

# FermiNews

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Linda Spentzouris,  
pictured below



Photo courtesy of the University of Texas at Arlington

Peter Rosen in his office at the University of Texas at Arlington.

## Peter Rosen Takes Job at DOE

by Leila Belkora, Office of Public Affairs

Physicist Peter Rosen, who currently is Dean of Science at the University of Texas at Arlington, has accepted the position of Associate Director for High-Energy and Nuclear Physics at the Department of Energy. Rosen, who says his main job will be "to make the case for high-energy and nuclear physics to people who decide on the funding," will assume his new responsibilities on January 27.

During the search for a permanent associate director, John O'Fallon took the role of acting associate director, while remaining director of the high-energy physics program.

"John O'Fallon has directed the DOE high-energy physics program through its most difficult years to date, starting with the gradual reduction of the base program, and the demise of the SSC," said Fermilab Director John Peoples. "Despite these challenges, the U. S. has had a strong high-energy physics program because of the Department's contribution. The discovery of the top quark is a consequence of programs that John guided," he added. Rosen said of O'Fallon, "He's done a fine job, and I look forward to working closely with him on the program."

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# Texas in Chicago

It's named for the Lone Star State, but the Texas Symposium explored whole galaxies—and attracted a few stars of its own—in Chicago last month

*by Donald Sena, Office of Public Affairs*

The 18th Texas Symposium on Relativistic Astrophysics and Cosmology, held Dec. 15–20 in Chicago and hosted by Fermi National Accelerator Laboratory and the University of Chicago, once again provided an international forum for major developments in astronomy and astrophysics.

The biennial event, attended by nearly 800 scientists, included talks by several Nobel laureates and prominent researchers from around the world—all presenting important work in disparate fields and providing robust discussion and debate about topics such as dark matter, cosmic backgrounds, the age of the universe and gamma-ray bursts. Joshua Frieman, head of Fermilab's Theoretical Astrophysics Group, and David Schramm, vice president for

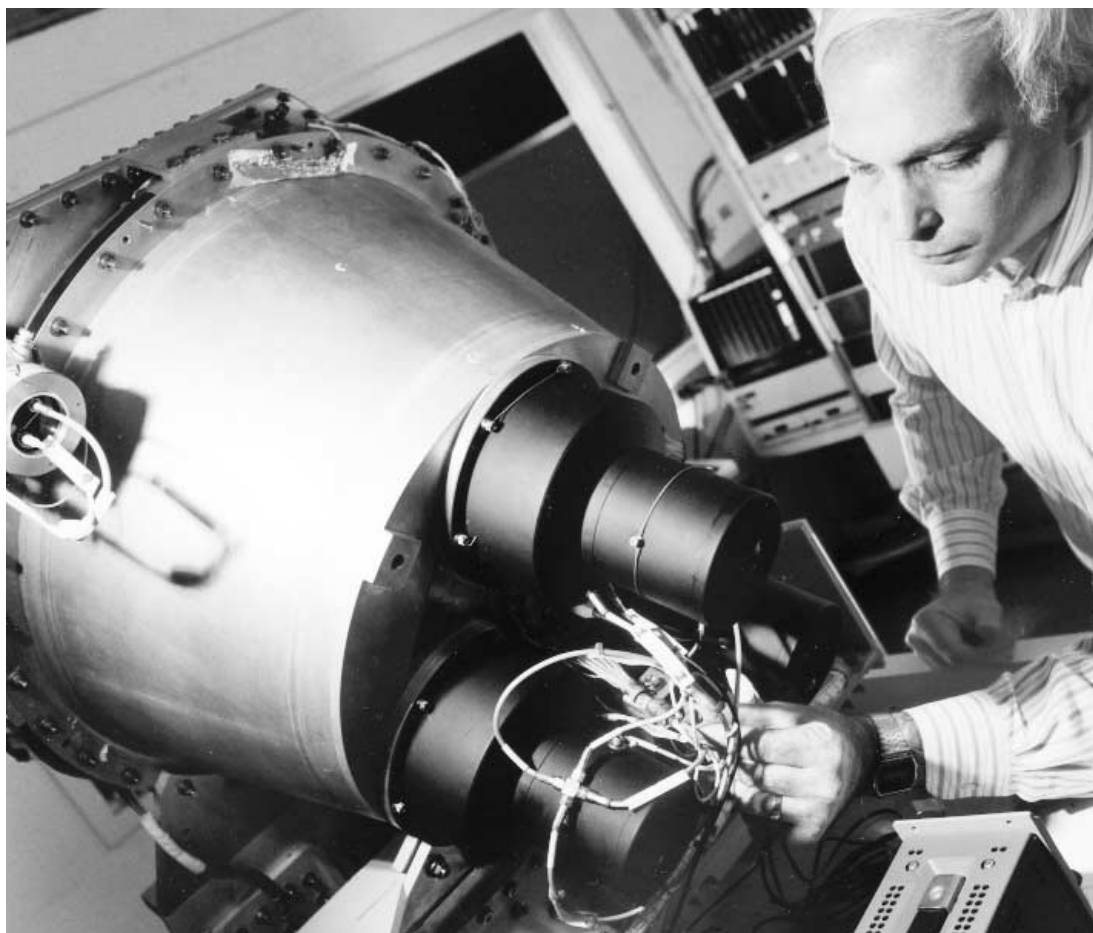
research at the University of Chicago, co-chaired the symposium.

"Driven by an array of ground- and space-based observations, astrophysics and cosmology are entering a new era of exciting development. This excitement was reflected in the variety of talks and posters presented at the symposium," said Frieman.

Mayor Richard M. Daley welcomed the scientists to Chicago on the symposium's opening morning. Hugo Sonnenschein, president of the University of Chicago, and Fermilab Director John Peoples followed the mayor at the podium. In his address, Peoples recalled the conference's rich history and the remarkable developments since the initial meeting in Dallas in 1963. Peoples also

"Particle physics and astrophysics are intimately intertwined in many of the fundamental questions facing us today..."

