

# FermiNews

Fermi National Accelerator Laboratory

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## INSIDE

- 2 Experimenters  
Detect  
Antihydrogen
- 4 DOE Reviews  
PET Project
- 5 Holiday Shutdown
- 6 Fermilab  
Food Service

## Russians at Fermilab

by Leila Belkora, Office of Public Affairs

When Russian delegates to the Joint Coordinating Committee for Research on the Fundamental Properties of Matter came to Fermilab November 13 and 14 to discuss U.S.-Russian collaboration on high-energy physics research, they had every reason to feel at home. The first high-energy physics experiment ever carried out at Fermilab was a joint Soviet-U.S. collaboration that began taking data "as soon as the accelerator barely began operating" in 1972, in the depths of the Cold War, recalled Fermilab physicist Ernest Malamud, one of the collaborators.

Today, as Russian physicists struggle with severe financial troubles in their own country, Russians are the second-largest group (after Italians) of foreign physicists collaborating on experiments at Fermilab, according to Fermilab Assistant Director Roy Rubinstein.



Nikolai Tyurin, Deputy Director of the Institute for High Energy Physics in Protvino.

Nearly 200 Russians currently participate in experiments at Fermilab. Many are members of the DZero collaboration and contributed to the 1995 discovery of the top quark. A small number of Russian physicists and engineers have joined the Fermilab staff, either as employees or as guest scientists. "The Russian universities, with their rigorous mathematical training and emphasis on fundamentals, have created a tradition of excellence and imaginative design in accelerator physics," said Peter Limon, head of Fermilab's Technical Support Division, where several Russian scientists work on magnet design, among other areas.

*continued on page 8*



The signing of the 19th Meeting Record. Seated are Alexandre Jakovsky, left, of the Russian Federation Ministry of Atomic Energy, and John O'Fallon, of the U.S. Department of Energy. Behind them are Fermilab Director John Peoples (far left), U.S. and Russian delegates and Fermilab Directorate staff.

# Experimenters at Fermilab Detect Antihydrogen

Experiment 862, part of the current fixed-target run, confirms CERN results announced earlier this year.

by Judy Jackson and Donald Sena,  
Office of Public Affairs

Researchers at Fermilab announced at the November 18 All-Experimenters' Meeting that they had begun to detect atoms of antihydrogen produced in a gas-jet target in the Fermilab Antiproton Accumulator.

By December 4, Experiment 862, "The Search for Antihydrogen," had detected 16 "candidate" antihydrogen atoms, the simplest atoms of antimatter. When the experiment begins optimal operation, scientists in the seven-member collaboration—small by high-energy physics standards—expect to detect about five antimatter atoms per day, for a total of several hundred by the end of the current experimental run.

"It's really exciting to finally have the experiment working and to see that the data is so clean," said David Christian, E862 spokesman and Fermilab physicist. "We have always said that there would be no background, but it's great to see that we were right."

Glenn Blanford, a collaborator from the University of California at Irvine, said he noticed what appeared to be the first antihydrogen event on a computer readout about half an hour after it happened. "It wasn't perfect," he said, "but it looked good."

After consulting with Christian, the collaboration made a small adjustment in the hardware and the next events looked perfect.

Blanford said the experiment is expecting a relatively small number of antihydrogen atoms, so the early events created much excitement among the collaboration.

"It was really exciting," said Blanford. "The second two came within one-half hour of each other."

The Fermilab experiment confirms the results announced in January 1996 by scientists at CERN, the European Laboratory for Particle

