

## Calendar

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

**Friday, Dec. 11**

**3:30 p.m.**

DIRECTOR'S COFFEE  
BREAK - 2nd Flr X-Over

**4 p.m.**

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

Speaker: Dmitry Bandurin,  
Kansas State University

Title: Determination of  $\alpha_s$  and  
Double Parton Interactions in  
DZero.

**Monday, Dec. 14**

THERE WILL BE NO  
PARTICLE ASTROPHYSICS  
SEMINAR THIS WEEK

**3:30 p.m.**

DIRECTOR'S COFFEE  
BREAK - 2nd Flr X-Over

**4 p.m.**

All Experimenters' Meeting -  
Curia II  
Special Topics: E-906/Drell-  
Yan Installation; 8mm Tape  
Retirement Plan

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

[Upcoming conferences](#)

## Campaigns

### [Take Five](#)

### [Tune IT Up](#)

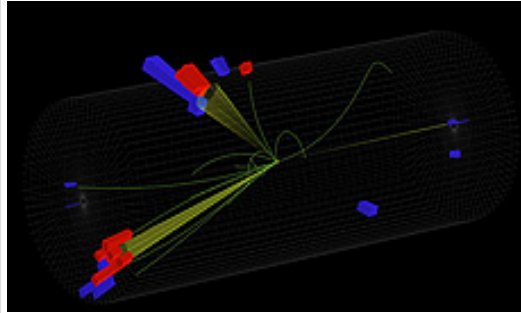
## H1N1 Flu

For information about H1N1,  
visit Fermilab's flu information  
[site](#).

## Weather

## CMS Result of the Month

### Simply smashing



This is the first recorded event in CMS that has the distinct look of quarks or gluons scattered out of the beam particles.

I write this month's CMS Result of the Month from the CERN hostel, and I am simply brimming with excitement. This week is the CMS collaboration meeting and scientists from around the world have come together to talk about the stunning new data coming out of the CMS detector.

A couple of weeks ago, the LHC turned back on after being down for a year while recovering from the [damage](#) that occurred in fall of 2008. It's been a long road, but it's been worth it. The startup has been cautious, but ambitious. In the [last ROM](#), I described "beam splashes" in which the beam was run into blocks of steel intentionally put in place to protect the equipment. Well, the blocks have been removed and the accelerator has circulated two proton beams in opposite directions around the ring for hours at a time. The beams have been intentionally made to collide inside the four large experiments arrayed around the ring. For the next couple of days, the accelerator will deliver about a million collisions to each of the experiments. This is at low energy and beam intensity, but it's just right to get an initial understanding of the accelerator and detectors.

While the current efforts are on recording this low-energy data, the energy of the beams has even been increased to higher than the reigning world's champ, the Fermilab Tevatron, and the beams were even collided very briefly. In February, the LHC will begin attempting collisions with energies 3 ½ times higher than the Tevatron.

I spent the week hearing reports of

## Feature

### Drillers will sample soil, rock at proposed neutrino site



A crew will use a drilling rig similar to the one above to collect soil and rock samples on Fermilab's site. *Image courtesy of the Groff Testing Corporation.*

The preliminary design for a proposed [long-baseline neutrino project](#) at Fermilab is about to take a step forward.

Starting next week, engineers will begin to collect the geological information on Fermilab's site that will guide the proposed project's design and the construction of underground tunnels and caverns.

"We need to understand the geological specifics for the potential project," said Fermilab engineer Tim Wyman. "The site investigation will give us an idea of the types and conditions of soil and rock we have and how the water flows in those areas."

To collect soil and rock samples, engineers will drill at three areas.

On Monday, Dec. 14, a crew will conduct seismic tests near the Main Injector to identify the soil and rock content. On Wednesday, Dec. 16, a crew will drill to depths of 100 and 240 feet at two locations near the Main Injector. The drilling and seismic tests will not affect the operation of the Tevatron or any other laboratory activities.

The most visible drilling will take place on Jan. 4 near Kirk and Giese roads on the west side of the laboratory. At this location engineers will collect soil samples down to 65 feet and rock samples down to 650 feet.