~ John Peoples,  
Fermilab Director



NASA photo by Dennis Keim

Gerald Fishman, seen here working with Burst and Transient Source Experiment equipment, is the principal investigator on BATSE. Fishman and others on his team presented their recent gamma-ray bursts findings at the Texas Symposium.

Joshua Frieman, head of Fermilab's Theoretical Astrophysics Group, was a co-chair of the symposium.

Photo by Reidar Hahn



touched upon the recent closer collaboration between the particle physics and astrophysics communities.

"Particle physics and astrophysics are intimately intertwined in many of the fundamental questions facing us today: what is the origin of the asymmetry between matter and antimatter? What is the nature of the dark matter? Why is the universe so smooth on large scales? What is responsible for the origin of galaxies? What is the ultimate fate of the universe—will it expand forever or recollapse in a Big Crunch? What is the origin of the highest energy cosmic rays? While particle physics has helped us frame these questions and offers suggestive solutions,

Stephen Hawking (center of photo), from Cambridge University, gave a public lecture at Chicago's Field Museum in conjunction with the symposium.



Photo courtesy of the Fermilab Foundation

observational astrophysics and cosmology, in turn, are now providing complementary tools to study the nature of fundamental physics," said Peoples.

## Symposium News

Gamma-ray bursts, sporadic flashes of extremely intense radiation whose origin is hotly debated, provided the biggest news of the symposium. Scientists working on the Burst and Transient Source Experiment (BATSE) at NASA's Marshall Space Flight Center in Alabama detected what NASA said were possibly repeating bursts in one region of the universe. In the past, the experiment has detected only about one gamma-ray burst on a given day, randomly located throughout the universe and lasting only 10–30 seconds.

"That's what makes these recent events so unusual," said BATSE collaborator Charles Meegan in a NASA news release detailing the findings. "They came right after one another, about two days apart, and all from the same part of the sky. Moreover, the last one was much longer than usual, lasting 23 minutes."

The NASA announcement at the Texas Symposium, while not quelling the debate on the causes and distances of gamma-ray bursts, intrigued the science news media and generated stories by *The New York Times*, the *Chicago Tribune* and the Associated Press, among other news outlets.

## Science Talks

In total, several hundred scientists addressed the symposium at the morning and afternoon sessions. Nobel laureate Jim Cronin, from the University of Chicago, led a session on the highest energy cosmic rays, particles that possess energy surpassing that achieved by the world's particle accelerators.

British Astronomer Sir Martin Rees addressed the gamma-ray bursts mystery, along with other scientists. Joseph Taylor, from Princeton University, spoke about pulsars, the subject of his Nobel-Prize winning work. Wendy Freedman, an astrophysicist from the Carnegie Observatories, summarized the results of many experiments that estimate the age and expansion rate of the universe and the amount of matter it possesses. A symposium session on large-scale structure focused on recent observational results from the Hubble Space Telescope, the 10-meter Keck telescope, and the ROSAT and ASCA x-ray satellites, on issues such as how galaxies evolve and the nature of galaxy clusters. Symposium talks also covered results from recent galaxy surveys and plans for new studies, such as the Sloan Digital Sky Survey and the Two-Degree Field, which will map out

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# CDF Unplugged

By Leila Belkora, Office of Public Affairs

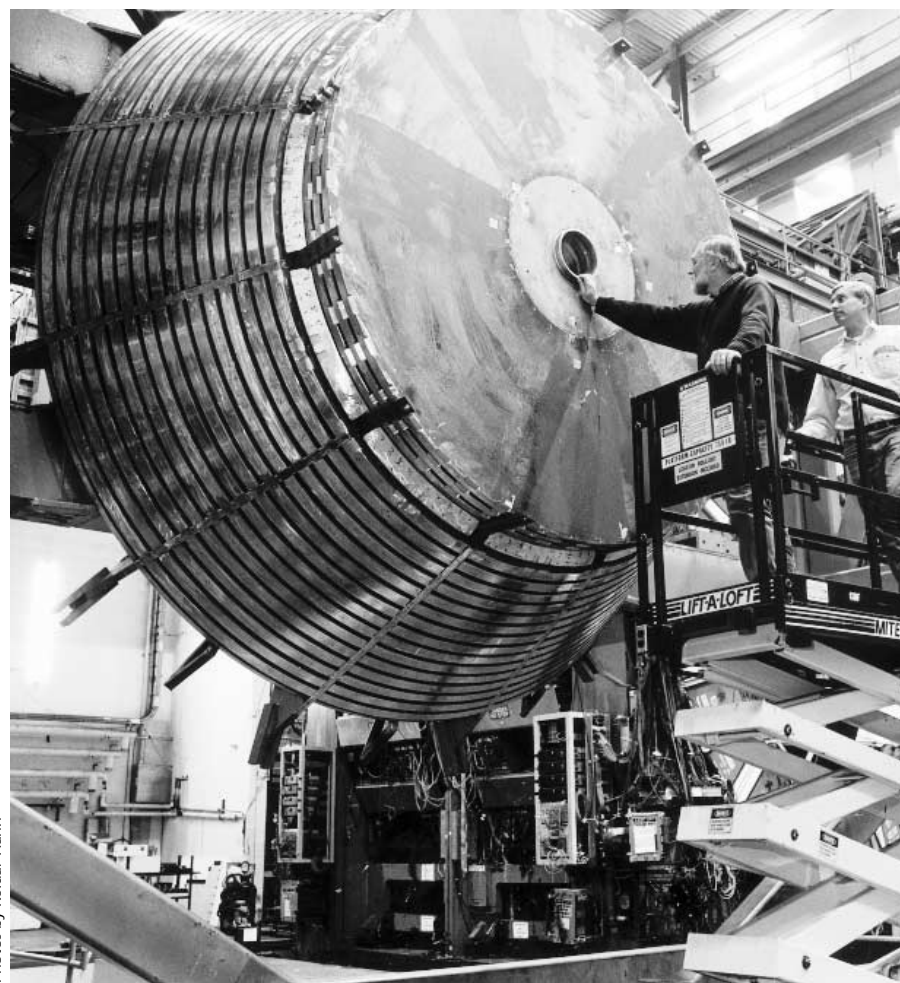
It's not quite like the problem of the square peg and the round hole, but removing the funnel-shaped end plugs from the central detector at CDF was no easy job when collaborators pulled them out last July. The two 80-ton detector elements fit in their slots at the east and west ends of the central detector with one half inch clearance. Sliding the end plugs back into place later this year when they've gained another twenty tons each will be even trickier. Experimenters and engineers look forward to that delicate operation, however, as the culmination of five years' work designing and building new end plug components. The upgraded end plugs will enhance the performance of the entire detector and will allow physicists to refine, among other things, their measurement of the mass of the top quark.