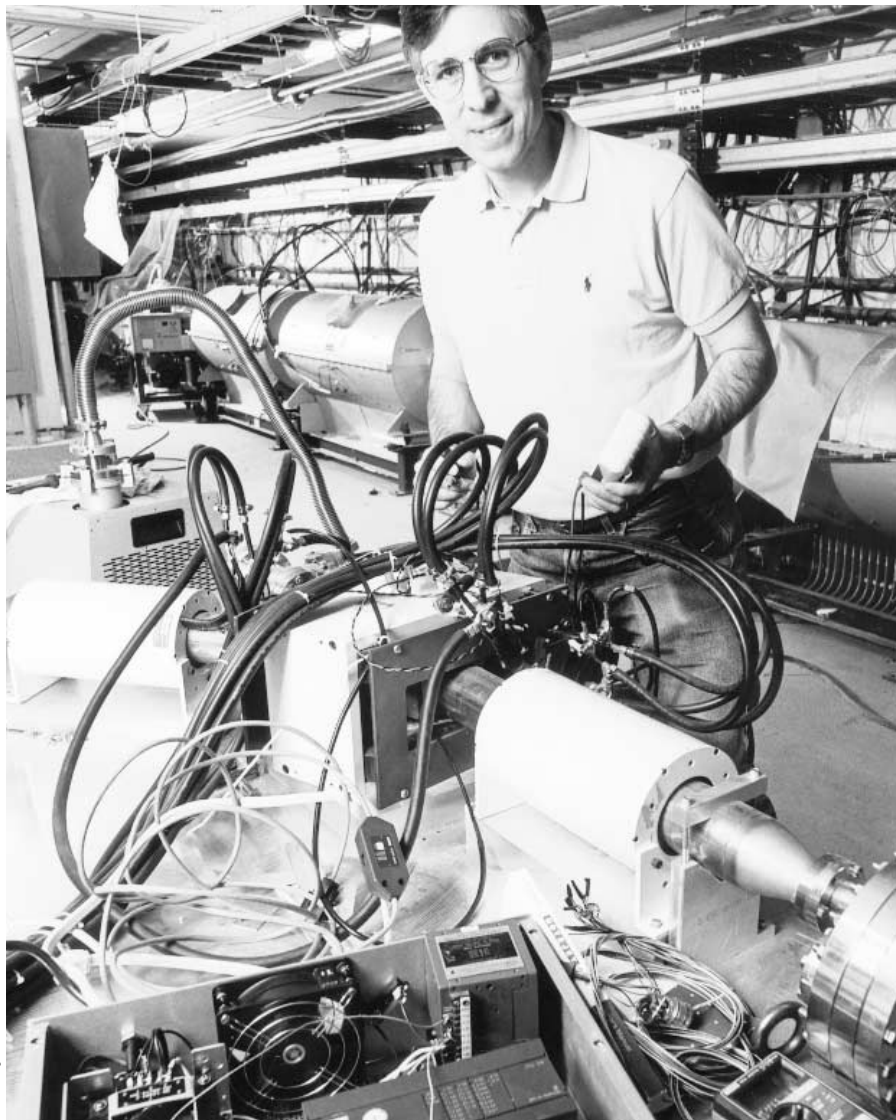


Photo by Reidar Hahn

Physics. Physicists there produced a total of nine atoms of antihydrogen before the CERN experiment ended its run.

A key to the success of E862 is the gas-jet target that the antihydrogen experiment shares with Experiment 835, the study of charmonium states. Italian scientists Mario Macri and Mauro Marinelli at the University of Genoa and INFN designed the target. Antiprotons from the Antiproton Source strike the target and produce a tiny number of atoms of antihydrogen.

Antihydrogen atoms consist of an antiproton and an associated antielectron, or positron. Both the CERN and Fermilab antihydrogen experiments used an idea first proposed by physicists Charles Munger, Ivan Schmidt and Stanley Brodsky at a conference in Munich in July 1992. An antiproton that passes an atomic nucleus with sufficient speed can create an electron-positron pair; in rare instances, the positron will stick to the moving antiproton to make an atom of antihydrogen. Fermilab's

David Christian, spokesman for the antihydrogen experiment, with the particle detector in the antiproton source.

A 1983 Mario Macri gas jet diagram.

1. The hydrogen enters the jet.
2. In the jet, the hydrogen sits right on the line between being a gas and a liquid. As a result, the hydrogen forms clusters of molecules. This allows experimenters to spray the hydrogen out at the perfect velocity for making antihydrogen.
3. Antiprotons pass through the hydrogen spray at about a 90 degree angle.
4. An antiproton that passes an atomic nucleus with sufficient speed can create an electron-positron pair; in rare instances, the positron will stick to the moving antiproton to make an atom of antihydrogen.

high-intensity and higher-energy antiproton source allows greater antihydrogen detection rates than CERN could achieve.

Blanford said the Fermilab and CERN experiments are the first steps in a series of possible experiments that could explain more about antimatter properties.

“The next step would be to try and increase the rate of production” of antihydrogen atoms, said Blanford. “Also, we want to do spectroscopy.”

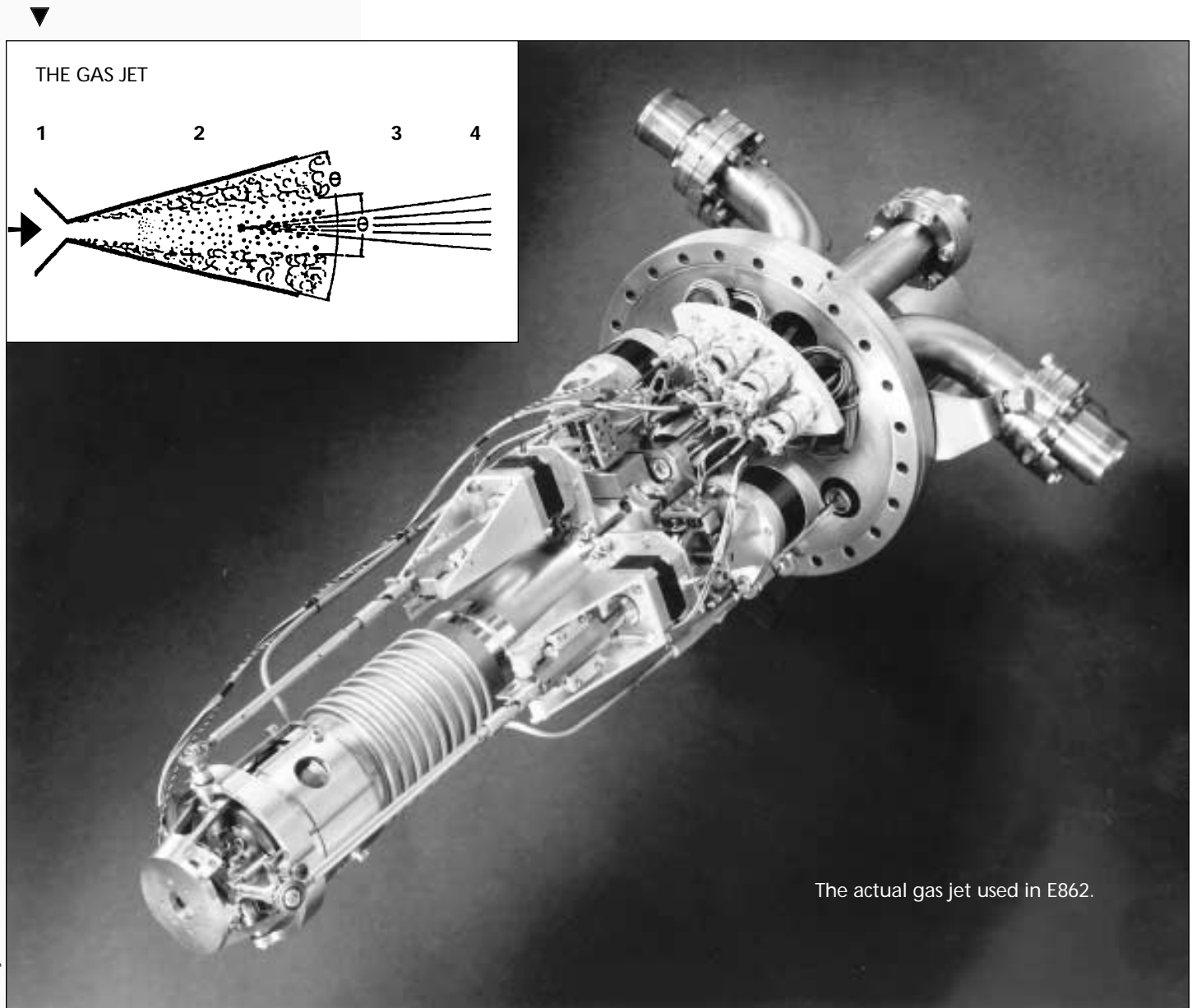
Fundamental precepts in the scientific theory known as relativistic quantum field theory require that atoms of antihydrogen

