

## Calendar

**Thurs., January 11**

**2:30 p.m.** Particle Astrophysics Seminar - (NOTE DATE) Speaker: H. Seo, Arizona State University  
Title: Probing Dark Energy with Baryon Acoustic Oscillations from Future Large Galaxy Redshift Surveys

**3:30 p.m.** Director's Coffee Break - 2nd Floor Crossover

THERE WILL BE NO THEORETICAL PHYSICS SEMINAR THIS WEEK

THERE WILL BE NO ALCPG ILC PHYSICS AND DETECTOR SEMINAR THIS WEEK

THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

**Fri., January 12**

**3:30 p.m.** Director's Coffee Break - 2nd floor crossover

**4:00** Joint Experimental Theoretical Physics Seminar - 1 West

Speaker: A. de Roeck, CERN  
Title: The LHC: The First Few Years

**8:00 p.m.** Fermilab International Film Society - Auditorium

Tickets: Adults \$5  
Title: Whisky Galore! (Tight Little Island)

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

## Weather



**Light Rain 45°/35°**

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

## Feature

### Hometown artist brings watercolors to Fermilab



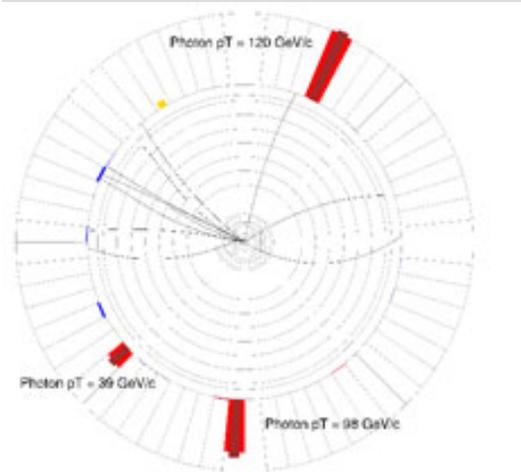
"Wilson's Window" was painted by D.L. Brown. Brown will have a reception Friday from 5-7 p.m. in the Fermilab Art Gallery.

Watercolors are not just an art form to painter D.L. Brown: they're an instrument for time travel. Growing up in the 1940s and '50s in rural, small-town central Illinois gave Brown a keen eye for the rustic from an early age. "My grandmother would walk to the store across the street every day," he remembered, "and they'd let her use a charge account if she didn't have the dollar thirty she needed." Although credit cards were still a thing of the future, that trust built between people "really helped to seal the society," Brown said. "Everybody depended on that store, and the store depended on the town. It was like an extended family."

Throughout his life, Brown has drawn and painted storefronts, saloons, and other bits of Americana from his travels ranging from Wisconsin to Mississippi. Most of his images are depictions of existing "mom'n'pop" shops, but many are his own memories spliced together with historical and cultural symbols,

## Fermilab Result of the Week

### Is Higgs afraid of Fermions?



This figure displays the detector response to a three-photon candidate event selected by this analysis. It shows a longitudinal view (from the proton's flight path along the beamline) of the detector, with reconstructed tracks and calorimeter energy depositions in black and red, respectively.

The Standard Model of particle physics needs something like a Higgs boson to help explain why all the particles in our universe have the masses we observe. Although hiding places are becoming scarce, the Higgs boson remains elusive. Some physicists believe this dearth of discovery is because the Higgs is not the friendly, outgoing particle we envision. They argue that the Higgs could be "fermiophobic", i.e. averse to interactions with quarks and leptons (fermions).

The simplest means of introducing a Higgs mechanism into the Standard Model requires just one Higgs boson, which generates masses through its interaction with each particle. This theory "fits" the Standard Model best if the Higgs mass is low: less than about  $153 \text{ GeV}/c^2$ . (A proton's mass is  $1 \text{ GeV}/c^2$ .) Higgs bosons with the lowest compatible masses should decay predominantly to a pair of bottom quarks, and this signature is being exhaustively searched at the Tevatron. A Fermiophobic Higgs arises from the second simplest model, which predicts a total of five Higgs bosons. (Including two charged Higgs bosons.) In this model, one configuration of model parameters causes the lightest Higgs boson to simply not couple to fermions. Thus, any search for a Higgs decaying to bottom

**Current Security Status**[Secon Level 3](#)**Wilson Hall Cafe****Thursday, January 11**

-Minnesota Wild Rice with Chicken  
 -Tuna Melt on Nine Grain  
 -BBQ Ribs  
 -Chicken Casserole  
 -Buffalo Chicken Wrap  
 -Assorted Slice Pizza  
 -Toasted Pecan Chicken Salad

[Wilson Hall Cafe Menu](#)**Chez Leon****Thursday, January 11****Dinner**

Shrimp Chowder  
 Veal Saltimbocca  
 Steamed Green Beans with Red Onions  
 Tomato Risotto  
 Lemon Napoleons

**Wednesday, January 17  
Lunch**

Mid-January Winter Blues  
 Dessert Luncheon

[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)

such as Rosie the Riveter, classic Coca-Cola memorabilia and weathered clapboard walls. Brown gets to know the people that occupy each building he paints, and he learns about their history to produce a snapshot of quintessential American life. His painting "Wilson's Window" portrays the entrance to a shop in a small town near Memphis that opened in the 1880s. "It's still open today, and it's loaded with antiques and interesting junk," he said.

Brown's work will be on display in the Fermilab gallery from January 8 until February 13, with an artist's reception this Friday, January 12, from 5-7 pm. Brown is especially excited to show his work to the physics community. "I imagine the organization and structure of my work will be very agreeable to scientists," he joked. "In these times people need to see and enjoy art more than ever; it's a pleasant escape from the computerized society we live in."

