

## Calendar

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

Thursday, July 1  
8:30 a.m. - 5 p.m.

#### [XVI International Symposium on Very High Energy Cosmic Ray Interactions](#)

(ISVHECRI 2010) - One West  
2:30 p.m.

#### [Theoretical Physics Seminar](#) - Curia II

Speaker: Tania Robens, University of Glasgow

Title: Alternative Dipole Subtraction Scheme Using Nagy Soper Dipoles

3:30 p.m.

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

THERE WILL BE NO

ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

Friday, July 2

8:30 a.m. - 5 p.m.

#### [XVI International Symposium on Very High Energy Cosmic Ray Interactions](#)

(ISVHECRI 2010) - One West  
3:30 p.m.

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

4 p.m.

#### [Joint Experimental-Theoretical](#)

#### [Physics Seminar](#) - One West

Speakers: Eun-Joo Ahn, Fermilab  
Ralph Engel, Karlsruhe Institute of Technology

Title: Xmax Distributions with Auger and Their Interpretation (in

conjunction with the [XVI International Symposium on Very High Energy Cosmic Ray Interactions](#) )

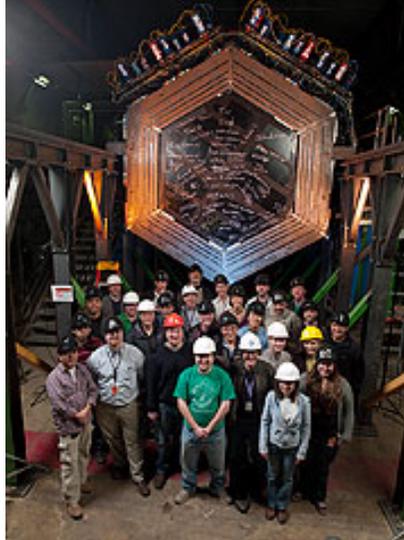
Click here for [NALCAL](#), a weekly calendar with links to additional information.

## [Upcoming conferences](#)

## Campaigns

## Feature

### MINERvA receives CD-4



Members of the MINERvA collaboration stand in front of their completed detector in March 2010.

The MINERvA project reached a milestone this week. The Department of Energy awarded the project CD-4, the last step in its five-step project approval process, on June 28.

"The MINERvA project team and our partners at Fermilab and the Department of Energy all worked very hard to complete construction of the MINERvA detector ahead of time and under budget," said MINERvA co-spokesperson Kevin McFarland of University of Rochester. "We're very grateful for the taxpayer trust and support that made this possible. I'm incredibly proud of everyone who rewarded that trust by delivering this new scientific instrument."

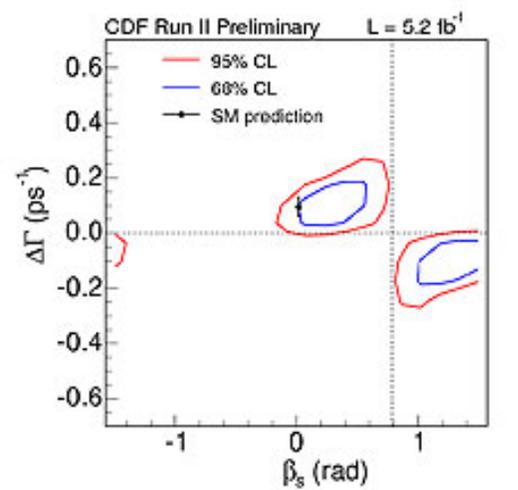
Collaborators on the MINERvA project completed construction of the detector on March 15. The detector, which consists of 108 4-ton, hexagonal steel and scintillator modules with more than 32,000 channels, will collect data that MINERvA collaborators will use to measure low-energy neutrino interactions at an unprecedented level of detail.

"As exciting as this milestone is, the real reward is seeing the beautiful neutrino events that this detector is now recording," said MINERvA co-spokesperson Deborah Harris, who will soon relinquish her role as project manager. "I'm grateful to have worked with such an excellent project team and I will miss those who are moving on to build new detectors."

