

## Calendar

### Wednesday, November 16

**2:30 p.m.** Particle Astrophysics Seminar  
(NOTE DATE) - Curia II

Speaker: R. Mandelbaum, Princeton University

Title: Science Results with SDSS Weak Lensing

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

**Note:** There will be no Fermilab ILC R&D Meeting or Colloquium today

### Thursday, November 17

**11:00** Academic Lecture Series - 1 West  
Speaker: C. Quigg, Fermilab

Title: The Electroweak Theory and Higgs Physics – Lecture 6

**2:00** Accelerator Physics and Technology Seminar - 1 West (NOTE TIME)

Speaker: M. Bai, Brookhaven National Laboratory

Title: AC Dipole Based Diagnostics

**2:30** Theoretical Physics Seminar - Curia II

Speaker: M. Redi, New York University

Title: Cosmic D-Strings as Axionic D-Term Strings

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

Title: Readying the Injector for feeding the Spallation Neutron Source

## Weather



Chance of Snow **32%/13%**

[Extended Forecast](#)

[Weather at Fermilab](#)

## A New Record Every Week for Tevatron Luminosity

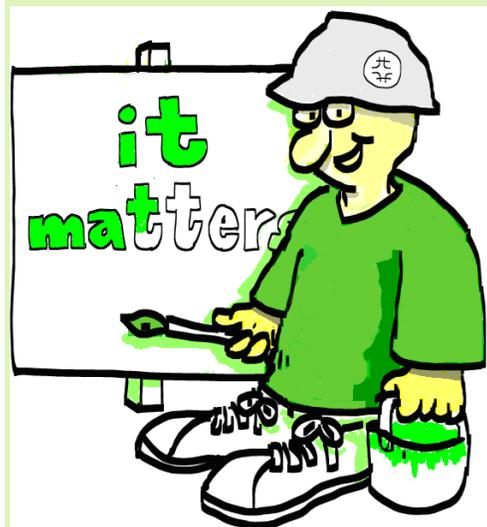
Last week, Fermilab once again set new world records for peak and integrated luminosity. At 8:00 p.m. on November 10, the peak luminosity reached  $167E30\text{cm}^{-2}\text{sec}^{-1}$ . Even better, Fermilab surpassed its [recent integrated luminosity record](#) of 21 inverse picobarns as well. Between Monday, November 7 and Monday, November 14, the Tevatron's weekly integrated luminosity rose to 23 inverse picobarns, a record for the second straight week.

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

*This is the fourth story in a series that explains [what luminosity is](#), and why we've recently gotten better at producing it. This story highlights a process called "slip-stacking," which produces more antiprotons for the Tevatron.*



## Fermilab's Icon for "Green Design" Needs a Name



"The Green Guy", above, needs a name.

So far, our sustainability icon has been known simply as "The Green Guy." On September 30, we asked you to name him, and we received an overwhelming response. We've chosen our favorites from the names you submitted, and now we need your help picking the best one. Please [vote](#) for your favorite name by Monday, November 21.

## Volunteer Reception to Thank Education Helpers

Fermilab Director Pier Oddone has invited about 300 employees, users and contractors to a reception honoring their support of Fermilab educational programs. The Volunteers Reception will be held at 5 p.m. on Wednesday, November 30, on the Wilson Hall second floor crossover. "There's a lot of talent and skill here that we need to make our educational programs a success," said Priscilla Meldrim, of the Education Office. "We need these volunteers. We could not run without them."

**Current Security Status**[Secou Level 3](#)**Wilson Hall Cafe****Wednesday, November 16**

- French Onion
- Texas Style Meatloaf Sandwich
- Grilled Chicken with Black Bean & Corn Salsa
- Italian Sausage with Peppers
- Smoked Turkey Panini Pesto Mayo
- Sausage & Pepperoni Combo
- Fettucine Chicken

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 with Mushrooms
- Stuffed Filet of Sole with Crabmeat
- Vegetable Medley
- Maple Walnut Cake with Maple Glaze

[Chez Leon Menu](#)

Call x4512 to make your reservation.

**Search**

**Search the Fermilab Today Archive**

**Info**

Ioanis Kourbanis (standing) and Kiyomi Seiya of the Accelerator Division-Main Injector Department working at the controls of RF systems for slip-stacking, the technique for transferring protons from the Booster to the Main Injector. Slip-stacking has generated a major improvement in the number of protons delivered to the antiproton target. (Click image for larger version.)

**Slip-stacking to bombard pbar target**

Ioanis Kourbanis judges his upgrade contributions by the state of the antiproton target. He's looking for damage to the target, and damage is what he hopes to find.