 **Mostly sunny**  
21°/10°

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

[Current Security Status](#)

[Secon Level 3](#)

[Wilson Hall Cafe](#)

### Friday, Dec. 11

- Breakfast: chorizo burrito
- Old-fashioned ham and bean soup
- Philly-style chicken
- Chicken pot pie
- Baked fish over rice
- Roasted veggie and provolone panini
- Assorted slices of pizza
- Baked potatoes

[Wilson Hall Cafe menu](#)

[Chez Leon](#)

### Wednesday, Dec. 16

#### Lunch

- Stuffed flank steak
- Garlic mashed potatoes
- Cherry cheesecake

### Thursday, Dec. 17

#### Dinner

- Red pepper soup
- Beef croustades with boursin and mushroom
- Spinach with scallions and lemon
- Roasted potatoes
- Raspberry parfait with Christmas cookies

[Chez Leon menu](#)

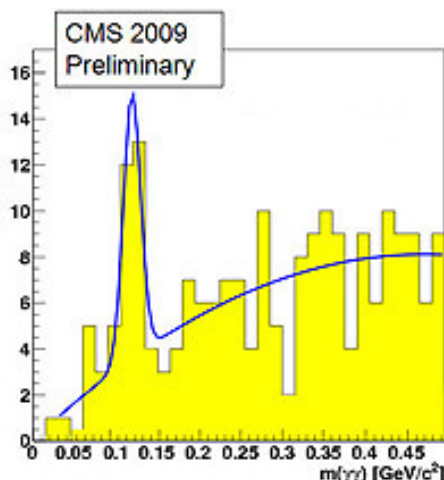
Call x3524 to make your reservation.

[Archives](#)

experimental triumphs, of interesting collisions and known particles observed in the new equipment. The future is bright and it's only a short while before CMS moves beyond the known and enters the uncharted quantum frontier.

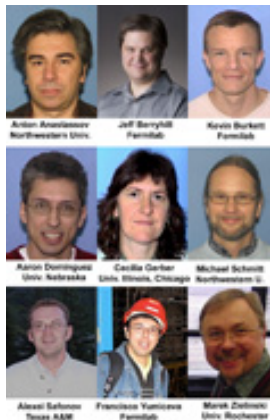
Stay tuned.

— *Don Lincoln*



An extremely early plot of an analysis looking for neutral pions, which would show up as a peak near 0.14. The peak is a little low, demonstrating just how new the plot is. This difference is expected and subsequent calibration will improve the measurement. This plot is interesting because neutral pions decay into two photons, just like the Higgs boson. A plot similar to this might be how the Higgs boson is found.

These physicists head particle identification groups at the LHC Physics Center at Fermilab. Each develops and approves the algorithms whereby raw data is converted into the physical electrons, muons, neutrinos, jets and b quarks necessary for advanced analysis.



[From symmetry breaking](#)

All drilling will take place during regular business hours and should last one to two days at each location. Fermilab does not anticipate any noise louder than that heard from regular traffic on Kirk Road. A crew will use a drilling rig to bore a three-inch diameter hole to collect the soil and rock samples. After the drilling is complete, workers will refill the holes to return the sites to their natural appearance.

Using funds from the American Recovery and Reinvestment Act, Fermilab awarded the \$195,000 site investigation contract to the Groff Testing Corp., an engineering consultant firm in Kankakee. The firm will submit a report with its site investigation findings to Fermilab in early 2010.

The proposed long-baseline neutrino project, which could begin construction as early as five years from now, could potentially involve major construction on Fermilab's site. The laboratory will involve its [Community Advisory Board](#) throughout the design process.

— *Elizabeth Clements*

[Recovery Act Photo](#)

## NOvA crews dig in



Construction crews removed 54,000 tons of granite from the future site of the NOvA detector building. They have used the crushed rock as a base for 3.5 miles of access road and will use it as part of the roof of the detector facility to help block cosmic rays. *Photo by Dan Traska of Einarson Flying Service.*

[In the News](#)

[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)

Visit the Fermilab [home page](#)

## The search for dark matter: CDMS presents its results Thursday, Dec. 17

There are many rumors circulating about upcoming results from the CDMS experiment. A statement from the CDMS collaboration helps to set the record straight:

- The CDMS collaboration has completed the analysis of the final CDMS-II runs, which more than doubled the total data from all previous runs combined. The collaboration is working hard to complete the first scientific publication about these new results and plans to submit the manuscript to [arXiv.org](http://arXiv.org) before the two primary CDMS talks scheduled for Thursday, Dec. 17, at Fermilab and at SLAC.