-- *Rhianna Wisniewski*

## Result of the Week

### Wizards, demigods and CP violation



The allowed range for the CP-violation parameter ( $\beta_S$ ) and the decay rate difference ( $\Delta\Gamma$ ) from the CDF analysis of the matter-antimatter symmetry using  $B_s \rightarrow J/\psi \phi$  decays together with the Standard Model-favored point. The fact that the Standard Model favored point is within the one-sigma region (blue oval) means that the measured value is consistent at that level with the Standard Model.

**Editor's note:** This is Craig Group's final column as editor of the CDF Result of the Week. Fermilab Today staff thank Group for his hard work. Future CDF Results of the Week will be edited by Andy Beretvas.

In popular literature, demigods like Percy Jackson or wizards like Harry Potter distinguish themselves from regular mortals, or muggles, by using their special powers. In particle physics, some measurements have more power than others to distinguish themselves as clear tests of the Standard Model.

One such measurement is the search for [charge-parity violation](#) in  $B_s$ -mesons (pronounced "b-sub-s"), which are bound states of a strange and a beauty quark. CP violation is linked to the matter-antimatter asymmetry in the universe. The fact that all the antimatter in the universe has disappeared and the surrounding world is made only of matter particles can partially be explained through CP violation. For example, CP violation can lead to differences between the decay rates of particles and their anti-particles.

Physicists expect CP violation to occur in  $B_s$ -mesons. In some observable phenomena physicists expect the

[Take Five](#)[Tune IT Up](#)[H1N1 Flu](#)

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

[Weather](#)

Sunny  
77°/57°

[Extended Forecast](#)  
[Weather at Fermilab](#)
[Current Security Status](#)[Secou Level 3](#)[Wilson Hall Cafe](#)**Thursday, July 1**

- Breakfast: Apple sticks
- Minnesota wild rice w/chicken
- Tuna melt on nine grain
- Italian meatloaf
- Chicken casserole
- Buffalo crispy chicken wrap
- Assorted sliced pizza
- Mandarin chicken

[Wilson Hall Cafe Menu](#)[Chez Leon](#)**Thursday, July 1**

Dinner  
- Closed

**Wednesday, July 7**  
Lunch

- Cornmeal crusted catfish
- Green beans w/hot pepper vinegar
- Creamy coleslaw w/bacon
- Sweet potato pie

[Chez Leon Menu](#)

Call x3524 to make your reservation.

[Archives](#)[From Interactions.org](#)

## Start of tunnel construction for the European XFEL

The traditional tunnel and borer christening celebration today marked the start of construction of the tunnel system for the X-ray laser European XFEL. More than 500 guests attended the ceremony on the building site in Schenefeld (Pinneberg district, Schleswig-Holstein), the future research campus of the X-ray laser facility.

Tomorrow, the first of the two tunnel boring machines – TULA ("TUnnel for LAsEr"), 6.17 metres in diameter, 71 metres long, weighing 550 tonnes and costing 18 million Euros – will start in the direction of DESY-Bahrenfeld (Hamburg), where it will arrive in summer 2011.

Godmother for the tunnels excavated by TULA and by the same token "earthly patron saint" for the tunnel builders is Dr. Herlind Gundelach, State Minister for Science and Research of the Free and Hanseatic City of Hamburg.

The new X-ray laser research facility is 3.4 kilometres long and located in the German federal states of Hamburg and Schleswig-Holstein. Its tunnel system comprises a 2.1-kilometre-long section for the electron accelerator and a "fan" of five tunnel sections in which the X-ray flashes used for research will be generated. These tunnels end in an underground experiment hall. In total, 5777 meters of tunnel will be constructed in the next two years using two boring machines, the larger of which now starts excavating the tunnel sections underneath the city of Hamburg.

[Read more](#)

[Milestone](#)

## In remembrance

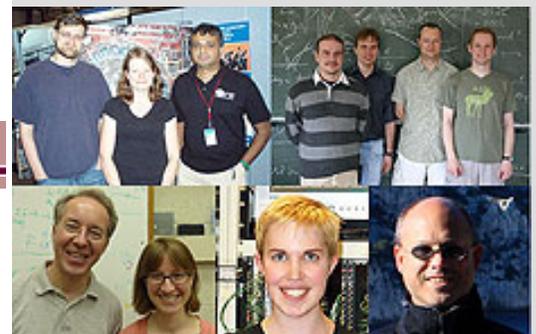
Warren Cannon, a former Fermilab senior personnel administrator who died in March, now has a street named after him. One block of a street in Aurora was named Warren F. Cannon Street in honor of Cannon, who was a prominent community leader in the city. To learn more, read a [news story](#) about this honor.