exhibit the same atomic “spectrum” of energy levels as atoms of hydrogen—levels detected by spectroscopy. Tests of this fundamental precept are possible but would require tens of thousands of atoms of antimatter. The CERN and Fermilab experiments are the initial steps toward producing sufficient quantities of antihydrogen to permit such tests.

Both the CERN and Fermilab antihydrogen experiments generated much interest in the media, reflecting the widespread public fascination with the subject of antimatter. ■

**“ It’s really exciting to finally have the experiment working and to see that the data is so clean.”**

~ David Christian, E862 spokesman



# DOE Conducts Second Review of PET Project

Reviewers spend three days at Fermilab to hear of progress on PET

by Donald Sena, Office of Public Affairs

The U.S. Department of Energy conducted its second major review of the Positron Emission Tomography (PET) Project Nov. 6-8, receiving detailed analysis of the project's status and issuing "action items" for some areas of PET.

The DOE reviewers heard presentations about the technical details of the project, including reports on the radio frequency (rf) system and the ion source. The group also toured Lab G on the Fermilab campus, where much of the

hardware development is occurring. Fermilab engineer Ralph Pasquinelli, who works in the Antiproton Source and is project manager of PET, also detailed the schedule for the project, explaining that the timeframe for completion of the accelerator has slipped by about two months since the modified schedule from the last review.

## Application and History

Positron Emission Tomography is a medical procedure for diagnosing a variety of patient ailments, from cancer to diseases of the brain to lung phenomena. The accelerator that Fermilab is building will send a beam of helium-3 into a target, generating four radioactive isotopes: carbon-11, fluorine-18, nitrogen-13 and oxygen-15. These isotopes are injected into patients in the form of glucose, and are metabolized by the body. The isotopes have short half-lives ranging from two to 110 minutes, which keeps them from irradiating patients excessively. As the isotopes interact in the body, experts use sophisticated computer techniques to collect data and create three dimensional representations of tumors and other objects.

The Biomedical Research Institute, located near Shreveport, La., will house the accelerator. The 170,000 sq. ft. research laboratory stands next to the Louisiana State University School of Medicine. The project collaborators include Fermilab, the project manager; the University of Washington; The Biomedical Research Foundation of Northwest Louisiana; and Science Applications International Corporation (SAIC). Over the course of the entire project, Fermilab will use about 10 full-time equivalents for PET. In the beginning, the Lab supplied only two or three FTE's, and now it has 15-19 per month. However, that number will shrink again when Fermilab delivers the accelerator to Louisiana.

SAIC was the original project manager back in the early 1990s. When funds were terminated for the original project, all effort was suspended until Fermilab took over the project management in 1995. Fermilab had originally planned to deliver the accelerator to Louisiana



Photo by Reidar Hahn

Ralph Pasquinelli works with PET equipment in Lab G on the Fermilab campus.

early in 1997. After the initial DOE review, DOE asked project managers to prepare a more detailed analysis of the schedule, and the PET managers said they adjusted their delivery date to the end of January or early February, which was more realistic.

Since that time, however, Fermilab PET developers discovered problems with original project equipment, according to Pasquinelli. There is a serious water corrosion problem in the aluminum Radio Frequency Quadrupole (RFQ) vanes—the water system carries heat away from the accelerator. The ion source also presented problems for PET developers.

The water leaks “precipitated the need to redesign [the RFQ vanes], which was not in the original scope of the project. That caused a major setback,” said Pasquinelli.

These new problems have caused the schedule to slip, and delivery of the accelerator is now planned for May 1997, with setup and commissioning completed by June.

The DOE reviewers also detailed four action items to help guide the project. They wanted to see more modeling of the RFQs. The DOE team also requested a more detailed management chart and suggested the appointment of a PET program advisory committee to “set directions, resolve issues and advise the director” of Fermilab, according to the signed action item memo. Also, the DOE reviewers said they will conduct another review in April 1997, unless Fermilab managers expect to be in the position to set up the accelerator in Louisiana by mid-1997.

Pasquinelli said his priority now is to redesign and fix the RFQs, and get the project back on track.

The review “is over and now we go back in the trenches and make the accelerator work,” said Pasquinelli. ■

# Shutdown Lowdown

Everything you wanted to know about the holiday shutdown at Fermilab

by Judy Jackson,  
*Fermilab Office of Public Affairs*

As it did last year, Fermilab will reduce activity to a minimum during the winter holiday season. The Laboratory will close for normal operations at the close of business on Friday, December 20, 1996 and reopen for business as usual on the morning of January 2, 1997. The Laboratory's emphasis on productivity prompts the measure, partly in response to the customary minimal use of the Laboratory during the period between Christmas and New Year's Day, when many employees traditionally take vacation, said Associate Director Bruce Chrisman.