Fermilab physicist Lauren Hsu will present a talk on the new results at Fermilab on Thursday, Dec. 17 at 4 p.m. CST. A Webcast will be available [here](#).

Also on Dec. 17, at 2 p.m. PST, Southern Methodist University physicist Jodi Cooley, CDMS analysis coordinator, will speak at SLAC. Her talk will be Webcast on the [CDMS Web site](#).

When collaborators opened the black box [nearly two years ago](#) they didn't see any candidates for dark matter particles, but they did set the world's best constraints on the properties of dark matter candidates, another step forward in the search.

The CDMS experiment is located a half-mile underground in the Soudan Underground Laboratory in northern Minnesota, shielded from cosmic rays and other particles that could mimic the signals expected from dark matter particles.

Learn more about dark matter and the CDMS experiment on this [FAQ Web page](#) from the 2008

press release. An article in *symmetry* magazine features Jodi Cooley and explains how scientists use the CDMS experiment to listen for [whispers of dark matter](#).

View photos and video related to the CDMS



CDMS project manager Dan Bauer adjusts elements of the CDMS detector.

## Higgs could reveal itself in dark-matter collisions

From *Physics World*, Dec 10, 2009

For particle physicists analyzing the first data from CERN's Large Hadron Collider (LHC) in Geneva, it is the €4.3bn question: is there a particle known as the Higgs, which endows all others with mass? But now a study suggests there might be a far cheaper method of finding the answer - and gargantuan particle accelerators don't get a look in.

According to Marco Taoso of CERN and colleagues, the famed Higgs could be leaving its imprint in the light produced in collisions of dark-matter, the substance believed by most scientists to make up the vast majority of the universe's mass. In fact, the researchers think we could be seeing the Higgs's tell-tale spectral signatures in this way within a year - so sooner, potentially, than the LHC unscrambles data on the elusive particle.

[Read more](#)

### Announcements

#### Latest Announcements

[FermiLab Mac Users' group meeting - Dec. 16](#)

[Fermilab December payroll information](#)

[Scottish country dancing will meet every Tuesday through December](#)

[International folk dancing meets Dec. 17, then not until Jan. 7](#)

[Give the gift of movies](#)

[Book atrium events through the Office of Communication](#)

[FMLA and FTL policy updates](#)

[Wilson Hall stocking stuffer holiday sale ends today](#)

[Gallery talk by Peter Olson today](#)

[Register for Quigg symposium - Dec. 14-15](#)

[Barn Dance - Dec. 13](#)

[Free introductory martial arts classes -](#)



experiment in the [CDMS image gallery](#) from 2008.

— *Rhianna Wisniewski*

### Special Announcement

## Avian art works on display in Fermilab Art Gallery

A new exhibit in the Fermilab Art Gallery features drawings by Peter B. Olson in an exhibit titled Dissimulation.

A gallery talk featuring the artist will take place in the Fermilab Art Gallery from 12-1 p.m. today and an artist reception celebrating the works and the artist will take place from 5-7 p.m. today in the Art Gallery.



An artist reception featuring paintings by Peter B. Olson will take place tonight at 7 p.m.

Olson's drawings feature birds from around the world. His artwork explores the beauty and mystery of birds in various regions throughout the world. His most recent exhibits included the international Birds in Art in Wausau, Wisconsin, American print surveys in Kansas and Indiana and a show in Chicago's Printworks Gallery.

Olson, who earned his MFA in printmaking from Northern Illinois University, works at the NIU Art Museum as assistant director.

The exhibit will run through Feb. 26, 2010.

View Olson's work on his [Web site](#).

[Dec. 14 and 16](#)

[Fermilab blood drive - Dec. 15-16](#)

[Inaugural potluck party - Dec. 16](#)

[Tell us about your Take 5 moment by Dec. 16](#)

[English Country Dancing - Jan. 3](#)

[Fermilab Management Practices seminar beginning Feb. 11](#)

[Sign up for spring Science Adventures classes](#)

[Argentine Tango at Fermilab meets Wednesday nights](#)

[Prescription eyewear technician location change](#)

[Lederman Science Center holiday hours](#)

[Chicago Blackhawks discount tickets](#)

[Additional Activities](#)

[Submit an announcement](#)

### Classifieds

Find new [classified ads](#) on *Fermilab Today*.