

## Calendar

**Thursday, Sept. 18**  
 THERE WILL BE NO PHYSICS AND DETECTOR SEMINAR THIS WEEK  
 THERE WILL BE NO THEORETICAL PHYSICS SEMINAR THIS WEEK  
**3:30 p.m.**  
 DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over  
 THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

**Friday, Sept. 19**  
**3:30 p.m.**  
 DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over  
**4 p.m.** [Joint Experimental-Theoretical Physics Seminar](#) - One West  
 Speaker: M. Strang, State University of New York, Buffalo  
 Title: Observation of ZZ Production with DZero

[Click here](#) for NALCAL, a weekly calendar with links to additional information.

## Weather

 **Sunny**  
 71°/50°

[Extended Forecast](#)  
[Weather at Fermilab](#)

## Current Security Status

[Secon Level 3](#)

## Wilson Hall Cafe

## Feature

### Fermilab gives home to endangered owls



A 1-year-old barn owl. See the [YouTube video](#) about how the endangered birds have been reintroduced to Fermilab.

Fermilab's already varied wildlife just got a little more diverse.

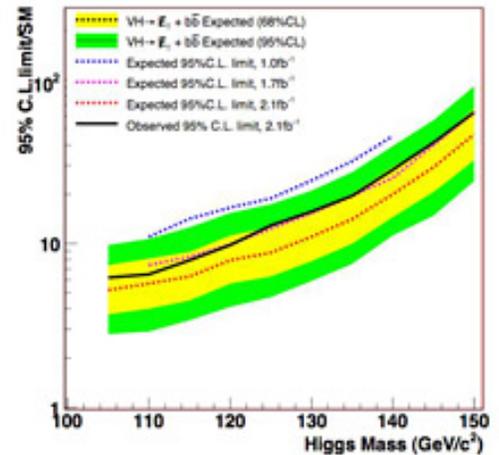
Ecologist Dan Thompson of the DuPage County Forest Preserve released two endangered barn owls into a storage barn on Kautz Road on Friday.

"We chose Fermilab for the high-quality habitat and the abundance of open grassland," Thompson said. "It is one of the longest contiguous pieces of grassland in the state. We also chose it for Fermilab's commitment to ecological health."

The Department of Energy designated Fermilab one of six National Environmental Research Parks. Since 1975, volunteers at Fermilab have worked to restore more than 1,200 acres of native prairie, the barn owl's natural habitat. Less than one-tenth of 1 percent of natural prairie remains in Illinois.

## Fermilab Result of the Week

### Cleaning up the particle mess to find the Higgs



The diagram shows the limit to Higgs production (at a 95 percent confidence level) for various Higgs masses. The blue and pink lines show the expected limits obtained using smaller data sets, and the red line shows the current expected limit using simulated data, which improves about 20 percent with respect to the previous result. The black line shows the limit observed in real data.

The Higgs mechanism is a crucial part of the Standard Model. Scientists introduced this mechanism into the Standard Model to describe how the electroweak force carriers and all fundamental particles obtain mass. One of the predictions of this mechanism is that a new particle should exist: the Higgs boson. The Higgs boson is the sole remaining undiscovered piece of the Standard Model, and the quest for it is now the highest ranking priority for the CDF and DZero experiments.

There are various ways the Tevatron can produce the Higgs boson. A CDF team has been looking at events where the Higgs is produced together with a W or Z, where the W or Z go undetected. This leaves a signature of the Higgs that seems to recoil against nothing.

This particular Higgs signature is distinct from the majority of collisions at CDF. Once this Higgs is produced, it primarily decays to bottom quarks, which are seen in the detector as two sprays of particles called jets. Unfortunately, many uninteresting physics processes that mimic the Higgs signature can creep into the signal sample. Although these

## Thursday, Sept. 18

- Minnesota wild rice w/chicken
- Tuna melt on nine grain
- Smart cuisine: Italian meatloaf
- Chicken casserole
- Smart cuisine: vegetarian salad wrap
- Assorted slice pizza
- Mandarin chicken

[Wilson Hall Cafe menu](#)

## Chez Leon

## Thursday, Sept. 18

### Dinner

- Spinach & feta in phyllo
- Roasted prime rib
- Herb & garlic potatoes
- Dilled baby carrots & green beans
- White chocolate mousse

## Wednesday, Sept. 24

### Lunch

- Southwest cornish hens
- Chipotle sweet potatoes
- Orange carmel flan

[Chez Leon menu](#)

Call x4598 to make your reservation.

## Archives

[Fermilab Today](#)

[Result of the Week](#)

[Safety Tip of the Week](#)

[ILC NewsLine](#)

## Info

[Fermilab Today](#)

is online at:

[www.fnal.gov/today/](http://www.fnal.gov/today/)

Send comments and suggestions to:

[today@fnal.gov](mailto:today@fnal.gov)



[Barn owl peers out of its new home at Fermilab.](#)

The loss of habitat destroys the owls' breeding sites and limits the availability of food. That coupled with farmers leaving less land unplowed, sealing barns tighter and using pesticides to kill mice has made the owls scarce. Fewer than 20 barn owl sightings have been documented by the Illinois Department of Natural Resources in the past 10 years, none in Kane or DuPage counties.