Normal accelerator operations will continue through Sunday, December 22. On December 23, the accelerator complex will begin operating on standby mode with skeleton crews in the control room. The Tevatron will stay cold, and most power supplies will remain on. Experiments will not run shifts; a minimal staff will make periodic walk-throughs. Main Injector construction will continue.

Of the eight weekdays affected, the equivalent of three are scheduled holidays, for which employees will be paid as usual. Employees who have vacation balances must use vacation or the 1996 floating holiday to cover the other five days. Those who lack vacation time to cover the five shutdown days will be excused without pay. The only employees required—or allowed—to work for pay during the shutdown are those designated by division and section heads as necessary for essential functions.

## Shutdown Wrap-Up

Monthly employees who would normally receive their pay on Tuesday, December 31, will instead receive their check advices on Friday, December 20. They should submit timesheets on December 12. Weekly employees will receive their pay for the weeks ending December 15 and December 22 on Friday, December

20. (They will receive pay for the week ending December 29 on January 3, 1997.) Weekly employees should turn in times sheets for the weeks ending December 15, 22, and 29 on December 13. The Payroll Office will close during the shutdown, and no Payroll personnel will be on call.

The 15th floor of Wilson Hall will be closed to visitors from the afternoon of December 20 to January 3. It will reopen to visitors on Saturday, January 4. During this time, the Facilities Engineering Services Section and sub-contractors will demolish and restore the ceiling of the 15th floor north crossover. Until the demolition is completed and the debris removed—scheduled for December 23—the elevators will not service the 15th floor. During this period, employees who need to get to the offices on the 15th floor must use the south stairwells. By December 24, limited elevator service will resume, but the visitor area will remain closed until January 4.

The Laboratory will not close completely. Heat will remain on. A small on-call Computing Division support staff will attempt to maintain basic services. If it snows, FESS will plow the roads. Security, the Fire Department and the Communications Center will operate at weekend levels. There will be no mail delivery, other than that made by sleigh and reindeer.

The Lederman Science Center will close during the shutdown. The Wilson Street gate will remain closed. Tests of the automatic gate system will be suspended.

Salaried employees may come to their offices—without pay—and perform light office work such as working at computer terminals. (Federal law prohibits weekly employees from performing volunteer work at the Laboratory.) Except in specifically authorized cases,



# Eurest Takes Over Food Service at Fermilab

by Judy Jackson,  
Fermilab Office of Public Affairs

Wednesday, November 27, marked the final day of food service by Fermilab cafeteria staff at the Laboratory. On Monday, December 2, Eurest Corporation, a division of Compass Group, a British food service corporation, began serving meals at Fermilab.

Laboratory Services Section Head Chuck Marofske described the change to contractor-produced meals as a Laboratory cost-management effort. "Labor costs for the Fermilab cafeteria were marginally above average," he said. "The savings in using an outside contractor come from a contractor's procurement practices

and specialized management techniques." For example, he said, "it is inappropriate to use the same accounting system that takes account of a 50-thousand-dollar magnet to track a ten-cent can of pop."

Marofske said the contract includes a commitment from Eurest that cafeteria prices will not rise within the next year.

As part of the review process for the three contractors who bid on the Fermilab food service contract, a committee of five Laboratory staff members visited area cafeterias managed by the bidders. Besides the Fermilab cafeteria, Eurest manages food services at other area facilities including the College of DuPage, Borg-Warner Corporation, and local law firms, schools and universities. Committee members included Marofske and John Barry of the Laboratory Services Section, Michael Rhoades and Bob Huite of the Business Services Section, and Jack Pfister of the Directorate. Marofske said the committee evaluated bids for financial responsibility, quality of operations and other contract requirements. "The quality of the food was not a primary reason to contract out food services," he said.

Of the dozen-member Fermilab cafeteria staff, six chose to remain at the Laboratory, employed by Eurest. Five left for other jobs or to manage their own businesses. One has taken another assignment at Fermilab. Departing food service worker Cindy Love, who will take a job as a supermarket cashier, voiced regret at leaving behind coworkers and familiar lunch-line customers, but looked forward to a shorter commute. Others expressed similarly mixed emotions at the change.

Eurest manager Marianne Yassine regards her new assignment at Fermilab as a challenge. "My goal is to make food that's eye-appealing and high quality at a competitive price," she said. "Fermilab is well known throughout the world and has an international mix of guests and staff. I want to improve the food." Yassine said that procedures for ordering food or beverage service for Laboratory events will not change.

The first week's cafeteria menu under Eurest management featured entrees such as Voodoo Chicken, Beef Szechuan Stir Fry, and Chicken Tacos. Lunch patrons could also buy pizza from a local pizza chain, roast chicken, and sandwiches of low-fat cold cuts.

Yassine spends every weekday at Fermilab,



Photo by Reidar Hahn

Marianne Yassine, general manager of Eurest Corporation's Fermilab operation, holds a bottle of industrial strength plum sauce.



Photos by Jenny Mullins



Chez Leon chef Tita Jensen chats with departing cafeteria chef Richard Currence. Jensen hosted a November 26 farewell event for cafeteria staff. Chez Leon operations remain unchanged under the new Laboratory food service contract.

and encourages the Fermilab community to share concerns and ideas about the cafeteria. "I take every suggestion seriously," she said.