The end plug calorimeters measure the energy of particles emerging from proton-antiproton collisions in the heart of the central detector. They monitor a cone-shaped region along the accelerator axis, the "forward" and "backward" directions as seen from a particle in the beam. They consist of alternating layers of steel or lead and detector material, stacked horizontally like plates in a dish rack.

Last fall, members of Local 393 iron-working crew ground out the inner cores of the old plugs. CDF engineers erected a temporary wood shelter around the work area in the detector assembly hall pit to protect the rest of the instruments in the hall. "We're always worried about dirt that we can't remove later, so we built a 'dirty room' to protect the central detector from the grinding and from welding fumes," said Harry Carter, chief engineer in charge of the end plug assembly.

Task Manager Mike Nurczyk sympathized with the crew's awkward preparations for the job. "The biggest pain was having to dress up: the masks, suits, ear protection, eye protection. Everybody had to be fitted for special respirator suits. They wore a little cloth in back so they didn't get dust down their neck, and big leather gloves. It was very hot in there; the suits don't let any air through," he said. Carter concurred, "Those guys worked like troopers."

The plugs recently emerged from the dirty room with shiny new steel exterior rims. "I think they look like old space capsules, like the Mercury spacecraft," said Carter. Where previ-



Photos by Reidar Hahn

ously the instruments only recorded particles emerging from the collision area at an angle greater than 10 degrees, the coverage now extends down to three degrees, thanks to an inward extension of the old plug material.

CDF physicists will fit the plugs with "pizza pans," thin wedges that mechanically support a new calorimetry system based on scintillating tile and optical fiber technology. The pizza pans will fill the volume between the steel spacers, whose function is to "slow down" incoming particles so that they deposit their energy in the detector.

The scintillating tile technology will ensure that the end plugs can keep up with the faster rate of proton bunches circulating in the Tevatron after the Main Injector comes online. "In its previous incarnation the plug was a gas-based detector," said physicist Giorgio Apollinari, who, with Mike Lindgren, is project manager for the plug upgrade. "The time it took to collect the charged particles created by the 'debris' from the proton-antiproton interactions was longer than the new bunch spacing in Run II. Therefore we decided to move to a calorimeter based on scintillating tile technology. We'll work with light [instead of electrons drifting in gas], so we can collect the energy deposited in the calorimeter in a short time."

CDF engineer Harry Carter left, and Task Manager Mike Nurczyk inspect the hadronic section of one of the end plugs in the CDF assembly hall pit.



Carter and Nurczyk inspect the hadronic section of one of the end plugs in the CDF assembly hall pit. The second end plug is behind them. In the background is the central detector.

The scintillating material emits light when a particle passes through and ionizes atoms. Optical fibers collect the light and photomultiplier tubes convert the optical signal to an electric current to measure the energy deposited by the particle.

Fermilab physicists and engineers began to plan for the end plug upgrade in 1991 under the leadership of physicist Peter Limon, who now heads the Technical Division. From 1991 to 1995 the end plug collaboration focused on defining technical choices and building detector elements.

"We picked up a project that was well developed in 1995," said Apollinari. "When we started the project scintillating tile was new technology—it was a shot in the dark. A prototype in 1991 demonstrated that it worked, and it has now been adopted by other high-energy physics experiments." The CMS detector at CERN and the STAR experiment at Brookhaven National Lab adopted the technology. "It's part of our achievement to have shown the world that this technology can be used with no major drawbacks in large-scale calorimeters," said Apollinari.

The upgrade project draws on the skills of university physicists, Fermilab engineers, and industrial engineers. The Technical Division had "a huge responsibility," according to Apollinari. Jim Kerby, engineer in charge of the end plug upgrades in the Technical Division, said the project has been particularly satisfying for engineers in his division, who have participated in several aspects of the design and structural modifications. "It was all interesting—there's a collaboration of many tens of people from about 10 universities. It's really been a nice project from the standpoint that we got involved early on and were able to help make decisions about the best detector they could make, given the constraints."

A Japanese company, Kuraray, and an American firm, Bicron, provided scintillating material and fibers. The Hamamatsu Company worked with CDF physicists to develop a new type of photomultiplier tube to collect the signals from several optical fibers at once. Italian physicists are providing the high-voltage systems and a laser calibration system for the photomultipliers. Japanese physicists built the electromagnetic calorimeter in Japan.

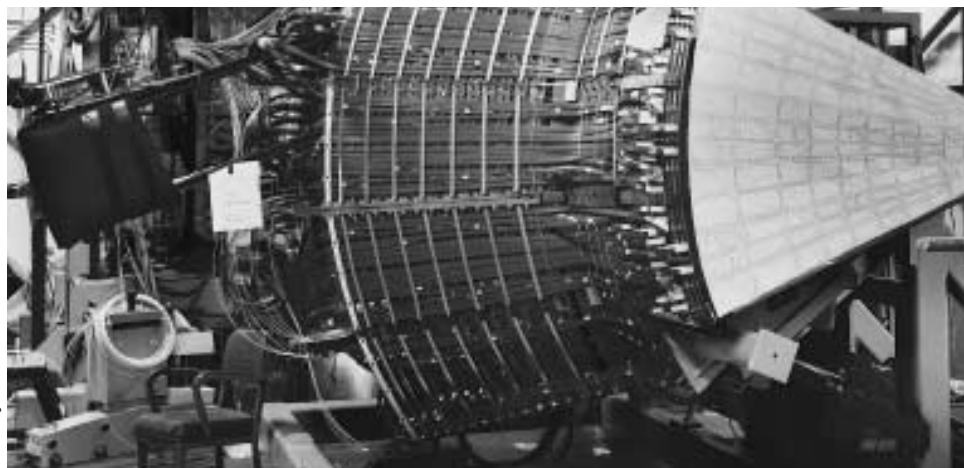


Photo by Reidar Hahn

American physicists from the Rochester, Michigan State, UCLA, Rockefeller, Brandeis, Wisconsin and Purdue universities are working on other parts of the calorimeter, including systems to track electrons and the routing of the optical fibers. "There are 25,000 fibers per end plug, and it's a very clean design," said Kerby.

