

## Calendar

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

Friday, August 14  
3:00 p.m. (NOTE TIME)  
DIRECTOR'S COFFEE  
BREAK - 2nd Flr X-Over  
3:30 p.m. (NOTE TIME)  
[Joint Experimental-Theoretical Physics Seminar](#) - One West  
Speakers: Arnaud Duperrin, CPPM Marseille  
Kevin Pitts, University of Illinois, Urbana-Champaign  
Title: New Results for Lepton-Photon from DZero and CDF

Monday, August 17  
PARTICLE ASTROPHYSICS SEMINARS WILL RESUME IN THE FALL  
3:30 p.m.  
DIRECTOR'S COFFEE  
BREAK - 2nd Flr X-Over  
THERE WILL BE NO ALL EXPERIMENTERS' MEETING THIS WEEK

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

## Campaigns

## Take Five

## Tune IT Up

## Weather



Mostly sunny  
86°/65°

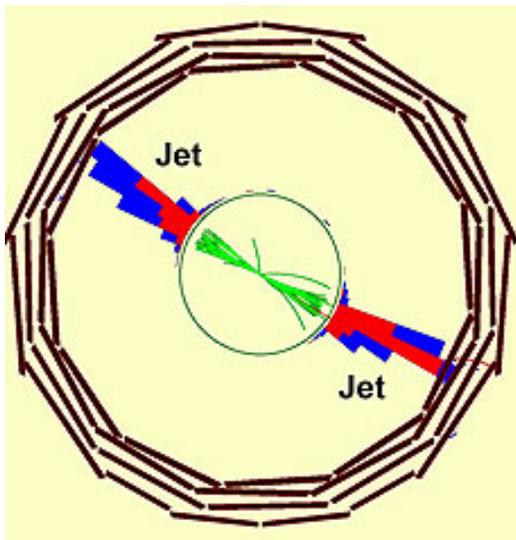
[Extended Forecast](#)  
[Weather at Fermilab](#)

## Current Security Status

## Secon Level 3

## CMS Result of the Month

### First things first



Examining events in which only two jets are formed is a powerful way to study the uniformity of how the CMS detector responds to energy deposited within it.

*Editor's note: This is the first installment of the monthly CMS Result of the Month.*

The recent announcement of the startup schedule of the LHC prompts scientists to check one more time the sorts of things a particle detector needs to measure accurately. Scientists need to understand the detector well so that they can exploit the information it records to draw clear conclusions.

The LHC will collide counter-rotating beams of protons. Protons are tiny particles found in the center of atoms. A proton is as small compared to a germ as a germ is to the entire Earth. Within protons are even smaller particles called quarks and gluons (collectively called partons). The strong nuclear force affects partons. As its name suggests, this force is much stronger than any of the other subatomic forces. Consequently, what we expect to find at the center of a detector, where the beams collide, are enormous numbers of partons being knocked out of the collisions between two protons. In fact, ordinary parton collisions occur thousands to millions of times more frequently than more exciting physics. Thus, a deep understanding of parton scattering is crucial in making sure that we don't mistake an ordinary collision for

## Recovery Act Feature

### Recovery Act pushes high-field magnet development forward



This is the cable winding machine Fermilab will use for high-field magnets.

A collaboration of national laboratories, universities and industry may soon begin testing a new material that could help to revolutionize the superconducting magnet field.

The U.S. Department of Energy is providing \$2 million in [Recovery Act funds](#) to the Very High Field Superconducting Magnet Collaboration to test BSCCO2212, a bismuth-based material that may allow scientists to create high-field superconducting magnets that could achieve more than twice the strength of existing magnets. Fermilab will manage \$1.5 million of the new funds, and has already started making cable to test the new material.

Both the Tevatron and the Large Hadron Collider at CERN use superconducting magnets made out of niobium-titanium to steer beams of particles in accelerators. The Tevatron's magnets have a field of 4 Tesla, and the LHC's magnets can achieve 8 Tesla. Recent tests on alternative materials, such as niobium-tin, reached a magnetic field of 13 Tesla.