Kourbanis, of the Accelerator Division's Main Injector Department, has been coordinating the introduction of the technique called "slip-stacking" for the transfer of protons from the Booster to the Main Injector, with the final goal of increasing the number of protons on the antiproton target—and thus, increasing antiproton (pbar) production. The slip-stacking scheme was proposed by Chuck Ankenbrandt of the Accelerator Division in 1981 and was first studied in the Main Ring accelerator in the late '90s. The scheme was incorporated into Run II upgrades with a design goal of achieving 8E12 protons per pulse on target. In December 2004, the antiproton target was being hit by about 4.5E12 protons per pulse; since slip-stacking has been introduced, the antiproton target has seen pulses in excess of 8.0E12 protons. Now Kourbanis has to start considering the issue of damage to the antiproton target resulting from the increased intensity. He doesn't mind. "That means we've been successful," he says.

In Tevatron luminosity, all paths

Volunteers include those who help keep exhibits at the Lederman Science Center running, provide answers to physics questions from the public at Ask-a-Scientist events, make presentations to local classrooms, help with scout projects and assist docents and others in the Education Office with group tours. Volunteers also provide ideas and clarify the science for classroom materials and exhibits. "They're really the inspiration, particularly for junior high and high school students," said Meldrim, who coordinates school visits to Fermilab. "We want students to gain an appreciation for the science enterprise - who scientists are, how they develop research questions, how they approach their work."

Volunteers also play an important role in Fermilab visits from college students and adults, said Nancy Lanning, of the Education Office. "For older students, it's an opportunity to ask the nitty-gritty questions," she said. Director's Award nominations for especially dedicated volunteers were made last month. The winner will be announced at the reception and given a \$1,000 award. "We are grateful to the directorate for sponsoring this," Lanning said.

For information on how to volunteer with the Education Office, contact Nancy Lanning at [lanning@fnal.gov](mailto:lanning@fnal.gov).

—Kendra Snyder

**Photo of the Day**

Fermilab Today is online at: <http://www.fnal.gov/today/>

Send comments and suggestions to [today@fnal.gov](mailto:today@fnal.gov)

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ultimately lead back to pbars. Increasing the number of collisions in the Tevatron means increasing the number of antiprotons. The only way to increase antiproton production is to fire more protons from the Main Injector at the antiproton target. But the Main Injector gets its protons from the Booster, and therein lies a challenge. The Booster accelerates protons from an initial energy of 400 MeV to a final energy of 8 GeV in 0.033 seconds, the largest proportional increment in the lab's accelerator chain. But this workhorse accelerator is just 475 meters in circumference, compared to 3.3 kilometers for the Main Injector. It takes seven "Booster-fuls," or batches, to fill the Main Injector. Since building a bigger Booster wasn't in the cards, the question was how to get significantly more protons into the Main Injector, to send more protons to the antiproton target. Complicating the question: only one MI batch per pulse can be sent to the antiproton target. So how could it be done?

The answer: By putting two Booster batches in the same place at the same time, in orbit around the Main Injector.

[Read More](#)

—*Mike Perricone*

#### In the News

**From *PhysOrg.com*,  
November 15, 2005:  
Watson Lecture: Exploring Einstein's  
Legacy**

November 25 marks the 90th anniversary of Einstein's formulation of his theory of general relativity, which describes gravity as a consequence of the warping of space and time.



Wilson Hall with Booster Pond viewed from the south at sunset. (Photo by Reidar Hahn; Click image for larger version.)

#### Announcements

##### **Inclement Weather Snow Removal**

While Wilson Hall has a snow melt system for the front center plaza, portions of the front sidewalk, and stairs to the east and west parking lots, the snow melt system does not cover all front areas of the plaza or all sidewalks. For this reason, residents will see barricades and ropes to section off the areas not on the snow melt system. During periods of heavy snow and sub zero temperatures beyond the design criteria of the snow melt system, additional barricades will be placed in the front plaza area until snow removal crews can respond. As in previous winters, sections of North Eola Road and West Wilson Road may be closed during extreme winter conditions.

##### **Give the Gift of Good Health**

Surprise someone with the gift of good health. Gift Certificates are available for a Recreation Membership for your spouse, adult dependent, or co-worker. The

Since then, physicists have been trying to understand and test general relativity's predictions, including the existence of black holes (which are made not of matter but of whirling space and warped time), gravitational waves, and the acceleration of the universe. "We don't understand the predictions very well because we are not clever enough to solve Einstein's equations when spacetime is highly warped and dynamical," says Kip Thorne, the Richard P. Feynman Professor of Theoretical Physics at the California Institute of Technology.

"Einstein's predictions have turned out to reach into the domain of our every day technology. For example, time flows more slowly on the earth than it does in the Global Positioning System's satellites high above the surface of the earth. The software that computes where we are from the GPS signals must correct for the warping of time from there to here, or the system would fail," Thorne says.

[Read More](#)

Recreation Facility is open twenty-four hours a day, every day. The price for a membership is \$45 for graduate students and each of their qualified family members and \$75 for a regular membership and each of their qualified family members. Go [online](#) for more information and pictures of the facility.

#### **Entertainment Books are On Sale**

Entertainment Books are on sale now in the Recreation Office. You can view the [offerings](#) in books online before you order.

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