The big job facing CDF collaborators is to assemble all the components of the end plugs. The plug sections closest to the particle interaction region, known as the electromagnetic sections, are still under construction in the Technical Division labs. These sections capture the signals from gamma rays and electrons. The large plug sections in the CDF pit comprise the hadron calorimeters, further from the interaction region and better suited to record the passage of energetic muons and pions. Engineers will join the electromagnetic and hadron sections and attach the photomultiplier tubes. "Making it all come together is the biggest single challenge, the assembly of the entire device," said Carter.

The confidence of end plug collaborators stems from their use of a test model that is currently taking data. "The test beam that we're successfully running now has all the technical solutions implemented, so we'll be able to use the end-plug calorimeter from day one of Run II," said Apollinari. "That's important, because this detector will be on the front line of the challenge of the high interaction rate" provided by the Main Injector upgrade.

For Kerby, recent successful runs with the test beam speak for themselves. "That's one of the nicest ways to show completion on a collaborative project. The proof's in the pudding—a lot of people did a lot of things right." ■

The test beam is a replica of a section of the end plug, incorporating all the new technology and designs in the upgrade model. Data from the test beam helps physicists understand the response of the real end plug to a beam of energetic particles in the Tevatron.

Fermilab guest scientist Jun Iwai demonstrates how the "pizza pans" will fit into the end plugs. He stands in front of a model of one electromagnetic section of the end plug in Lab 5.

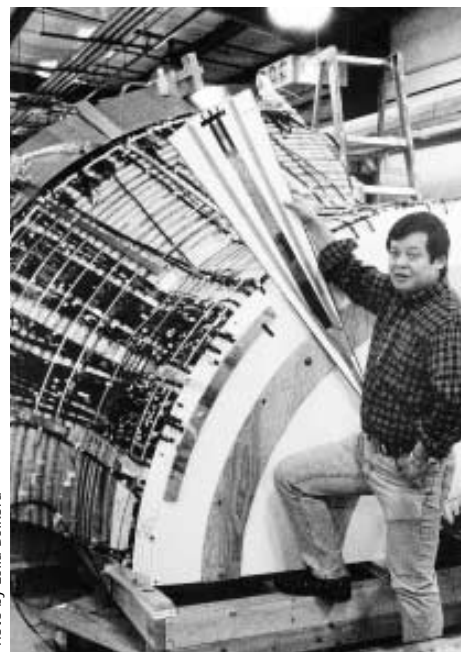


Photo by Leila Belkora



# Fermilab Exhibit Demonstrates Synergy of Art and Science

*Photos by Reidar Hahn, Visual Media Services  
Text by Donald Sena, Office of Public Affairs*

It's quintessential Fermilab, a direct extension of what Bob Wilson envisioned.

Fermilab's founding director, an artist himself, believed that science and art could not only coexist, but should complement each other—a belief that moved the director to build a science laboratory where art has an integral role. The current display in Fermilab's Art Gallery vividly embodies this tradition.

The art exhibit on the second floor gallery of Wilson Hall, organized by Angela Gonzales, comprises actual experiment equipment put on display for its intrinsic visual appeal. The show is called "VIRTU: Homage to Physics Artisans at Fermilab," and will run until the end of February. The show was held over due to its popularity.

"The objects that form the apparatus of an experiment are always the result of intense thought. Their appearance may be shaped by trial and error, but never by accident," wrote Fermilab Director John Peoples in the exhibit's catalog. "...At each stage choices are made after which the object is different, and each choice follows from the values of the chooser. Rarely are these selections exclusively the result of some set of cold numbers, because the creators of these objects felt satisfied if the object was pleasing to their senses as well as functional... There are no systems of standards for beauty in experimental apparatus and the physics artisan is not constrained by a school of esthetics."

The photographs here are a sampling of the objects on display; captions and numbers are from the exhibit's catalog. ■



## "55"

Brian Chase and Jim Zagel, both of the Beams Division, view a target holder. The "computer controlled solid target carousel [was] used in experiment 665, which was installed in the New Muon Lab."

## "66"

Steve O'Day, of the Beams Division, checks out another apparatus on display in the Homage to Physics Artisans show. He is looking at a glass negative of a microstrip chamber.

## "41"

Lead-Glass Cerenkov Counters: "These pyramid-shaped pieces of glass are spares from the E760 electromagnetic calorimeter. They are used for distinguishing electrons and photons from other types of particles and measuring their energy."

## "9"

In 1992, a physicist at a laboratory in Germany wrote to Fermilab "concerning production of boards [like the one at right] to be used in the rear drift chamber" for one of their experiments. "Fermilab is one of the few facilities that can produce large boards with the precision necessary for this type of detector."

## "20"

CDF luminosity monitor: "This chamber was part of the CDF beam vacuum system designed by the Italian collaboration. It contains six trapezoidal silicon detectors, housed in 'petals' for shielding from the fierce electromagnetic pulse created in the wake of the passing beam bunches."

## "4"

Silicon Vertex Detector: "This 20-centimeter diameter barrel fit tightly around the Tevatron beampipe in Collider Run I. It has 23,000 strips etched in silicon wafers with separations of 60 microns between the strips."

