-term implications for both the life and the physical sciences,” Biggert continued. “Already, Ph.D. candidates are choosing life sciences over physical sciences. As the PCAST report points out, ‘It is widely understood and acknowledged that the interdependencies of the various disciplines require that all advance together.’ This is one of the major reasons why I introduced legislation in the 107th Congress, and again in the 108th Congress, to significantly increase funding for the DOE Office of Science, the nation’s primary supporter of research in the physical sciences and high energy physics.”

Fermilab is located in the 14th Congressional District of Illinois, represented by Speaker of the House of Representatives J. Dennis Hastert, Jr. Rep. Biggert’s selection to chair the Energy Subcommittee was well received at Fermilab, and at Universities Research Association, Inc., the consortium of universities operating the laboratory under contract for the DOE Office of Science.

“We respect and admire Congresswoman Biggert’s record of leadership, especially in the areas of science research and science education,” said

Fred Bernthal, President of Universities Research Association, Inc. “She has worked very hard recently to redress the long-standing problem of inadequate funding for DOE’s Office of Science. We congratulate her on this new assignment, and we look forward to working with her as the new Chair of the Subcommittee on Energy.”

Fermilab Director Michael Witherell noted that an authorization bill for the National Science Foundation, similar to HR 34, led to the start of significant increases in appropriations at NSF. He also pointed out that Illinois is a national center of science research—and research funding.



On a visit to Argonne National Laboratory, Rep. Biggert (right) and Secretary of Energy Spencer Abraham (center) take a look at a hydrogen fuel cell with Argonne scientist Raj Sekar.

Photo by George Joch, Argonne National Laboratory

**“Fermilab is the place where ‘BIG IDEAS’ are conceived, tested, IMPLEMENTED IN EXPERIMENTS, and interpreted for the public.”**



Photo by George Joch, Argonne National Laboratory

Rep. Biggert and Bob Larsen, director of Argonne's Center for Transportation Research, view a gasoline-electric hybrid vehicle whose technology is being studied.

“Congresswoman Biggert’s appointment recognizes the fact that she has been the leading member of Congress on the issue of support for the Office of Science in the Department of Energy, our funding agency,” Witherell said. “It’s not widely recognized that 20% of DOE Office of Science funding comes to the State of Illinois, mostly for Argonne National Laboratory and for Fermilab. Illinois has one of the biggest stakes of all the states in the Office of Science. I think that’s part of what led Congresswoman Biggert to become interested in this issue. In other areas of research and development, the state of Illinois’ share of federal funding is more typically four or five percent.”

Already familiar with the Argonne program, Biggert also has a sound understanding of Fermilab’s research mission. She stressed her intention to maintain an active interest in the lab and its future.

“At no time in its history has Fermilab contributed more to the world’s understanding of particle physics than it is contributing today,” Rep. Biggert said. “Between operating the highest-energy particle accelerator, conducting leading neutrino experiments, and helping to design and develop the next-generation accelerator, Fermilab is the place every high-energy physicist wants to be. Illinois and the U.S. are proud of the lab’s role in global physics research.

“Fermilab is the place where ‘big ideas’ are conceived, tested, implemented in experiments, and interpreted for the public,” she continued. “The lab seeks answers to fundamental questions about the universe. I support Fermilab’s pursuit of the most ambitious course—not just for Illinois, but for the U.S. high-energy physics community’s rightful place among the leading thinkers of the world. There is little doubt that the mysteries of the universe can only be addressed by a robust program of frontier science. As Chairman of the Energy Subcommittee of the House Science Committee, I will be working with my colleagues from Illinois and elsewhere in Congress to support and enhance the role of science at the Department of Energy.”

Biggert also emphasized the importance of scientists participating in the political process.