Eurest has brought a new chef, Joe Chmeleck, to the Fermilab kitchen. Chmeleck formerly worked in "gourmet restaurants, including The Living Room in Oakbrook," Yassine said. She added that she is eager to see cafeteria usage rise, expressing concerns about adequate parking for Fermilab users and staff who come to Wilson Hall from outlying areas of the Laboratory to eat lunch. The number of lunchtime cafeteria customers has been declining slowly, according to Marofske, to an average of about 500 people per day.

"If you haven't eaten in the cafeteria for awhile, come in and try us again," Yassine urged members of the Fermilab community. "I want to meet as many Fermilab people as I can, and I would like to hear from all of them." ■

**"The savings in using an outside contractor come from a contractor's procurement practices and specialized management techniques."**

~ Chuck Marofske,  
Head of Lab Services

## Change of Leadership in Research Division

On November 10, Fermilab physicist John Cooper became head of the Research Division, a move that will aid in the transition of the present Research Division and Physics Section into the new Particle Physics Division, which comes into existence on January 1, 1997. Cooper will lead the new division with Stephen Pordes and Bob Trendler as his deputies. (See the October 18 and November 1 editions of *FermiNews* for more facts about the reorganization). Cooper previously served as the Research Division department head for CDF, the Collider Detector at Fermilab.

Between now and the new year, the Research Division and Physics Section will continue to work together to make the transition as smooth as possible, according to Fermilab Director John Peoples. Cooper replaces Roger Dixon, who began his tenure in 1992 as the acting head of the Research Division before taking over in 1993. Peoples said he chose November 10 for the move because that was the time when all of the fixed-target beams were complete, allowing for a clean transition. Dixon's original appointment was to last only three years, but Peoples said he persuaded Dixon to stay longer during an important period at the Laboratory.

"Roger did a great job under difficult circumstances," said Peoples. "During his time as division head, the successful collider run took place; we've mounted the next fixed-target run, which looks like it is going to go very well; and we are getting ready for the next big collider run—so a lot of things happened."

Dixon said he plans to work on a cold dark matter experiment with a collaboration of researchers.

## Computing Division Changes

Effective January 1, 1997, Vicky White will step down as deputy head of the Computing Division, spending a short period guiding the Computing Division's information systems project, and then turning her attention to the DZero upgrade.

Steve Wolbers, head of the Operating Systems Support department, will become deputy head of the division. ■

# Russians at Fermilab

*continued from page 1*

At the Committee's 19th Annual Meeting, the tradition of U.S. Russian collaboration continued, as delegates renewed a 20-year old agreement to bring high-energy physicists from the two countries together. The Committee negotiates the agreement each year.

Russian delegate Atlant Vassiliev, representing the Department of Nuclear Sciences and Technology at the Russian Ministry for Atomic Energy, emphasized the scope of cooperative research. "In the process of this collaboration, very important research has been performed which has changed our vision of the structure of nuclear matter and of the principal forces of nature.... For these achievements, hard work in theoretical and experimental physics, accelerator physics, superconductivity, computers, cryogenics, and other scientific fields was absolutely necessary," he said.

Collaboration is more important than ever for Russian particle physicists, said Fermilab physicist Victor Yarba, former deputy director of IHEP-Protvino. "The only high-energy physicists who can survive in Russia today are those who can join foreign collaborations," Yarba said. "Those who do not have that chance must leave the field, because the level of government support has fallen below the survival level. Physicists earn less than taxi drivers and less—far less—than laborers on construction projects." He adds that physicists who participate in joint experiments at laboratories such as Fermilab, Brookhaven, the Stanford Linear Accelerator, or the European Laboratory for Particle Physics, have additional income to support their families "due to very modest spending while they are abroad and being paid per diem or salary."

The yearly meeting of the Committee unites physicists and ministry-level staff from both countries. The Committee puts together a formal agreement for the forthcoming year to support exchanges of personnel and equipment, and to conduct workshops and meetings. This year officials from the U.S. Department of Energy, the Russian Federation Ministry of Atomic Energy, and U.S. and Russian national research centers made space at the table for a representative from the newly-formed Russian State Committee on Science and Technology, which conveys research funding requests to the Russian Duma, or parliament.

Russian collaborators on the DZero and E781 experiments. Front Row: Nikolai Terentyev, Victor Golovtsov, Vladimir Matveyev, Lisa Shabalina. Middle row: Alexandre Atamantchouk, Nikolay Bondar, Mike Merkin, Sergei Gurzhiev. Back row: Eugene Zverev, Boris Razmyslovich, Dmitry Karmanov, Alexandre Leflat, Mikhail Kubantsev, Alexei Volkov.



Photo by Fred Ullrich

Participants reviewed ongoing collaborations and experiments. At Fermilab, some 70 Russian DZero collaborators are helping prepare for a detector upgrade to allow detection of proton-antiproton collisions at a higher rate. E781, a fixed-target experiment to study charm-quark baryons, has a large contingent of Russian members from PNPI and other institutions. In the future, Russian institutions hope to participate in Fermilab's planned neutrino experiments COSMOS and MINOS.

## Hard Times for Physics

Russian laboratory directors provided an overview of joint U.S.-Russia experiments that continue, despite severe funding shortfalls that have crippled research activity at the national labs. "There is uncertainty in funding that creates many problems," noted Tyurin. Russian officials have postponed plans for an accelerator that would operate at an energy of 3 TeV. Work on the 600 GeV "UNK" accelerator has a very low budget, and construction is going slowly. The existing 70 GeV proton synchrotron in Russia operates for a very limited time per year, because funds cannot pay for electrical power to operate it longer.

