

## Calendar

### Friday, November 11

**3:30 p.m.** Director's Coffee Break - 2nd Flr X-Over

**4:00** Joint Experimental Theoretical Physics Seminar - 1 West  
Speaker: M. Neubauer, University of California, San Diego

Title: Recent B-Physics Results from CDF  
**8:00 p.m.** Fermilab International Film Society - Auditorium

[Les Diaboliques](#)

### Saturday, November 12

**8:00 p.m.** Fermilab Lecture Series - Auditorium

[C.J. Chenier and The Red Hot Louisiana Band](#)

### Monday, November 14

**2:30 p.m.** Particle Astrophysics Seminar - Curia II

Speaker: S. Profumo, California Institute of Technology

Title: TeV Gamma-Rays and the Largest Masses and Annihilation Cross Sections of Neutralino Dark Matter

**3:30 p.m.** Director's Coffee Break - 2nd Flr X-Over

**4:00 p.m.** All Experimenters' Meeting - Curia II

Special Topic: Recent Progress on ILC Test Area

## Weather

## Crash Course in Luminosity, Key to Discovery at Fermilab

*This is the third story in a series that explains [what luminosity is](#), and why we've recently gotten better at producing it in the Tevatron.*



This picture of the Main Injector tunnel shows the Recycler and the Electron Cooling beam lines. (Click on image for larger version.)

### Making the best antiproton beams

The recipe for producing large numbers of collisions, or high luminosity, in the Tevatron seems rather simple: produce beams with a large number of protons and antiprotons; make sure that the beams are "nice and tight," and that few particles are lost as the beams pass through the chain of accelerators; send the beams into the Tevatron for final acceleration; and make the beams collide head-on at the center of the CDF and DZero detectors.

Although there have been numerous improvements in the Fermilab accelerator complex during the past twelve months (and *Fermilab Today* will highlight several of them in this series), the flurry of luminosity records in the last six months is closely related to two success stories: the full integration of the

## ILC NewsLine

### Petronzio Opens Dialogue Between GDE and FALC



The current chairman of FALC, Roberto Petronzio (left), with the Fermilab Director Pier Oddone.

On Friday, 4 November, the Funding Agencies for the Linear Collider (FALC) met at Fermilab. At the meeting, representatives from funding agencies and governments around the world discussed the various issues involved with funding an International Linear Collider.

[Read More](#)

### Education Office to Host Science-Based Reading Day

Mostly Sunny **63°/43°**[Extended Forecast](#)[Weather at Fermilab](#)**Current Security Status**[Secou Level 3](#)**Wilson Hall Cafe****Friday, November 11**

- Old Fashioned Ham & Bean
- Black & Blue Cheese Burger
- Summer Herb Cod
- Stuffed Manicotti
- Roasted Veggie & Provolone Panini
- Assorted Pizza Slice
- Vegetarian Stir Fry

The Wilson Hall Cafe accepts Visa, Master Card, Discover and American Express at Cash Register #1.

[Wilson Hall Cafe Menu](#)**Chez Leon****Wednesday, November 16****Lunch**

- Rouladen
- Buttered Dill Egg Noodles
- Pickled Carrots
- German Chocolate Cake

**Thursday, November 17****Dinner**

- Vol-au-Vents w/Mushrooms
- Stuffed Filet of Sole w/Crabmeat
- Vegetable Medley
- Maple Walnut Cake w/Maple Glaze

[Chez Leon Menu](#)

Call x4512 to make your reservation.

**Search**

Recycler storage ring into the antiproton supply chain, and the start-up of a new method to provide "nice and tight" antiproton beams via electron cooling.

Located inside the Main Injector tunnel, the Recycler storage ring relies on hundreds of permanent magnets to steer antiprotons around a two-mile circle at a constant energy of 8 GeV (billion electron volts). After a rather slow startup, the commissioning of the Recycler has progressed rapidly in the last twelve months.

"In August 2003, the Recycler was basically on the ropes," said Cons Gattuso, the Recycler Deputy Department Head. "Now the machine can handle stashes of more than 3E12 antiprotons," or three million million antiprotons. The Recycler can store these antiprotons for hundreds of hours without significant losses, providing the desperately-needed relief for the 20-year-old Accumulator Ring of the Antiproton Source, which cannot handle so many antiprotons. (A second function of the Recycler, to recycle antiprotons at the end of a store, was dropped because the technical challenges outweighed the potential gains in luminosity.)