“It is my goal to have these provisions incorporated into a comprehensive energy bill when it moves through Congress this year,” Biggert said. “But to be successful, I need to demonstrate that broad, bipartisan support exists for the funding levels and management changes contained in HR 34. That requires as many cosponsors as possible. The bill already has 74 cosponsors, but there are 435 members of the House. This is where [physicists] can help. Tell your colleagues across the country to write, call, and urge their Representatives to cosponsor HR 34. Spread the word that a robust high-energy physics program at the DOE requires a robust Office of Science, and that HR 34 guarantees both.” ❄

## FERMILAB ARTS SERIES Website for Fermilab events: <http://www.fnal.gov/faw/events.html>

To purchase tickets for Arts and Lecture Series events, or for further information or telephone reservations, call 630-840-ARTS weekdays between 9 a.m. and 4 p.m. Phone reservations are held for five working days, but will be released for sale if not paid for within that time. Will-Call tickets may be picked up, or available tickets purchased, at the lobby box office on the night of the performance beginning at 7 p.m. When coming to this event, only the Pine Street entrance to Fermilab will be open. For more information, check out our web page at [www.fnal.gov/culture](http://www.fnal.gov/culture).



### Dragon's Tale: Nai-Ni Chen Dance

March 8, 2003

Dragon's Tale is a feast for the eyes, mind, and heart. Bringing to life the culture and traditions of China, this full-length family show

leaves children mesmerized at each enchanting, astounding dance, and adults equally caught up in the magic of it all.

Tickets- \$19 (\$10 ages 18 and under)



### Quartetto Gelato

April 5, 2003

As the engaging innovators of a fresh approach to classical music, Quartetto Gelato has won the hearts of audiences worldwide since their remarkable

1994 debut season. The concert presentations combine supreme musicianship, irrepressible energy and charming wit, treating their listeners to an unforgettable musical event.

Tickets - \$21 (\$11 ages 18 and under)



### Orquesta Aragon

May 10, 2003

Founded 60 years ago, Orquesta Aragon is recognized as the premiere charanga group in Cuban Music. In keeping with the charanga-style, Orquesta Aragon is a 13 piece band that does not feature a brass-section, but rather vocals, flute, and violins on top of a rhythm section of piano, bass, congas, timbales, bongo and clave.

Tickets - \$26 (\$13 ages 18 and under)

## FERMILAB LECTURE SERIES

8 p.m., Friday, March 14, 2003

### Mapping the Heavens: The Universe Revealed by the Sloan Digital Sky Survey

Joshua Frieman, Fermilab and the University of Chicago

A panoramic tour of the SDSS project: from the novel technological innovations it incorporates; to the beautiful images of galaxies, nebulae, stars, and other objects it has produced; to the new understanding it has given us of these varied phenomena. The presentation will include a virtual

'fly-through' of the 3-d map of 250,000 galaxies, providing an unprecedented view of the vast structures—clusters, filaments, walls, and voids—that extend throughout the Universe.

Tickets- \$5

## MILESTONES

### EPRA AWARDS

Fermilab Employee Performance Recognition Awards, presented by director Michael Witherell on Feb. 17, 2003, to:

- Mike Church (ID 07480N) BD-DH-Headquarters Staff
- Cons Gattuso (ID 08022N) BD-Main Injector Dept
- Dave Johnson (ID 04214N) BD-Main Injector Dept

- Ioanis Kourbanis (ID 09037N) BD-Main Injector Dept
- Paul Lebrun (ID 06058N) CD-Computing & Engineering for Physics Applications
- Dave McGinnis (ID 08040N) BD-BS-Antiproton Source Dept
- Shekhar Mishra (ID 08870N) BD-Main Injector Dept
- Stephen Pordes (ID 04663N) BD-DH-Headquarters Staff
- Vladimir Shiltsev (ID 11340N) BD-BS-TeVatron Dept

### RETIRING

- Jim Fisher, ID 11993, TD Headquarters, February 28.

### DEATHS

- Jack Lockwood, ID 270, Accelerator Division, EE Support (ret.), October 1, 2002.
- Jerry R. Reeder, ID 9921, PPD-Mechanical (ret.), February 21, 2003.
- Jim Schiltz, ID 1775, Chief Accounting Officer (ret.), February 27, 2003.

LUNCH SERVED FROM

11:30 A.M. TO 1 P.M.

\$10/PERSON

DINNER SERVED AT 7 P.M.