Yarba pointed out that talented young Russians who once competed for educational opportunities in physics and engineering now spurn those fields for graduate programs in business, because they see that basic scientists cannot support themselves. As a result, he says, "there is no new blood in the national laboratories." He pointed to international support as the best hope for saving Russia's fabled science education system.

Despite the limited financial resources, life goes on. Workers expect to install magnets in

## Russian Institutions

Centers for high-energy or nuclear physics in the former Soviet Union:

- The Institute for High Energy Physics (IHEP) at Protvino
- The Institute for Nuclear Research (INR)
- The Kurchatov Institute
- The Lebedev Physical Institute
- The Institute of Theoretical and Experimental Physics (ITEP)
- Moscow State University
- The Moscow Radio-Technical Institute
- The Joint Institute for Nuclear Research (JINR) in Dubna
- The Budker Institute for Nuclear Physics (BINP) in Novosibirsk
- The Petersburg Nuclear Physics Institute (PNPI) in Gatchina
- Research institutes in Georgia, the Ukraine, and Armenia.





Photo by Jenny Mullins

### Unofficial Dean of Russians at Fermilab

Victor Yarba (at left), former deputy director of IHEP and currently head of the Magnet Design and Fabrication Group in the Technical Support Section, was a member of the Joint Committee for 18 years. He relates the genesis of the formal bilateral agreement that has supported collaborations in high-energy physics through the Cold War years: "I was involved from the first day in the preparation of that agreement. Why it was necessary at that time? You see, we believed, and many physicists from the U.S. believed, there should be some kind of framework for how to do this cooperation, because at that time it was not easy to get a visa, to bring some equipment to this country, to provide support to physicists who are doing experiments here, and so on. It was equally true for American physicists who were working at IHEP. Some physicists—even great physicists—doubted that we needed this agreement. But when relations were not as good, there were some times when it was difficult to collaborate. And I know that all collaborations in other sciences stopped, except in high-energy physics, during the very tense relations. I remember once when Leon Lederman—he was director—said to me, "Oh, Victor, you remember, it was very good that we have this agreement, because now [the cooperation] is not easy to arrange, but this agreement helped a lot."

the UNK tunnel in December. Veniamin Sidorov, deputy director of the Budker Institute, reported that a new 5-ton spherical detector for measuring the energy of particles emerging from electron-positron collisions had its first run. The experiment achieved more than twice the accuracy of previous measurements of the rate at which the annihilation of electrons and positrons produces hadrons. Said Sidorov, "Even though we have hard times in Russia, it is still possible to start construction of complex specialized equipment."

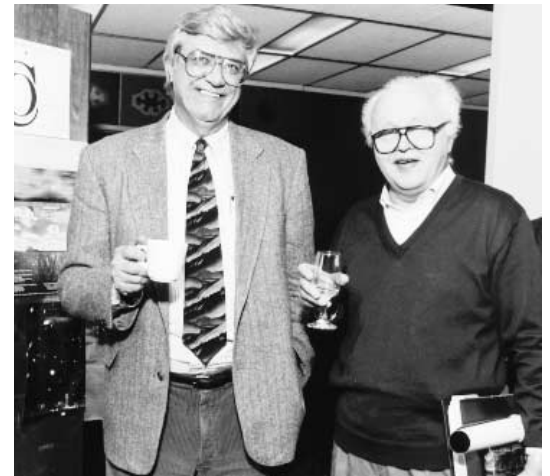
Delegates from the Russian Federation repeatedly stressed that international cooperation is crucial to maintaining research in high-energy physics in the former Soviet Union. "Our government representatives do not always understand the importance of our research, so it is important to have recognition from the international scientific community" to obtain funds, said Gornushkin. He added, "If the Gore-Chernomyrdin Commission approves a project, it helps."

The Joint Commission on Economic and Technological Cooperation, chaired by U.S. Vice President Al Gore and Russian Prime Minister Viktor Chernomyrdin, formed under the leadership of Presidents Clinton and Yeltsin in 1993. DOE Energy Research Director Martha Krebs submitted the DZero upgrade project to the Commission in 1996, and Russian delegates to the Joint Committee at Fermilab say they

hope to propose Russian participation in Fermilab's NuMI Project, as well.

At the meeting's end, DOE Acting Associate Director for the Office of High Energy and Nuclear Physics John O'Fallon and Deputy Director of the Department of Nuclear Sciences and Technology Research Alexandre Jakovsky signed the Record of the Nineteenth Meeting between the U.S. and the Russian Federation that will allow cooperative projects to proceed in 1997. Nikolai Tyurin then invited delegates to hold their next meeting at his home institution. With a reference to Protvina's wintry weather, he proposed: "It is my pleasure to invite you to Protvino. October is better than November, and the end of September is even better." ■

Anna Belova, representing the Russian Federation State Committee on Science and Technology, celebrating the signing of the Record of the 19th Meeting with Barry Gale, from the Department of Energy's Office of Policy.



David Leath, Associate Director for Research at the Stanford Linear Accelerator Center, and Victor Sidorov, Deputy Director of the Budker Institute for Nuclear Research (Novosibirsk).



Photos by Reidar Hahn

## ACCELERATOR

The Accelerator Division continued to push the Tevatron's intensity higher, as the machine set a new record in the early morning hours of Dec. 8 with an intensity of  $2.51 \times 10^{13}$  particles/pulse.

During the Thanksgiving weekend, the accelerator delivered 86 hours of beam out of a scheduled 120 hours. Beam was also stored in the Antiproton Source for data taking.

From the morning of Dec. 2 to the morning of Dec. 3, the Accelerator Division delivered 12 hours of beam out of a scheduled 24. One of the interruptions was caused by a Main Ring ground fault, which was eventually traced to a choke on the dipole power supply bus.