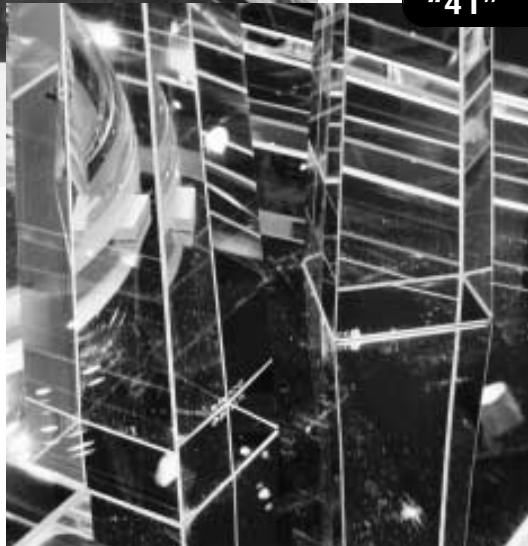
## "5 and 6"

This display case contains smaller pieces of experiment apparatus, including titanium nitride coating equipment and a radio frequency input coupler-cold window assembly.

"55"



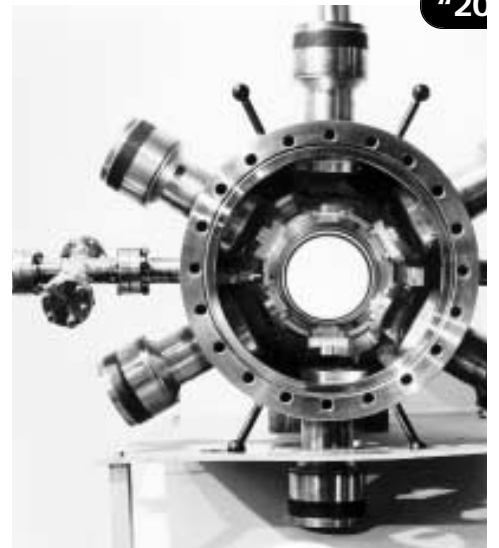
"66"



"41"



"9"



"20"



"4"



"5 & 6"

## Peter Rosen

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Rosen's position puts him in a management level between the long-term civil servants who administer the research programs and the upper level of DOE management that undergoes changes with every new administration. "As I see it, most of my job is to interface between the [HEP and Nuclear Physics] programs and Martha Krebs. Martha Krebs is a political appointee; my position is a permanent one," said Rosen.

Columbia physicist Frank Sciulli, who served with Rosen on past HEP Advisory Panel committees, said one of Rosen's strengths is his eloquence in promoting the value of research in fundamentals of physics. "I think Peter can elucidate for lay people very well the importance basic science plays in our society, in our culture, in our future. He can be very eloquent and he certainly will be a good advocate for science," he said.

Rosen admitted he is preparing to try to capture the public's imagination with an understanding of basic concepts.

"Energy is an overused word—people don't appreciate how important it is. Energy takes many different forms. I'd like to make energy an exciting word the way NASA has made space research exciting," he said.

Stan Wojcicki, a Stanford University physicist and member of the MINOS collaboration on Fermilab's planned NuMI project, served on the search committee to find a replacement for previous Associate Director Wilmot Hess, who retired in 1996. Wojcicki said Rosen's scientific interests make him a good choice for the position.

"He will deal with both nuclear physics and high-energy physics, and he's eminently qualified because he has been working at the interface, studying weak interactions and neutrino physics, over the last decade or two," he said. Wojcicki added that Rosen has administrative experience, a wide knowledge of physics, and the respect of his fellow scientists.

Rosen is familiar with the research environment both at universities and in the national labs, here and abroad.



John O'Fallon, director of the High-Energy Physics Program in DOE's Office of Energy Research.

Before taking his current job at the University of Texas, where he was instrumental in getting the Physics Department involved in accelerator-based research, Rosen worked at Los Alamos.

"I was a program officer for DOE and NSF; I've had a broad range of experience. I've been around a long time," he said. Rosen received his Ph.D. in Physics in 1957 from Oxford University and became an American citizen in 1972.

Rosen's personal interests in physics center on neutrinos. "I'd like to see the NuMI project proceed 'with all deliberate speed,' as they say," he noted. His broad view of DOE plans, however, centers on U.S. participation in CERN's Large Hadron Collider and what is to come after that.

"The LHC has to be an important priority, because the LHC will be the next energy frontier," he said. "But people must start to think about the next step, beyond the LHC. One has to begin to lay the groundwork for that. My own preference is that by taking part in the international collaboration that is the LHC, it will lay the groundwork for an international collaboration, but in the U.S. That's a far-reaching plan." ■

## Texas in Chicago

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the large-scale structure of the universe on an unprecedented scale.

One highlight of the symposium was the presence of Stephen Hawking, from Cambridge University. Hawking gave a public lecture at Chicago's Field Museum on December 17, detailing his work through the years.

### History

The late Alfred Schild, of the University of Texas at Austin, and Ivor Robinson, of the University of Texas at Dallas, organized the first Texas Symposium after the discovery of quasars in 1963, according to a source at the University of Chicago. The second event, held in Austin the next year, focused on gravitation, relativity and high-energy astrophysics. The success of the first two conferences led to other institutions offering to host "Texas" symposia. Subsequent conferences were held in New York, Baltimore, Munich, Tel Aviv and Brighton, UK, among other cities. All kept the name, in honor of the first two meetings, although some say the name is confusing due to the itinerant nature of the symposium. The 1998 Texas Symposium will be held in Paris. ■

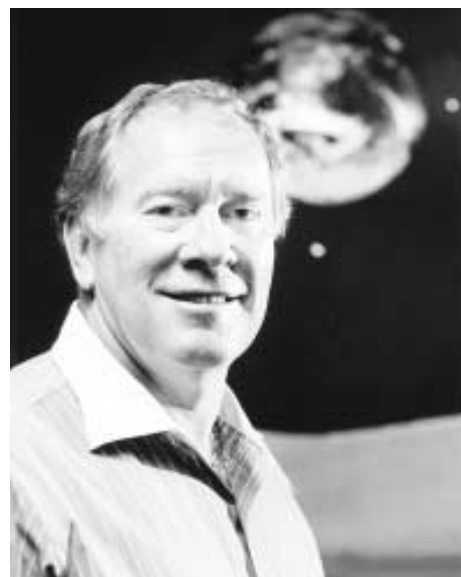


Photo courtesy of the University of Chicago

David Schramm, vice president for research at the University of Chicago, was the symposium's co-chair with Josh Frieman.



