

## Furlough Information

New furlough information, including an [up-to-date](#) Q&A section, appears on the [furlough Web pages](#) daily.

## Calendar

### Friday, Feb. 8

**3:30 p.m.**  
DIRECTOR'S COFFEE  
BREAK - 2nd Flr X-Over  
**4 p.m.**

[Joint Experimental-Theoretical  
Physics Seminar](#) - One West

Speaker: S. Dube, Rutgers  
University  
Title: Search for  
Supersymmetry at CDF Using  
Trileptons

### Sunday, Feb. 10

**2:30 p.m.**  
[Fermilab Chamber Series](#) -  
2nd floor Art Gallery  
Tickets: \$15  
Metropolis Quartet

### Monday, Feb. 11

**2:30 p.m.**  
[Particle Astrophysics Seminar](#)

- Curia II  
Speaker: G. Farrar, New York  
University  
Title: Giant AGN Flares and  
Cosmic Ray Bursts

**3:30 p.m.**  
DIRECTOR'S COFFEE  
BREAK - 2nd Flr X-Over  
**4 p.m.**

All Experimenters' Meeting-  
Curia II  
Special Topic: Update on CMS  
Installation and Commissioning

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

## Weather

## Special Announcement

### Got a furlough question?

Fermilab's [furlough Web pages](#) provide information, updated daily, on rolling furloughs, and an opportunity to ask questions. Before you submit a question, check the existing information to see if you can find the answer. Cutting down on the many duplicate questions that already have answers lets managers put their efforts into answering new questions with information that employees need.

## Feature

### Closing in on the Higgs



The Tevatron experiments will reach into the region considered the most-likely to house the low-mass Higgs boson.

CDF and DZero collaborators last week described the path to the Higgs boson they hope to continue forging through 2010.

CDF and DZero co-spokesmen [Rob Roser](#) and [Darren Wood](#), spoke to the Particle Physics Project Prioritization Panel, the group charged with recommending a 10-year plan for U.S. HEP.

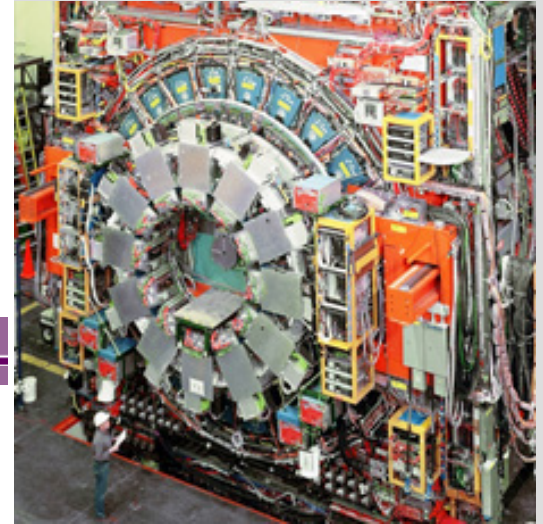
"2007 was a really good year for us, and we expect 2008 to be better," Wood said, citing a banner year of 34 scientific papers submitted in 2007 by DZero. "And the physics prospects for 2010 are exciting."

Both experiment teams told P5 that their collaborators would have smooth-running detectors and ample personnel through 2010.

The Tevatron could reap more discoveries

## From iSGTW

### Computing the unseen: the search for dark matter



Researchers are using the Collider Detector at Fermilab detector to help in the search for dark matter, hoping to observe a Bs particle decay, which could provide evidence of supersymmetry and dark matter. *Image courtesy of Fermilab*

Think you've seen it all? Think again.

Everything we can see and detect makes up only four percent of the universe, according to Michael Weinberger, a physicist at Texas A&M University and member of the Collider Detector at Fermilab collaboration.

Weinberger and his CDF colleagues are conducting a search that could shed light on the universe's "dark matter"—material that doesn't emit or reflect radiation but is predicted by astrophysical observations to outnumber visible matter by nearly six-to-one—and they are using grid technology to expedite their hunt.

#### The elusive B<sub>s</sub> decay

The key to the search is the ability to measure the rate at which Bs particles decay to form two muons. According to the Standard Model, a well-established theory that describes elementary particles and their interactions, this decay is extremely rare.