--Christine Buckley

**Photo of the Day**

**The tiny dot on the left is a comet; click the image for a close-up view:** AD's Denton Morris took this photo of Comet C/2006 P1, better known as Comet McNaught, the evening of January 9 at Fermilab. "This comet is about to make its turn around the sun but should be viewable in the west just after sunset until January 12, weather permitting," he wrote. Although the comet's close proximity to the sun makes accurate predictions of its brightness difficult, some astronomers estimate that this comet is as much as 40 times brighter than the planet Venus. The comet might also be visible to the naked eye or with binoculars for the next two days about 30 minutes before sunrise low near the horizon and north of Venus.

**Readers Write**

quarks would be completely blind to a Fermiophobic Higgs. Such a particle has no choice but to decay to photons or weak bosons ( $W^\pm$  or  $Z^0$ ), and for low masses this choice gets further limited to photons.

Physicists at the DZero experiment realized a unique opportunity to search for the simultaneous production of a Fermiophobic Higgs and a charged Higgs boson. With the charged Higgs boson decaying to a Fermiophobic Higgs, this would result in a four photon final state (or three if one photon escapes detection), which would have a very low rate of non-Higgs backgrounds. The DZero search resulted in no significant excess of events with this signature in 830 inverse picobarns of data. This null result allows DZero to set the world's first upper mass limits on Fermiophobic plus charged Higgs boson production at 44-80 GeV/c<sup>2</sup> depending on model parameters. If a Fermiophobic Higgs boson truly exists, it will now have a difficult time staying out of the searchlight of Tevatron physicists.



**Above:** Oleksiy Atramentov contributed to this analysis during his time as a graduate student at Iowa State University and as a postdoc at Florida State University. **Below:** These results rely on a precise energy measurement from the DZero Calorimeter. The team below has worked to make sure that all future analyses of the quickly increasing RunIIB dataset will benefit from the same calorimeter uniformity and resolution as the RunIIA results.

## Subtle humor?

**Dear FT:**

I was amused by the subtle humor in yesterday's "What's in a Name" column. A whole article about name changes that gets the name of FRA wrong--what a stitch!

Cheers,  
 Chuck Ankenbrandt  
 Accelerator Division

**Editor's note:**

We apologize for the misnomer. FRA, of course, stands for Fermi Research Alliance. We've updated the [archived version](#) of the story.

In the News

## **Nature News, January 9, 2007:**

### **Shrinking Higgs brings optimism to US lab: Tevatron gains renewed hope of bagging the particle that endows mass**

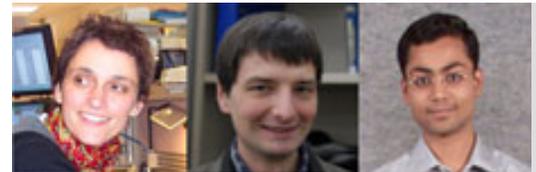
Physicists shooting to find the Higgs boson — the particle thought to endow all others with mass — have seen their target move, again. A new measurement of the mass of another subatomic particle, the W boson, has lowered the predicted mass of the Higgs.

This reassures scientists working at the Tevatron particle collider at Fermilab in Batavia, Illinois, that they still have a chance of finding the Higgs — possibly even before the more powerful collider under construction at CERN (the European particle-physics laboratory near Geneva in Switzerland) can claim the discovery.

CERN's Large Hadron Collider (LHC) is expected to find the Higgs within a few years — if the particle exists at all. But there is still a race between instruments. And the stakes for those involved are high.

"As they say, nobody remembers the person who came second," says Mark Lancaster, one of around 700 scientists working on the Collider Detector at Fermilab (CDF). CDF is one of the instruments collecting and analysing the debris from the proton-antiproton collisions in the Tevatron.

[Read More](#)



Ursula Bassler

Mikolaj Cwiok

Venkat Kaushik



Jiri Kvita

Patrice Lebrun

Bjoern Penning



Krisztian Peters

Jan Stark

Marco Verzocchi

## Accelerator Update

### January 8 - 10

- Three stores provided 26 hours and 30 minutes of luminosity
- Store 5166 set a record with a luminosity of 251.79E30
- Store 5166 aborted due to power supply trip
- Pbar shutter problems hinder stashing

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

## Announcements

### **Q&A about furlough posted**

At a Q&A session Monday, Director Oddone answered questions about what might happen if Fermilab employees needed to take a month-long furlough. We have updated [this webpage](#) with answers to some of those questions.

### **Weekly Time Sheets are Due Tomorrow**

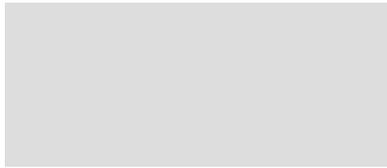
With the upcoming Martin Luther King holiday, weekly time sheets are due in Payroll by 10 a. m. on Friday, January 12.

### **Brown Bag Seminar on Internet Safety**

Wellness Works presents a Brown Bag Seminar on Internet Safety titled, "Avoiding Internet Predators and Scams," given by Justin Fitzsimmons Assistant States Attorney for Kane County. The seminar will be held Wednesday, January 24, from noon to 1 pm in Curia II.

### **Flu Shots Still Available in the Medical Office/ WH GF-NW**

It is worthwhile to get flu vaccine through the middle of February. Free flu vaccine shots will



be available to all active full-time employees, term and temporary employees. Call 840-3232 to schedule an office visit.

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