# Profiles

PARTICLE PHYSICS

## Linda Klamp Spentzouris

Research Associate,  
Beams Division

D. #5068

'...When you study something in a purely academic way, often you get concrete possibilities for using the information you gained.'

by Leila Belkora, Office of Public Affairs

Linda Klamp Spentzouris is shy about taking credit for her accomplishments, including a doctoral dissertation in beam physics that won the Outstanding Doctoral Thesis prize for 1997 from the American Physical Society. Her colleagues at Fermilab aren't shy with praise for her, however. The Lab recently hired Spentzouris to develop prototypes and concepts for accelerators of the future. "She's gifted," says her thesis advisor and supervisor Pat Colestock. "She's going to be working on one of the more innovative projects in the Beams Division.... She can do so many things."

Spentzouris is truly a "Fermilab home-grown" physicist. She started working at the Lab in 1981, as an operator in the Accelerator Division. "I was thinking of it as a short-term job," said Spentzouris. "I thought I'd only stay for three years or so. I thought I might go back to school, but I wasn't sure, and I didn't know what field I would study if I did go back.... I ended up staying a lot longer than I thought I would."

Spentzouris took some engineering classes and learned to program computers, but it wasn't until she attended a workshop on particle accelerators led by Fermilab physicists Don Edwards and Mike Syphers that she found her calling. Said Spentzouris, "I asked them to teach their class on the fundamentals of accelerator physics to the Operations Group, which they did, and I really liked it. During that time I realized I was more interested in that than in anything else. I got some people at the Lab, like Don Edwards and David Finley to help me do some more beam physics, to solidify in my own mind that that's what I wanted to do, before I made the step of quitting my job." Spentzouris then enrolled as a graduate student at nearby Northwestern University in Evanston, conducting research on the Fermilab Accumulator and Main Ring accelerators.

For her thesis, Spentzouris studied the way a beam of protons or antiprotons spreads, or diffuses. Ideally, particles in the beam travel as a narrow bundle. In practice, the beam starts to disperse as particles bump into one another and knock each other off course.

Spentzouris found a way to obtain information about the spreading of the beam by giving it a judicious "kick." The beam is like a Slinky, or flexible coil; pinching the coils together along part of its length and releasing them causes compression waves to travel along the coil. In a similar way, applying an electric field can cause the beam to bunch up and stretch out along the direction of its motion. "When I say 'kick the beam' I mean applying



Photo by Jenny Mullins

the kind of field that causes these density perturbations," said Spentzouris. The response of the beam to two carefully timed successive kicks helps probe the diffusion process in the beam.

Measuring the diffusion rate is useful to physicists and engineers who manage the beam for the benefit of the experimental programs. Previously, it took several hours to characterize the problem; with the method Spentzouris developed, accelerator physicists can measure the diffusion in a few minutes. The method was an unexpected spin-off from Spentzouris' studies. "Most of my work was in that investigative stage, trying to understand the phenomena that were occurring, and classifying what was going on with the beam response. But as usual when you study something in a purely academic way, often you get concrete possibilities for using the information you gained," she said.

Spentzouris says she's looking forward to working with her colleagues on ideas that may be a part of future accelerators at Fermilab or in Europe.

"I feel lucky not only to have a job, but I'm also really excited about the work I'll be doing. I think it will be fun, and that I can learn a lot, and be able to continue to develop as a scientist. It's not always true that you can find something where you have a chance to keep learning," she said. ■

## ACCELERATOR

During the 1996 holiday shutdown, the Beams Division operated the machine with reduced staff, monitoring the site and watching for any unexpected occurrences. The Tevatron remained cold, but the staff did not run beam except for providing protons to the Neutron Therapy Center. The major maintenance task of the holiday break involved the AP4 beamline in the Booster Ring, according to Bob Mau, head of accelerator operations. Crews from the Beams Division and the Main Injector spent part of their holiday toiling with the AP4 line, as workers put a connecting beamline from the Booster to the Main Injector tunnel. The job kept the accelerator down until early January. Other than the AP4 task, Mau said the shutdown was routine. He said a site-wide power outage on December 31 caused the helium to warm up; however, that incident didn't affect the schedule.

Beams Division staff brought the beam back up on January 6 and performed studies until the middle of the month. High-energy physics returned after the studies. Mau said just prior to the holiday break the accelerator was running reliably at high intensity. From December 16 to the shutdown, the accelerator achieved the highest average intensity ( $2.07 \times 10^{13}$ ) out of the Tevatron. The machine also hit its high for integrated luminosity in the Tevatron era.

## FIXED-TARGET

Collaborators provided this update on fixed-target experiments.

**E799/E832 KTeV** "We are pleased with most of the data collected so far. As of the 1996 laboratory holiday shutdown, our collaboration collected more than 1.3 billion kaon decay events, for Experiment E832. This week the KTeV detector is being reconfigured for the next phase of our experimental program. After resuming operations, we expect to start collecting rare kaon decay events in experiment E799. Also during this period, we will extensively analyze the initial data from the E832 experiment. We hope to gain better under-

standing of the detector performance in anticipation of further data collection on both experiments," wrote Herman White and Bob Hsiung on January 10.

**E866 NuSea** "In December we switched the E866 spectrometer to a setting optimized for high-mass acceptance. With this setting, we collected enough data to meet the goals in our original proposal by the end of '96. After the Christmas shutdown, E866 has come back up nicely. We are looking forward to collecting additional data in '97, which will reduce the statistical uncertainty in our measurement of the  $u$ -bar/ $d$ -bar ratio in the proton, especially in the interesting large  $x$  region," said Paul Reimer, a postdoc from Los Alamos National Laboratory.

**E862 Antihydrogen** "We made only very minor modifications to our apparatus over the holiday shutdown, and we are now waiting for the  $p$ bar source to resume operations, which should happen sometime next week," said Dave Christian on January 10.