"It is comparable to you being picked randomly from the entire population of the U.S.,"

 <b>Snow 33°/25°</b>
<a href="#">Extended Forecast</a>
<a href="#">Weather at Fermilab</a>
<b>Current Security Status</b>
<a href="#">Secon Level 3</a>
<b>Wilson Hall Cafe</b>
<b>Friday, Feb. 8</b>
- Cream of asparagus - Buffalo chicken wings - Cajun breaded catfish - Sweet & sour pork over rice - Honey mustard ham & swiss panini - Assorted pizza slices - Carved turkey
<a href="#">Wilson Hall Cafe Menu</a>
<b>Chez Leon</b>
<b>Wednesday, Feb. 13 Lunch</b>
- Sautéed salmon fillet w/ watercress sauce - Vegetable medley - Apricot tart
<b>Thursday, Feb. 14 Dinner</b>
- Red pepper soup - Steamed lobster tails w/ mousseline sauce - Asparagus w/lemon rind - Sweetheart salad (beets, walnuts & bleu cheese) - Lover's delight
<a href="#">Chez Leon Menu</a>
Call x4598 to make your reservation.
<b>Archives</b>
<a href="#">Fermilab Today</a>
<a href="#">Result of the Week</a>
<a href="#">Safety Tip of the Week</a>
<a href="#">ILC NewsLine</a>
<b>Info</b>

before its scheduled shut down in 2009, but with an additional year of operation, the CDF and DZero experiments would have more than twice the data available today. That opens the door to compelling physics such as the first exploration of the Terascale, a better definition of top-quark mass and finding the Higgs boson.

"We think taking advantage of the Tevatron's discovery potential is the right way to end the experiment," Roser said.

Physicists expect the Higgs to give off a very small signal amidst very large background, making it tricky prey to corner. Yet, other measurement constraints, including some from the Tevatron experiments, have narrowed in on the region considered the most likely home of a light-mass Higgs, the 115 to 182 GeV mass region.

By the end of 2009, researchers will have a good indication of the Higgs' possible existence in the LHC's so-called sweet-spot mass range of 155 to 170 GeV. Another year of data could extract the first evidence for a Higgs in that mass range.

"The Higgs production and decay modes we look for at low mass at Fermilab are not the same as CERN scientists look for with the LHC," Wood said. "There is a complementary nature. There is a productive period of overlap expected."

-- *Tona Kunz*

### Interactions press release

## Racing ahead at the speed of light

From *Brookhaven National Laboratory*, Feb. 6, 2008

*Accelerator physicists correct beam scattering, increase collision rates of speeding particles*

Imagine trying to catch up to something moving close to the speed of light - the fastest anything can move - and sending ahead information in time to make mid-path flight corrections. Impossible? Not quite. Physicists at the Relativistic Heavy Ion Collider (RHIC), a particle accelerator at the U.S. Department of Energy's Brookhaven National Laboratory, have achieved this tricky task - and the results may save the Lab money and time in their quest to understand the inner workings of the early universe.

Weinberger explains.

At such a low rate, researchers cannot expect to identify this decay among the trillions of proton-antiproton collisions produced by Fermilab's world-class accelerator, the Tevatron.

[Read more](#)

-- *Susan Burke, Fermilab*

### Announcement

## Reduced hours in Medical Department

Because the furlough has reduced the available hours of the medical staff, we regret to announce that the Medical Department can no longer maintain its extended office hours. Beginning Monday, Feb. 11, and until the rolling furlough period ends, the Medical Department will only be open between 7 a.m. and 3:30 p.m. Monday through Friday. We apologize for any inconvenience this may cause.

### Announcements

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

#### Register for S/CI training

Technical personnel and managers can sign up for suspect/counterfeit items identification training, scheduled to take place Feb. 11-14 at Fermilab. This training is required for construction supervisors and task managers. Three courses are offered: course 1, "Suspect/Counterfeit Items Identification", a two-hour, hands-on experience; and course 2, "Suspect/Counterfeit Items DOE Program", a 1.5-hour overview of DOE's S/CI program; and course 3 "Suspect/Counterfeit Items Train the Trainer", a three-hour, Q&A session intended for Fermilab individuals with responsibility to provide S/CI training for personnel within their division or section. Courses must be taken in order. Register at the [ES&H Web site](#) or contact [Joel Kofron](#), x8444

#### Adobe Acrobat 7.0 Professional: Advanced - Feb. 28, 2008

Learn to convert technical documents to PDF files, enhance and control PDF content accessibility, customize PDF documents for interactive use only and prepare PDFs for commercial printing. [Learn more and enroll](#)

**Discounted tickets available**

*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)

The physicists have developed a way to measure subtle fluctuations in RHIC's particle beams as they speed around their 2.4-mile-circumference high-tech racetrack - and send that information ahead to specialized devices that smooth the fluctuations when the beam arrives.

[Read more](#)

Discounted tickets are available for the following events: Chicago Bulls at the United Center, March 22, \$26 and March 25, \$30; Doodlebops Live at the Rosemont Theater, March 8; and When Irish Cows Are Smiling dinner and show at the Milk Pail, March 14, \$35.

#### **Classifieds**

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

[Additional Activities](#)