\$23/PERSON

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[HTTP://WWW.FNAL.GOV/FAW/EVENTS/MENUS.HTML](http://www.fnal.gov/faw/events/menus.html)

### LUNCH WEDNESDAY, MARCH 12

Cannelloni  
Italian Salad with Tomatoes  
Raisin-Rum Spice Cake

### DINNER THURSDAY, MARCH 13

White Bean, Potatoes and Arugula Soup  
Rack of Lamb  
with Chutney Mint Glaze  
Mushroom Orzo Pilaf  
Carrot and Green Bean Julienne  
Bourbon Walnut Pie

### LUNCH WEDNESDAY, MARCH 19

Golden Chicken Kebob  
Persian Rice  
Lentils with Carrots and Marjoram  
Baklava

### DINNER THURSDAY, MARCH 20

Minestrone  
Grilled Jumbo Shrimps  
with Garlic Herb Butter  
Spinach Fettuccine  
Chocolate Whiskey Cake

## F E R M I N E R W M S

F E R M I L A B  
A U. S. D E P A R T M E N T O F E N E R G Y L A B O R A T O R Y

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The deadline for the Friday, March 21,  
2003 issue is Tuesday, March 11, 2003.

Please send classified ads and story ideas  
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Please include your name and daytime  
phone number.

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## CLASSIFIEDS

### FOR SALE

- '01 PT Cruiser, Limited Edition, auto., inferno red, gray leather, all factory options, only 7K miles, garage kept, never in rain or snow. Like brand new, lady driver, beautiful car. \$18,500. Contact evenings 815-498-4517 or email barbor@fnal.gov.
- '96 Ford Taurus, V6 3.0 liter, auto., AC, AM/FM stereo cassette, ABS, air bags, power door locks, power steering, tilt, cruise, integrated phone. Good condition. 88K miles, female owned/driven. Contact 630-840-3000 or 961-9235.
- '95 Jeep Grand Cherokee 4x4, fully loaded, excellent condition, high miles but well maintained. \$5,000 o.b.o. Contact Shane at 630-742-4211.
- '92 Oldsmobile Royale 88, 4 dr luxury sedan: loaded, power everything, am/fm/cassette, 84K miles, well maintained. \$3,000. Contact Pierrick 630-840-5555 or email hanlet@fnal.gov.
- '89 Chevy Cavalier, 5-speed, new battery, starts reliably, 135K miles, good work car. Asking \$450. Contact Jeremy at 630-557-2166.
- Pair of Gemini Speakers 320 Watt, 15" woofers 7 x 4 midrange 3 Motorola tweeters \$150 pair. Contact 630-505-0276.
- Sofa, love seat, chair—matching 3-piece leather set. Color is off-white/creme. Good condition. \$400. Contact 630-840-2253 or e-mail schmitz@fnal.gov
- Bedroom set, 7 pieces total. Good condition. Queen size headboard and frame, 2 night stands, dresser with mirror, and armoire. Light brown in color. Bought at \$980, asking \$475 o.b.o. Contact Brian 630-840-6821 work, 630-892-4564 home.

- FE Olds trumpet, 4-1/2 years old, used 3-1/2 years Excellent condition, \$400 o.b.o. (\$750 brand new). Contact 630-505-0276.
- 15" VIEWSONIC monitor for Mac, \$75 o.b.o. Epson Stylus 700 Photo Printer, \$25 o.b.o. Contact 630-377-9252.
- Waterbed, king size, honey pine color, bookcase headboard, motionless mattress, padded rails, heater, safety liner, \$200. Contact Ron at 630-840-8864 or 630-466-1823 evenings.
- Custom cut Holstein beef, 1/4, 1/2, or whole. Contact Mark at 630-840-3719.
- Two tickets to Tommy Gun's Garage—March 15th. Prohibition Era Speakeasy Dinner and Show sponsored by Fermilab Recreation Office. Transportation included. Contact 630-840-2568.