[Photo of the Day](#)

predicted effect to be very small with a small uncertainty. This means, if a large CP violation is measured in these  $B_s$ -mesons, it must be due to a contribution from physics beyond the Standard Model. This makes the  $B_s$  system an excellent candidate to search for ever-elusive signs of new physics.

CDF physicists recently presented an update of the measurement of the matter-antimatter asymmetry in  $B_s$ -mesons by analyzing  $B_s$  and anti- $B_s$  particles decaying into a pair of lighter mesons (the  $J/\psi$  and  $\phi$ ). Previous measurements by [CDF](#) and [DZero](#) from 2008 caused some excitement as they indicated that CP violation in the  $B_s$  system only marginally agrees with the Standard Model prediction. For the new measurement, CDF physicists used almost four times more data and applied significant improvements to the analysis. They find that the region of the CP-violation parameter allowed by the new measurement is now much closer to the value favored by the Standard Model. It is interesting that a recent measurement by [DZero](#), also related to CP violation in the  $B_s$  system, shows a larger discrepancy with the Standard Model. It seems that it will require another round of updates, or Harry Potter waving his magic wand, to sort out what is going on with CP violation in the  $B_s$  system and its contributions to the lack of antimatter in our universe.

- edited by Craig Group



Primary contributions to the analysis were made by these analyzers. Top from left: Gavril Giurgiu, Johns Hopkins; Louise Oakes and Farrukh Azfar, Oxford University; Jan Morlock, Thomas Kuhr, Michal Kreps and Andreas Schmidt, University of Karlsruhe. Bottom from left: Manfred Paulini and Elisa Pueschel, Carnegie Mellon; Karen Gibson, Case Western; and Joseph Boudreau, University of Pittsburgh. Not pictured: Michael Feindt, University of Karlsruhe.

[Accelerator Update](#)

[Fermilab Today](#)[Result of the Week](#)[Safety Tip of the Week](#)[CMS Result of the Month](#)[User University Profiles](#)[ILC NewsLine](#)**Info****Fermilab Today**

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**Observations from overhead**

AD's Greg Vogel submitted this image of an osprey watching him from overhead on Tuesday, June 29.

**In the News****If scientists want to educate the public, they should start by listening**

From *The Washington Post*,  
 June 27, 2010

Whenever controversies arise that pit scientists against segments of the U.S. public -- the evolution debate, say, or the fight over vaccination -- a predictable dance seems to unfold. On the one hand, the nonscientists appear almost entirely impervious to scientific data that undermine their opinions and prone to arguing back with technical claims that are of dubious merit. In response, the scientists shake their heads and lament that if only the public weren't so ignorant, these kinds of misunderstandings wouldn't occur.

But what if the fault actually lies with both sides?

We've been aware for a long time that Americans don't know much about science. Surveys that measure the public's views on evolution, climate change, the big bang and even the idea that the Earth revolves around the sun yield a huge gap between what science tells us and what the public believes.

[Read more](#)

June 28-30

- Three stores provided ~33.25 hours of luminosity
- NuMI power supply repaired
- TeV quench during shot setup

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

**Announcements****HR announcement**

[Format change for new personnel requisition form](#)

**Latest Announcements**

[Deadline approaching for requests for fall 2010 & spring 2011 onsite housing](#)

[All supervisors: Do you need help preparing for performance reviews?](#)

[Submit timecards by Friday, July 2](#)

[Yoga begins July 6](#)

[Time to complete accomplishment reports](#)

[Session 3 preschool & youth swim lesson registration due July 2](#)

[Day Camp payments due](#)

[Web of Science citation database online trial](#)

[Adult water aerobics - Mondays](#)

[Adult swim lessons - Mondays](#)

[Walk to Health class began June 7](#)

[Butts & Guts class began June 7](#)

[10,000 Steps-a-Day walking program](#)

[Introduction to LabVIEW course - July 13](#)

[Embedded Design with LabVIEW FPGA and CompactRIO seminar - July 13](#)

[Interaction Management Coaching Forum - July 27](#)



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