**E815 NuTeV** "NuTeV is ready for the resumption of data taking," said Bob Bernstein. "We have started analysis of our muon and hadron calibrations."

**E872 Donut** "We have had protons on our target for eight weeks. We needed this period to study the beamline and shielding, and to reduce background particles to a very low level before installing the emulsion neutrino target," said Byron Lundberg, experiment spokesman. "We are now busy with our last (I hope!) bit of cleanup work, and are taking special measures against low energy neutrons. We will test these improvements next week."

**E781 SELEX** "SELEX has used the Christmas shutdown period to make a few necessary repairs to chambers and install the last components of the spectrometer. The goal for turn-on in January is to reestablish the running conditions of December, when both machine and apparatus performed very reliably. We plan to use results of data analysis during the downtime to improve

the online charm trigger selection and to add new hardware triggers to the system," said Jim Russ. "We continue to work on off-line reconstruction, using all processing options supplied by the Computing Division. It has been challenging to bring up a batch-processing, tape-driven computing project. The Computing Division has provided lots of effort to fix the problems we've encountered."

**E831 FOCUS** "During the period without beam, we had a lot of work to do, with interesting improvements in our detector. In particular, we were installing micro-vertex detector planes in between and after the segmented target. We were also installing a detector built by the CBPF group in Brazil, which will be used to determine the electron/positron trajectory upstream from the radiator where the photon beam is produced. We expect that the information from these new detectors will enhance the quality of our data," said Carla Gobel, a graduate student from CBPF in Brazil. CBPF is one of the collaborating institutions on the FOCUS experiment.

**E871 HyperCP** "We have been busy over the break, fixing broken electronics, making improvements to the spectrometer, installing new detectors and analyzing data taken last year," said Craig Dukes, spokesman for E871. He adds the collaboration has been "increasing the bandwidth of the data acquisition system to essentially its full capability of 20 Mbytes, installing an optical impact parameter trigger, improving the wire chamber preamp grounding and fixing broken wires in one of our downstream wire chambers."

**E835 Charmonium** "E835 went off the air due to a water problem on December 11th, and has not taken any data since then. The problem has been fixed and the antiproton source has been brought back to life. We hope to start taking data again" on January 19, said Stephen Pordes.

## Facilities Engineering Services Section

Members of the FESS team spent their holiday break boosting the reliability of Fermilab's electrical system, replacing old cable in a critical corridor of the Laboratory. Electrical lines running between the Lab's master substation and the distribution vault at the Main Ring have been in place since 1971; engineers, using a "revolutionary" cable testing system, identified certain cables as the most likely to fail during the next year, according to Bill Shull of FESS. The cables that FESS replaced included the infamous Feeder 21/22, which failed multiple times in 1996 and caused disruption to accelerator operations on many occasions.

"The major job we did was to provide robustness to our electrical lines, and these guys did one hell of a job putting these new electrical lines in," said David Nevin, head of FESS.

FESS also improved the electrical system for Wilson Hall, hooking up power generators to the computers on the seventh floor. Now, if there is a Wilson Hall power outage and there is no fire, the generators will keep the computers running. In case of a fire, the generators will power the fire pumps.

FESS also serviced switchgear equipment for the Booster/Central Utility Building and the antiproton source.

## Main Injector Update

The Main Injector project team performed three main tasks over the holiday shutdown, according to Dixon Bogert. Workers started to install the magnets in the beamline that will be used to carry beam from the Booster Ring to the Main Injector's 8 GeV transfer line.

The Main Injector crew also moved a large transformer from the master substation to the Kautz Road substation, and performed utility work for the expansion of the FZero service building.

## It's Official: Crews to Merge

On Monday, January 27, 1997 at 10:30 AM, beamline tuning operations will move from the Experimental Areas Operations Center to the Main Control Room. Two operators will remain at the EAOC to reset beamline trips, support experiment accesses, distribute keys on down days and monitor alarms currently unavailable in the MCR.

Beginning on January 27, the following phone numbers will reach the Operations Department:

For controlled access to experimental halls, continue to call current numbers; for beamline tuning or related business, x4538 or x4042; for normal MCR business, x3721 or x3722. The present MCR extensions 3194, 3195, 3196, and 3197 will be disconnected in approximately one month.

## LETTER TO THE EDITOR

*In response to Joy Kyriakopoulos' letter in the Jan. 10 issue of FermiNews:*

Changing conditions at Fermilab often call for new, innovative solutions. Such is the case with Xmas at Fermilab. In the past we worked through Xmas and enjoyed our huge tree for weeks. Now we are shut down for most of that time. To cut down a beautiful 25-year-old tree for a one week display just did not make sense.

In our effort to respond to the new conditions, we came up with the idea of inviting all nationalities and cultures to participate by displaying their traditional holiday customs in the atrium. NALWO enthusiastically supported this idea, but unfortunately could not respond in time for Xmas 1996. They did, however, say that next year they planned to participate and they did supply some of our decorations this year.

We also wanted to involve the children of Fermilab. We asked the day care center if the children would be interested in making decorations for the smaller tree and trimming our tree. The children excitedly took on this project.

Lastly, while NALWO and NALREC certainly assisted us in decorating the lobby, they did not purchase the tree. This is done every year by FESS.

~ David Nevin  
Head of the FESS

## MILESTONES

### BORN

Glenn and Monica (ES&H) Sasse

### RETIRED

Joyce Rossi, I.D. #9930 from RD/Astrophysics on January 17.

### DIED

Jack Smith, I.D. #1025 from AD/Mechanical Support Group on January 13. As one of the early hired technicians, Jack was part of the crew involved with the original Main-Ring installation, Linac, Booster, maintenance, upgrades and the switch to cryogenics. His supervisor, Dave Augustine said, "Jack was an excellent mechanic with a vast amount of skills."