Thompson released barn owls bred from a captive pair at Willowbrook Wildlife Center into several forest preserves in Kane and DuPage counties, but he said the Fermilab site has the best chance of becoming the birds' permanent home.

Fermilab's restoration programs have succeeded in reviving populations of a variety of animals. Birds such as herons, hawks and the occasional bald eagle have been spotted on Fermilab property, along with foxes, coyotes, deer, mink, weasels and even a few badgers.

Fermilab staff fed the owls in the barn during the weekend and put out seed to attract mice. The owls were released Monday and have so far stayed on site.

Thompson plans to continue to release barn owls onto Fermilab property each year – next time, with satellite transmitters.

-- *Kathryn Grim*

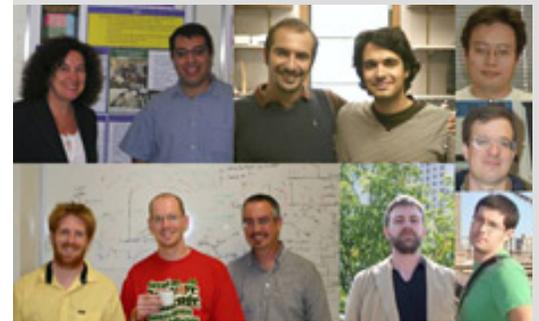
**Feature**

backgrounds make the Higgs signatures difficult to detect, they also motivate scientists to develop new techniques to understand and reject them.

Since Higgs events are very rarely produced at the Tevatron, it is important to retain as many of these precious events as possible. For this purpose, the CDF team analyzes events where one or both the jets originating from the Higgs are identified as coming from bottom quarks. In addition, the team looks at previously unused events containing up to three jets, where one jet is actually a tau lepton coming from a W, or hard quark/gluon radiation from one of the primary jets.

With these additions to the analysis the number of uninteresting events increases by a large amount. The events, which mimic the Higgs, can now be considered because scientists' understanding of them has improved. Using this data, CDF scientists now expect twice as many Higgs events.

These, and other improvements incorporated into this version of the analysis, improve the sensitivity to Higgs events by 20 percent. These improvements make it one of the most sensitive searches at the Tevatron and push scientists' efforts to observe this elusive particle one step closer to realization.



From top left, clockwise: Daniela Bortoletto, Artur Apresyan, Fabrizio Margaroli and Karolos Potamianos all of Purdue University; Song Ming Wang, of Academia Sinica; Oscar Gonzalez Lopez and Miguel Vidal, of CIEMAT; Ben Kilminster, of Fermilab; Brian Winer, Richard Hughes and Brandon Parks, of Ohio State University.

**Accelerator Update**

## Fermilab UEC gets new leadership

The Fermilab Users' Executive Committee recently held elections for 2008-2009 posts. Ashutosh Kotwal was elected chair to replace outgoing Chair Kevin Pitts.



Ashutosh Kotwal,  
Duke University,  
UEC chair.

The UEC serves as a liaison between outside scientists and engineers who use the laboratory and the Fermilab administration. The UEC seeks to meet researchers' needs and to encourage discussion about the future of the laboratory and the field of high-energy particle physics.

The following new members were elected:

- Karen Gibson (Pittsburgh), CDF
- Mike Hildreth (Notre Dame), D0/CMS/ILC
- Ron Moore (Fermilab), AD/CDF
- Heather Ray (Florida), Miniboone
- Jon Urheim (Indiana), Minos/Nova
- Tricia Vahle (William & Mary), Minos

Continuing UEC members are:

- Dan Hooper (Fermilab), astro/theory
- Matthew Jones (Purdue), CDF/CMS
- Ashutosh Kotwal (Duke), CDF/Atlas
- Kevin Pitts (Illinois), CDF
- Lee Sawyer (Louisiana Tech), D0
- Mitch Soderberg (Yale), microBoone
- Kirsten Tollefson (Michigan State), CDF

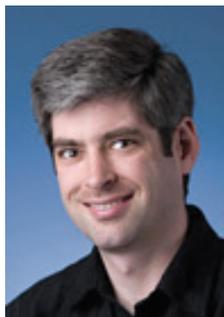
Find out more about the UEC [here](#).