The development of high-field magnets that can exceed 50 Tesla could provide a path forward for a possible muon collider at

## Wilson Hall Cafe

Friday, August 14

- New England clam chowder
- Black & blue cheeseburger
- Tuna casserole
- Dijon meatballs over noodles
- Bistro chicken & provolone panini
- Assorted pizza slices
- \*Carved top round of beef

\*Carb restricted alternative

### [Wilson Hall Cafe menu](#)

## Chez Leon

Wednesday, August 19

Lunch

- Cumin and chipotle glazed pork loin w/ apple salsa
- Roasted sweet potatoes
- Pear tart

Thursday, August 20

Dinner

- Fresh mozzarella & tomato salad
- Garlic shrimp w/ red peppers & wild mushrooms
- Lemongrass rice
- Sautéed spinach w/ garlic & lemon
- Brandy flan

### [Chez Leon menu](#)

Call x3524 to make your reservation.

## Archives

## Fermilab Today

### [Result of the Week](#)

### [Safety Tip of the Week](#)

### [User University Profiles](#)

### [ILC NewsLine](#)

## Info

something more interesting. In addition, scientists frequently observe additional partons in collisions in which more exotic things occur.

However, scientists never observe bare partons. These particles are converted to jets as they exit a collision. A jet is a collection of particles all traveling more-or-less in the same direction. By simulating events in which only two jets are formed, the CMS experiment has carefully studied its ability to accurately measure the energy of jets. In this situation, the two jets are expected to exactly balance. By comparing the energy of the two jets recorded in the detector, scientists can determine how uniformly the detector responds to the jets. Using the simulation, CMS scientists estimate that they will need to correct for as much as a  $\pm 20$  percent variation in response across the entire CMS detector. While this estimate will require beam data to confirm, scientists also were able to work out how much data they will need to remove these non-uniformities. Even at the low beam intensities expected for early running, CMS scientists estimate they can take the necessary data in about a week.

For more information, one should look at these [slightly advanced](#) and [technical \(pdf\)](#) descriptions.

-- Don Lincoln



**Robert  
Harris**

**Kostas  
Kousouris**

Two Fermilab scientists have recently carefully studied the uniformity of the CMS detector.

Fermilab.

Led by spokesperson David Larbalestier of Florida State University, collaboration members believe that BSCCO2212 is the answer. But because it has a completely different structure than niobium, it comes with a whole new set of challenges, namely that it breaks very easily.

"In order to turn it into a superconductor, we heat the BSCCO2212 up to 800 degrees," said Fermilab physicist Alvin Tollestrup. "The trouble is that it becomes more or less a ceramic. If you bend it, it breaks."

In the project's first phase, Fermilab will purchase the bismuth-based material from US vendors to conduct cabling and coil studies. Collaboration members will research the material's properties in detail and determine how much they can stretch it and whether they can make it into cables. Collaboration member institutions include: Brookhaven National Laboratory, Fermi National Accelerator Laboratory, Florida State University, Lawrence Berkeley National Laboratory, Los Alamos National Laboratory, National Institute of Standards and Technology and Texas A&M University.

[Read more at \*symmetrybreaking\*](#)

-- Elizabeth Clements

## Special Announcement

### Power and network outage in Wilson Hall tomorrow

Network services for Wilson Hall will be unavailable from 6 a.m. to 5:30 p.m. on Saturday, Aug. 15, due to a shutdown-related power outage. The following experiments and locations will also be affected by the network outage: MINOS, MiniBooNE, MINERvA, Lederman Science Center, Accelerator Division, CUB, LHC (ROC), Site 52 and Site 29.

## 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)

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[home page](#)



The Fermilab LHC Physics Center (LPC) provides a physical location at which U.S. CMS physicists can collaborate. At a recent "JTERM" training session, 51 lecturers trained 142 young physicists in many topics necessary to understand the deluge of data expected provided to CMS soon. Without the experience and time commitment of the lecturers, trainings like this would be impossible.

### Milestone

## Chuck Schmidt retires today



Chuck Schmidt stands in front of the Cockcroft Walton, the pre-accelerator, which produces H-ions. Schmidt was instrumental in implementing the H- design.