—*Kurt Riesselmann*

[Read More](#)**In the News**

Fermilab's Education Office will host a science-based Family Literacy Experience on Thursday, November 17. The program will be held in the Leon Lederman Science Education Center with sessions for children in preschool through eighth grade running from 3:30-7:15 p.m. The day is meant to mark the Illinois State Library Family Reading Day with a science twist as parents join their children in using hands-on, science program materials that integrate reading skills.

"We know that literacy is more than just reading," said Susan Dahl, event coordinator and manager of teacher resources in the Education Office. "Research tells us that we need context to read effectively or our brains will discard the words we are reading." The hands-on activities used at the event, what Dahl calls "inquiry science activities," can be used to reinforce the information children read. Sessions will guide children through music and movement activities centered on the study of milk, construction of ball and ramp tests, exploration of the solid/liquid substance "Oobleck" and a simulation of work done by epidemiologists. Parents also will learn how to encourage their children to read by conducting similar activities at home.

The grade-appropriate sessions are as follows: preschool, 3:30-4:15 p.m.; grades K-2, 4:45-5:45 p.m.; grades 3-5 and grades 6-8, 6:15-7:15 p.m. Snacks will be available between sessions and prizes will be raffled off for both children and parents. The fee is \$12 per child with adult companion. To register, or for more information, go to [the Website](#).

## Search the Fermilab Today Archive

### Info

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## From *Chicago Tribune*, November 10, 2005

### Astronomy: Light on a dark place Observatory aims to find the origin of cosmic rays

Cosmic rays, the highest-energy particles in the universe, are being pitched at Earth from someplace beyond our galaxy, and for more than seven decades no one has been able to figure out where they are coming from.

Now, armed with a cosmic ray catcher's mitt that is being inaugurated Thursday in Argentina on a site half the size of Rhode Island, scientists from the University of Chicago and Fermilab, along with more than 250 other scientists from 16 countries, hope to solve one of astronomy's biggest mysteries.

In addition to searching for the source of cosmic rays, researchers will use the observatory, which consists of hundreds of small detectors spread over 1,200 square miles of ranch and farm land, to explore the universe in ways they couldn't before. The \$50 million observatory is named after Pierre Auger, who in 1938 discovered particle showers on Earth caused by cosmic rays. He later studied cosmic rays at the University of Chicago using a hot-air balloon. Cosmic rays are so powerful that when they collide with air molecules in Earth's atmosphere they can temporarily produce energies similar to those that existed right after the Big Bang, the explosive beginning of the universe some 13 billion years ago.

"We want to understand how nature reaches these energies," said U. of C. astrophysicist Angela Olinto. "The

## Announcements

### Fermilab Lecture Series

Fermilab Lecture Series Presents a World Year of Physics Lecture: "Einstein: A Man for the Millennium?" on December 2 at 8 p.m. The speaker will be Dr. John Stachel, Professor Emeritus of Physics, Director for Einstein Studies, Boston University.

### Payday Change

Due to the upcoming Veteran's Day on Friday November 11, 2005 and the fact that most banks will be closed, employees will be paid on Thursday, November 10, 2005. Advices will also be distributed on Thursday.

### Mileage Reimbursement Rate Increase

In recognition of recent gasoline price increases, the Internal Revenue Service and the General Services Administration have increased the standard mileage rate reimbursement to 48.5 cents per mile for business miles driven between September 1 and December 31, 2005.

### Top Turns Ten Videos

See the Top Turns Ten presentations, now available as streaming video on the Top Turns Ten [Webpage](#).

### TC.J. Chenier & The Red Hot Louisiana Band

Saturday, November 12, 2005 @ 8 p.m. Tickets are \$19/\$10 for ages 18 and under.

### FSGI01 Will Be Decommissioned On Dec 31, 2005

We are encouraging users of fsgI01 to migrate their interactive computer usage to other interactive machines in FNALU cluster. You can visit the following [link](#) for

energies of the particles that we'll be observing with this detector are millions of times more powerful than we can produce with particle accelerators on Earth. In principle these particles will give us the possibility of testing physics that we can't test in our laboratories. What happened at the beginning of the universe is the same that you could try to probe by reaching higher and higher energies."

[Read More](#) (Registration Required)

information on the cluster.

### **New Classifieds on Fermilab Today**

New [classified ads](#) have been posted on Fermilab Today.

### **[Upcoming Activities](#)**