### HOUSES FOR SALE

- Two-story home near the Fox Valley area. 15-20 minutes to Fermilab. 3 bedrooms, 1.5 bath, covered patio and 2 car attached garage in kid friendly development. Neutral decor with light oak woodwork. Many upgrades. Built in 2001. \$152,000. Contact Patrick at 630-840-2977, donahoe@fnal.gov for more info.
- 2,450 sq. foot, 4 bedroom, 3 bath, very rustic and VERY secluded home on 2-1/4 acres in Bardstown, Kentucky. Separate 1,120 sq. ft. heated building, great for hobbies or workshop, has own kitchen and bath area with separate utilities. Plus two large storage buildings. Priced below market value at \$155,000 (appraised \$175,000 in Dec. 2002). Email for information sheet and photos: pacord@kyol.net or contact 859-336-0919

### FOR RENT

- Spacious bedroom with private bath on independent floor, one-car garage; spacious living area shared on same floor; use of laundry and main kitchen; located in a family house in residential Naperville, 20 min from the lab. Available beginning of March. \$495 per month. Contact 630-840-2574 during office hours
- House to share: ~10 miles from Fermilab, pvt room, all facilities—washer/dryer, dishwasher, fireplace, subdivision pool and tennis courts. \$500 per month includes all (except telephone), non-smoker. Contact Pierrick 630-840-5555 or hanlet@fnal.gov.

### SERVICES

- Need help preparing your taxes, save at least 20% off last years preparation fees. Contact Jack 630-840-5674 or 815-577-8450.

### BIBLE STUDY

- Bible Study group meets every Wednesday at noon (12-12:30 pm) in the Huddle (by the Control Room). The current study is entitled "Journey Into Happiness." Check out the #1 best seller of all time for yourself—with no strings attached. All are welcome. Info at 630-840-3607 or dykhuis@fnal.gov.

## CALENDAR/LAB NOTES

### FERMILAB CHILDREN'S SUMMER DAY CAMP

- Registration begins March 1. Deadline is March 28. A lottery drawing is held March 31 for acceptance into the camp. Information can be found in the Recreation Office, WH15W, x2548, x5427 and on the Recreation web page at <http://fnalpubs.fnal.gov/benedept/recreation/dependent.html>.

### NALWO

- NALWO (National Accelerator Laboratory Women's Organization) cordially invites Fermilab women to a Low/Fat Russian Cooking Demonstration and Tasting/Luncheon, April 4, 2003, 10:30am at Chez Leon in the Users Center; please contact Sue, x5059 or mendel@fnal.gov for more info <http://www.fnal.gov/orgs/nalwo/030404Cook.htm>

Website for Fermilab events: <http://www.fnal.gov/faw/events.html>

### BARN DANCES

- The Fermilab Folk Club will present two outstanding barn dances in March. Fred Campeau and Friends play Sunday, March 9 at 6:30 p.m. with calling by Spider Vetter. On Sunday, March 16 at 2 p.m., traditional midwest fiddlers Dan Gellert and Lynn "Chirps" Smith will play and Dot Kent will call. Barn dances are held in the Warrenville Community Building and feature traditional square and contra dances. Admission is \$5 for adults, \$2 for age 12-18, and free for under 12 years old. Come with a partner or without; bring the family or not. For more information contact Dave Harding (x2971, [harding@fnal.gov](mailto:harding@fnal.gov)) or Lynn Garren (x2061, [garren@fnal.gov](mailto:garren@fnal.gov)) or check the webpage at <http://www.fnal.gov/orgs/folkclub/>.

### MARCH 12: VIRTUAL ASK-A-SCIENTIST

- "The next Virtual Ask-a-Scientist will be on Wednesday, March 12 from 7:00 to 9:00 p.m. Central Time. Ryan Patterson and Jennifer Raaf, both of Fermilab's MiniBooNE experiment will answer questions live online. For more information, go to <http://www.fnal.gov/pub/inquiring/virtual/index.html>."

### CALL FOR ENTRIES

#### Fermilab Arts and Craft Show

- May 1, 2003 to June 2, 2003.
- Open to all Fermilab employees, visiting scientists or graduate students, retired employees, contractors and any member of his or her immediate family. Pick up applications at Atrium Desk. Questions?? Contact 630-840-6825 or [Georgia@fnal.gov](mailto:Georgia@fnal.gov).

### GOLF LEAGUES

- Fermilab offers several golf leagues that begin play in April. Everyone is welcome to join one or more of these leagues. Anyone at Fermilab can play: men and women, beginners and seasoned veterans, lefty's and righty's, etc. There are five different leagues, and they meet on Tuesday, Wednesday or Thursday evenings. For details, visit our web site at <http://mccrory.fnal.gov/golf>.

<http://www.fnal.gov/pub/ferminews/>



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