When Chuck Schmidt was 2-years-old, he stuck his mother's keys in an electrical outlet.

"My cry alerted the whole neighborhood," Schmidt said.

The shock might have deterred most children from tinkering with electronics, but Schmidt attributes his love for science to that experience. After 40 years of working to get and keep Fermilab's Linac and accelerators running smoothly and efficiently, Schmidt will retire today.

Schmidt's career at Fermilab began in 1969 when he joined the Main Ring Group. He remembers working with a team to steer the magnets in order to get the first beam around the main accelerator. He also worked as operations chief, close to the equivalent of today's run coordinators.

## Hawking receives US medal of freedom

From *Physics Today*, Aug. 13, 2009

President Barack Obama has awarded the highest US civilian honor — the Presidential Medal of Freedom — to Stephen Hawking.

In a speech before the presentation to Hawking and 15 other individuals Obama said:

"Professor Stephen Hawking was a brilliant man and a mediocre student when he lost his balance and tumbled down a flight of stairs. Diagnosed with a rare disease and told he had just a few years to live, he chose to live with new purpose. And happily, in the four decades since, he has become one of the world's leading scientists. His work in theoretical physics—which I will not attempt to explain further here—has advanced our understanding of the universe. His popular books have advanced the cause of science itself..."

[Read more](#)

### Announcements

#### Latest Announcements

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

[English country dancing, with potluck - Aug. 16](#)

[Bowlers wanted](#)

[Thai Village restaurant discount](#)

[Bike rack etiquette](#)

[Wilson Hall closed Saturday, Aug. 15](#)

[Fermilab Blood Drive Aug. 25 and 26](#)

[What's New in NI LabVIEW 2009? offered Aug. 27](#)

[URA Visiting Scholars Program now accepting applications](#)

[Bristol Renaissance Faire discount tickets](#)

[Six Flags Great America discount tickets](#)

But Schmdt, ID number 432, is best known for the H- source, the machine that isolates and ionizes hydrogen atoms.

“He is pretty much single-handedly responsible for the H- sources at the laboratory,” said Larry Allen, an engineering physicist in the Accelerator Division who has worked with Schmidt for the past 37 years.

Schmidt calls the conversion from proton beam to H- in the Linac a highlight of his career.

“I saw that the Booster wasn’t working well with protons and I looked at results from Argonne National Laboratory, which had developed the first H- source,” Schmidt said.

Schmidt also worked on the ion source for the Loma Linda project and most recently worked on electron cooling. He also headed the Linear Accelerator Department from 1989 to 1994, and then served as the deputy head of the same department when it was renamed the Proton Source Department, until 2001.

But what colleagues reflect on is Schmidt’s personality. “Chuck has always been the most conscientious guy I’ve ever met,” Allen said. “He was very protective of his employees.”

Schmidt plans to travel with his wife, Judy, and work around their Naperville home during his retirement. He also has a guest scientist appointment, and hopes to come back to the laboratory frequently to work on the High Intensity Neutrino Source, among other things.

“I do feel like I’ve accomplished a lot in the 40 years I’ve been here,” Schmidt said. “It has been a tremendous enjoyment.”

-- *Rhianna Wisniewski*

[Pool memberships available in the Recreation Department](#)

[Raging Waves Waterpark online discount ticket program](#)

[Mosaico Hispanico - Celebrating Hispanic music and dance - Sept. 19](#)

[Muscle Toning Class - Aug. 4 - Sept. 28](#)

[Yoga Class - Aug. 11 - Sept. 29](#)

[Office 2007 New Features class offered in September](#)

[Buttered Rum performs at Fermilab Arts Series Oct. 24](#)

[Fred Garbo Inflatable Theatre - Great Family Fun at Fermilab Arts Series - Nov. 7](#)

[Process piping \(ASME B31.3\) class offered in October and November](#)

["The Night Before Christmas" carol - Holiday fun at Fermilab Arts Series - Dec. 5](#)

[Additional Activities](#)

[Submit an announcement](#)

Classifieds

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