The accelerator will be affected by the lab-wide holiday shutdown. Normal accelerator operations will continue through Dec. 22. Beginning Dec. 23, the accelerator complex will operate on standby mode with skeleton crews in the control room. The Tevatron will stay cold, and most power supplies will remain on. Experiments will not run shifts; a minimal staff will make periodic walk-throughs. Main Injector construction will continue. For more information about the shutdown, see page five.

## FIXED-TARGET

Collaborators provided this update on fixed-target experiments.

**E799 / E832 KTeV** "This is our fifth week of [taking data] for E832," said Bob Hsiung on Nov. 27. "So far, we have taken 810 million events from neutral kaon decays that passed our level 3 event selections onto 600 DLT tapes with total data volume about 6 Terabytes ( $10^{12}$  Bytes)." Hsiung added his thanks to the Tevatron accelerator, which delivered about  $6 \times 10^{16}$  800 GeV protons to their target.

**E866 NuSea** "E866 continues to take data smoothly. Since the last report, we have changed our spectrometer settings to shift our acceptance to a lower mass range. We are currently studying our rate dependence at this setting. When this is done, we will change to a high mass setting," said Rusty Towell, a graduate student from the University of Texas at Austin.

**E862 Antihydrogen** The seven-member collaboration has detected antihydrogen atoms produced in the Antiproton Accumulator. See story on page two.

**E815 NuTeV** "Test beam work continues, and we have completed a successful mapping of the detector with hadrons. We are beginning to study the electron response," said Bob Bernstein. "And we are hoping, by Christmas, to equal the statistics of the previous two experiments, E744 and E770."

**E872 Donut** "After a couple of fixes in the PW beamline, the background muon flux at our emulsion target station is at the expected level. The muon shield absorbs or sweeps away virtually all of these unwanted particles," said Byron Lundberg. "We are now investigating other background particles, such as electrons and neutrons, before we perform an important test run with a small amount of emulsion as a final background check."

**E781 SELEX** "SELEX has been working on improving the efficiency of getting charm on tape. We've made significant gains in trigger efficiency, software filter code and tracking efficiency. The experiment is working well, and machine performance generally has been good," said Jim Russ.

**E831 FOCUS** "We are continuing to accumulate data on tape. The charm quality of the data continues to improve as we incorporate our better understanding of the various detectors into our 'charming' reconstruction software," said Hector Mendez, a scientist from CINVESTAV in Mexico and a collaborator on E831.

**E871 HyperCP** "We have successfully transported a secondary beam through our spectrometer, which is completely installed. We are beginning to do trigger studies and timing in readout electronics," said Kam-Biu Luk, co-spokesperson of E871.

**E835 Charmonium** "E835 has now taken a total of about  $10 \text{ pb}^{-1}$  of data at a variety of energies. The Antiproton Accumulator has achieved deceleration to the  $J/\psi$  mass, where we took some crucial calibration data," said Stephen Pordes. "Currently our main concentration is on searching for the  $\eta_c$  resonance. Also, the scintillating fiber tracker is working very well, and the cryogenics have performed flawlessly for 13 weeks now."

# 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

## Special Christmas Lunch

**Tuesday  
December 17**

Sole and Crabmeat  
with Raspberry Sauce  
Green Rice  
Chocolate Chestnut Torte

**Wednesday  
December 18**

BOOKED

**Thursday  
Dinner  
December 19**

Christmas Salad  
with Champagne  
Vinaigrette  
Lobster Tail  
with Caviar  
Sautéed Pea Pods  
and Pearl Onions  
Paprika Roasted Potatoes  
Raspberry Mousse  
with Assorted  
Christmas Cookies

## LAB NOTES

### The Argonne Credit Union

is seeking Credit Union members willing to serve as members of the 1997 Board of Directors. Board positions are open to all members in good standing. Applications are available at the Credit Union office and will be accepted until December 13. For more information, call John Roof at 840-4580.

### Presidential Sports Awards

Wellness Works, sponsored by the Recreation Office, will again be offering the Presidential Sports Award Program. This program was developed as a means to motivate all Americans to be active in fitness-oriented activities. Its purpose is to encourage individuals to become more physically active throughout life and emphasizes regular exercise rather than outstanding performance. Earn the Presidential Sports Award in any one of 68 different sports and activities. If you qualify, you'll earn the right to wear a Presidential Sports Award emblem, receive a personalized Presidential certificate and have your name included on the Presidents Sports Award plaque, located in the new Medical Office.

To earn the reward: Pick up your information packet in the Recreation Office, WH15W. Packets will be available beginning December 16 until January 17.

Participation is limited.

Questions? Contact the Recreation Office, x2548 or 5427.

## MILESTONES

### BORN



### HONORED

■ Hans Jensen, Fermilab physicist and CDF collaborator, elected a Fellow of the American Physical Society, "for his leadership in the construction and operation of the CDF experiment, especially its calorimetry."

■ Stephen John Parke, Fermilab physicist, elected a Fellow of the American Physical Society, "for novel insights into resonant neutrino oscillation and for the introduction of supersymmetric methods in the evaluation of multiparton scattering amplitudes."

## LETTER TO THE EDITOR

When I receive *FermiNews* my desire to be an experimental physicist is reinforced. One "Letter to the Editor" on the back cover of the last issue said the FN is a joke. But it isn't a joke at all—at least not to me. It gives me inspiration. So if the editors ever feel like no one appreciates them, tell them that I do.