# Chez Léon

M E N U

Lunch served from  
11:30 a.m. to 1 p.m.  
\$8/person

Dinner served at 7 p.m.  
\$20/person

For reservations call x4512  
Cakes for Special Occasions  
Dietary Restrictions  
Contact Tita, x3524

### Wednesday January 29

Spicy Black Bean  
and Sausage Calzone  
Romaine, Red Onion  
and Black Olive Salad  
Poached Pears with  
Cranberry Cardamom Sauce

### Thursday January 30

Vol-au-Vent with  
Mushroom Duxelle  
Grilled Tuna with  
Onion Sauce  
Oven Roasted  
Winter Vegetables  
Pear-Cranberry  
Ginger Cake

### Wednesday February 5

Flank Steak with Cilantro  
Chimichurri Sauce  
Spanish Rice  
Mango Flan

### Thursday February 6

Chicken, Vegetable and  
Shitake Mushroom Soup  
Mongolian Leg of Lamb  
with Red Curry Sauce  
Vegetable of the Season  
Pine Nut, Honey  
and Anise Tart

## CLASSIFIEDS

### FOR SALE

- 1991 Hyundai Sonata, auto, full options, 80k miles, extra clean. Asking \$4,200/obo. Call x2045 or send email osuat@fnal.gov.
- 1988 Pontiac GrandAm, automatic, A/C, 2.3 DOHC 16V new engine, about 50k miles, power steering, windows, mirrors and seats, adjustable steering wheel, stereo, good body, good tires. Price \$3,000, call Miguel, x3600 or x3744.
- 1988 Mazda 323SE, 5 spd., 2dr. hatchback, AM/FM radio w/cassette, 95k. \$2,500. Call Karin, x4362.
- 1984 Honda CRX, 5 spd. Dependable car, maintained mechanically, 35-45 m.p.g., clean interior. 200k miles, some rust, Goodyear Aquatred tires, stereo/cassette. Asking \$600. Call Eric, x2248.
- Whirlpool washer and dryer, 1991, large capacity, great condition. Both total for \$375. Call x5489 or (630) 820-6741, or chou@fnal.gov.
- Queen-size headboard, nightstand and two dressers. Black, with solid brass corner pieces and solid brass knobs. The brass pieces have an oriental design. In very good shape. Asking \$250 for all. Please call Robin, x3377 or Robin@fnal.gov.
- Exercycle, Vitamaster Air Trainer Advantage Plus, electronic monitor scans speed/distance/time/calories. Total body workout w/8 air-resistance settings. \$75 Call Lynne, x2791.
- Girls 20" Kent Craze, 5-speed bike. Asking \$35/obo. Call Meka at (630) 393-1801 after 3 p.m. Large Pet Porter, 40"L x 27"W x 30"H. Airline-approved for transportation or crating your dog/animal at home. Removable door has dual-bolt positive latch. Leak-proof bottom w/side ventilation slots. Exc. condition. \$50 See Credit Union board for photo. Karen, x5427 or (630) 393-1801.

### FREE

Free to good home. Three-year-old Rotweiler. Neutered, has papers. Call (630) 213-7668 for more information.

### WANTED

One or two pairs of tickets to any Bulls home game; no preference as to date or time, but we would like to get seats closer than the ones at the very top if possible. Call Sharon or Elaine, (630) 980-8255.

### New Fermilab World Wide Web Site Goes Up

A redesigned Fermilab World Wide Web site, including new pages from the Directorate, went public as the Laboratory's official electronic front door at about 11 a.m. on Wednesday, January 15. "Although I am sure that we will want to make changes and improvements as time goes on, I believe this represents a milestone," said Judy Jackson, head of Fermilab's Office of Public Affairs, which serves as the Laboratory's webmaster. Jackson invited Web users to explore the Laboratory's new site and asked that they forward corrections and comments to the Fermilab webmaster.

## CALENDAR

### JANUARY 24

NALWO potluck dinner at the Village Barn, 5:30-8 p.m. Enjoy the company, conversation and cuisine of lab employees, visitors and guests from around the world. Please bring a dish for 6-8 to share or contribute \$3 per person. Babysitting and pizza for the kids are provided. At 8 p.m. the movie "The Postman" will be shown in the Auditorium.

### FEBRUARY 16

The Fermilab Folk Club is sponsoring a special family dance at the Village barn from 2-5 p.m. Eric Zorn, one of the area's premier callers, will be calling this dance. Music will be provided by The Common Taters. The dances are contras, squares and circles. All dances are taught, and people of all ages and experience levels are welcome. You don't need to come with a partner. Admission is \$5. Children under 12 are free. For more information, contact Lynn Garren, x2061 or Dave Harding, x2971.

### ONGOING

English lessons, Thursdays 10-noon in the Users Center, call Jeanette Antoniuk, (630) 769-6518. NALWO coffee mornings, Thursdays 10 a.m. in the User's Center, call Selitha Raja, (630) 305-7769. In the Village Barn, international folk dancing, Thursdays 7:30-10 p.m., call Mady, (630) 584-0825; Scottish country dancing Tuesdays 7-9:30 p.m.; call Doug, x8194.

### GERMAN CONVERSATION CLASSES

Whether you are a beginner, speak a little German or just want to come for conversation, you are welcome to join our classes. They are taught by Angela Jöstlein, a native of Germany. A nominal fee for materials will be charged. The classes meet at 5:30 p.m. every Tuesday in the conference room at 20 Neuqua, just outside Lab 7, across from the gym. Feel free to call Angela, (630) 355-8279 or E-mail Hans at JOSTLEIN@FNAL.gov.

### FAT TESTING

A hamburger is 50% fat. Do you know what % body fat you are? Now you can find out. You can have your body fat reading done on Wednesdays during the month of February between 11:30 a.m.-12:30 p.m. in the Users Office. It only takes a few minutes, so stop by. Sponsored by Wellness Works.

## BENEFIT NOTE

### Social Security Information

The Social Security Administration has announced that the 1997 social security wage base will be \$65,400, up from the 1996 wage limit of \$62,700. There is no limit on the wages subject to the Medicare tax, therefore, all covered wages are subject to the 1.45% Medicare tax.

For more information contact Ron Pahl, Payroll Manager.



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Please send your article submissions, classified advertisements and ideas to the Public Affairs Office, MS 206 or E-mail: ferminews@fnal.gov

FermiNews welcomes letters from readers. Please include your name and daytime phone number.

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