### In the News

## Fermilab scientist wins alumni award

From *St. Cloud State University news*,  
Sept. 17, 2008

St. Cloud State University has announced its 2008 Alumni Award winners - graduates, staff and friends recognized by the St. Cloud State Alumni Association for outstanding contributions to society and the university. Among them is Dan Hooper '99, Oak



### Sept. 15-17

- Two stores provided ~32 hours and 10 minutes of luminosity
- LCW leak discovered on Pbar magnet
- Power supply fault causes loss of stack
- Inspection of TeV power supply knife-switches begins
- TeV quench diagnosed: Collimator at fault

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

### Special Announcement

## "Jeopardy" airs accelerator category

Set your DVR and put away your Wii! Today, the television game show JEOPARDY! will feature a category entitled "Accelerator," which will include interactive clues filmed at SLAC and a short overview of the laboratory. Don't miss SLAC's foray into the world of JEOPARDY! The show will be broadcast tonight on the ABC 7 Chicago WLS-TV, at 3:30 p.m. Please check specific airtimes for the show on your cable provider's program list.

### Announcements

#### [Have a safe day!](#)

#### **Dark matter, dark energy talk in D.C**

The Smithsonian in Washington D.C. will feature three prominent physicists in a discussion about dark matter and dark energy on Sept. 24. Fermilab theorist Joe Lykken and University of Chicago astrophysicists Rocky Kolb and Michael Turner will discuss upcoming research, including the use of accelerators, particle detectors and telescopes to unravel the mystery of what constitutes the 96 percent of universe that does not consist of known matter. [Click here to learn more](#)

#### **Fermilab Management Practices Seminar available**

The Professional Development Office has scheduled the Fermilab Management Practices seminar, (FMP), beginning in October. FMP, which is required for all new managers and supervisors, consists of the following courses: Managing Within the Law, Behavioral Interviewing, Interaction Management, Performance Review, Fermilab Functions. Please [click here](#) for more information.

#### **Flu shot clinics for 2008 season**

Use the east entrance of each building for the

Park, Ill., an associate scientist in the Theoretical Astrophysics Group at the Fermi National Accelerator Laboratory, who received the College of Science and Engineering Leadership Award. Hooper earned his doctorate at the University of Wisconsin Madison and completed a postdoctoral fellowship at Oxford University, after which he secured a coveted staff scientist position at Fermi National Laboratories, where he is known for his expertise in dark matter. He authored two layman's guides to the universe, "Dark Cosmos: In Search of Our Universe's Missing Mass and Energy" and "Nature's Blueprint: Supersymmetry and the Search for a Unified Theory of Matter and Force."

[Dan Hooper](#)

[View press release](#) (pdf)

## Fermilab Looks for Visitors from Another Dimension

From *Scientific American*, Sept. 13, 2008

The detection of extra dimensions beyond the familiar four—the three dimensions of space and one of time—would be among the most earth-shattering discoveries in the history of physics. Now scientists at the Fermi National Accelerator Laboratory in Batavia, Ill., are designing a new experiment that would investigate tantalizing hints that extra dimensions may indeed exist.

Last year researchers involved in Fermilab's MiniBooNE study, which detects elusive subatomic particles called neutrinos, announced that they had found a surprising anomaly. ...

... After a year of analysis, the investigators have failed to come up with a conventional explanation for this so-called low-energy excess. The mystery has focused attention on an intriguing and very unconventional hypothesis: a fourth kind of neutrino may be bouncing in and out of extra dimensions.

[Read more](#)

following clinics: Oct. 2 from 9 a.m. to 1 p.m. in Wilson Hall, ES&H training room; Oct. 14 from 9 to 11:30 a.m. in the Industrial Center Building's main floor lunch room; Oct. 21 from 9 to 11:30 a.m. Wilson Hall, ES&H training room. Active full-time employees, term employees and temporary employees are eligible for the vaccinations. Not eligible are: contractors, family members of employees, visitors/experimenters, seasonal employees, dayworkers, on-call employees and retirees. Register online at the [ES&H homepage](#) or call ext. 3232. Bring your Fermilab ID card and a completed consent form from the ES&H homepage. Wear a loose-fitting shirt. Pregnant employees need a note from a doctor.

### Microsoft Word, Excel classes

The Office for Professional and Organization Development will offer classes in Microsoft Word and Excel in early October. "Word 2003 Advanced" will take place on Oct. 7. [Learn more and enroll](#). "Excel Advanced" will take place on Oct. 8. [Learn more and enroll](#).

### Sept. 15-21 is National Pollution Prevention Week

Pollution prevention, or P2, means not creating pollution in the first place. P2 focuses on reducing waste at its source, reusing what can't be reduced and recycling what otherwise would be thrown away. The keys to P2 are the three R's - Reduce, Reuse and Recycle. [Read more](#).

### Michel Lauziere performs at Fermilab this Saturday, Sept. 20, at 7 p.m.

Michel Lauziere - self-titled "Master of Unusual Comedy" and featured on the "Late Night with David Letterman" show - will bring his magic to Fermilab this Saturday, Sept. 20. Please note: The [family-friendly show](#) starts at 7 p.m., an hour earlier than the usual Arts Series time. For tickets call (630) 840-2787. Tickets cost \$17 for adults/\$9 for guests 18 and under. Special promotion: Bring a new patron to this show and receive a half-off voucher for upcoming Arts Series events.

[Additional Activities](#)