Yours truly,  
Jessica Smith  
(High school student in  
Birmingham, Alabama)

## FERMIBLAB

Recently *FermiNews* received an anonymous letter:

As an avid fan of *FermiNews*, I read every issue cover to cover. There should be a horoscope and stories about the British Royal family, but everything else is fine. I do have a question, though, about the motto appearing on the masthead: Si non vis imprimi, noli pati fieri. Now I know that is Latin, so I asked some Latin American friends to translate it. They all had a different translation:

- "All the news that fits and then some."
- "Microwave on high for three minutes, stirring occasionally."
- "We ain't the liberal east-coast press."
- "And that's the way the Directorate thinks it is."
- "No, we don't accept personal ads, try The Reader."

So what is the true translation?

Sincerely,  
A Fan

What do *you* think it means? Send us your translation of "Si non vis imprimi, noli pati fieri." All-new (we haven't printed them yet) *FermiNews* t-shirts await the three best translations, selected by the editors. Don't let accuracy hold you back! E-mail your translations to [ferminews@fnal.gov](mailto:ferminews@fnal.gov)



## CLASSIFIEDS

### FOR SALE

■ Wedding dress size 10, never worn, cleaned and boxed, short sleeves off the shoulder, medium length train, white \$250, call Carmen x3834 or (630) 529-0135

■ Kohler whirlpool tub, heron blue, 4' x 6' with 6 waterjets, make offer; 19" Emerson color TV with remote, cable ready, \$65; Johnson outboard motor, 9-1/2 hp, rebuilt in '95, \$500 o.b.o. Call Terry, x4572.

■ Red 1990 Ford Escort; 79k miles, v.good condition, manual gear shift, pwr. steering, am/fm/stereo/cassette \$2,500 o.b.o., must sell soon. Call Jorge, x8430 or 406-5918

■ 1988 Cadillac Sedan Deville. Excellent mechanical and body. Never seen salt. Asking \$6,200. Need to sell soon. Call Ed, x4191 or (630) 466-1498. Negotiable.

■ '87 Harley-Davidson XLH Sportster 883, 13,000 miles, excellent stock condition, 2nd exhaust system & saddle bags included, dark red, \$5,500. Call Ed at 690-1145

■ 1986 Ford Escort GT 5 spd., 1.9l H.O. engine, 152 k miles, one owner, no accidents, a little rust, pretty dependable, a go-to-work-car. \$900 o.b.o. Call Dave, x8767

■ Bicycles for sale: men's 27" Schwinn Traveler 10-speed touring, \$20; boy's 18" Huffly Roadmaster 15-speed mountain bike, front shock, \$30. Call Elaine, x2193 or (630) 653-7430 evenings

■ Nordic Track ExerScience Ski Machine, aerobic exerciser. Used eight times, like new, asking price \$200. Call Sandy x4171.

■ Wedding bell blues? "Toast" those away with personalized gift giving. Custom designed & decorated wedding goblets & accessories. Call (630)420-5628.

### SEEKING SERVICES

■ Free subscription to *The Washington Post* to a Fermilab employee or user who agrees to read the *Post* daily and clip stories of interest to Fermilab for the Office of Public Affairs, x3351

■ In-home care from July to August 1997 for pleasant, musical 2 1/2 year-old girl 5 days/week, 9 to 5. Salary competitive. English fluency and car necessary; references. Nicole Jordan, Warrenville. 393-3970

### RECREATION GIFT CERTIFICATES

This year show how much you care by purchasing a Recreation Facility membership for your spouse. Gift certificates are available in the Recreation Office or call 840-2548 to make arrangements to purchase a gift certificate through the mail. And if you haven't purchased a membership for yourself yet this year, statistics show that your chances of continuing your exercise program increase two fold when exercising with a friend or spouse.

## CALENDAR

### DECEMBER 14

Folk dance party in the Village Barn, 7:30 p.m.—midnight. Live music by South Bend band "Spatter Dash." Newcomers and children are welcome, but no babysitting will be provided. Donations of refreshments are appreciated. \$5 for adults, \$1 for children under 15. For more information, call Mady at 584-0825 or Susan at 232-9089.

### DECEMBER 15

The Fermilab Folk Club will sponsor an afternoon barn dance at the Village Barn from 2 p.m. to 5 p.m. Music will be by Bill Robinson and Friends. Paul Watkins will be calling. Bill Robinson is an energetic and entertaining hammered dulcimer player. Admission is \$5. Children under 12 are free. Contact Lynn Garren, x2061 or Dave Harding, x2971 for more information.

### DECEMBER 17

Crafts workshop presented by Mio Holt and Mady Newfield with some of NALWO's Japanese visitors. 11 a.m.—1:30 p.m. in the Music Room of the Users' Center. Come for all or part of the time, and bring a sack lunch or snacks to share. Materials provided. Please call Mady at 584-0825 for more information or to offer to share a craft skill at this workshop.

### ONGOING

English lessons, Thursdays 10-noon in Users Center, call Jeanette Antoniuk at 769-6518. German lessons (advanced conversation), Tuesday 5:30 p.m. in lab 7, 20 Nequa, call Angela Jostlein at 355-8279.

NALWO coffee mornings, Thursdays 10 a.m. in the User's Center, call Selitha Raja at 305-7769.

Recorder lessons for beginners, no charge, call Min Ji Kim at 840-3564. In the Village Barn, international folk dancing, Thursdays 7:30-10 p.m., call Mady at 584-0825; Scottish country dancing Tuesdays 7-9:30 p.m.; call Doug at x8194.

## Holiday Shutdown

*continued from page 5*

shutdown policy precludes work on experiments or elsewhere that requires two or more people, a policy that applies to users as well as employees.

The Users Office and the Travel Office will close. The cafeteria will close, but food vending machines will be serviced. The Housing Office will operate at weekend levels, to deal with emergencies only. The Credit Union will close. ■



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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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