

## Calendar

**Thurs., Aug. 23**

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

**1:00 p.m.**

[ILC ALCPG Physics and  
Detector R&D Seminar](#) -

Hornet's Nest, WH-8XO

Speaker: A. Seiden, University  
of California, Santa Cruz

Title: NSF Funding

Opportunities for Joint Detector  
R&D for sLHC and ILC

**2:30 p.m.**

[Theoretical Physics Seminar](#) -  
Curia II

Speaker: M. Unsal, Stanford  
Linear Accelerator Center

Title: Confinement and Duality  
in QCD

**3:30 p.m.**

DIRECTOR'S COFFEE  
BREAK - 2nd Flr X-Over  
THERE WILL BE NO  
ACCELERATOR PHYSICS  
AND TECHNOLOGY  
SEMINAR TODAY

**4:00 p.m.**

[Special Fermilab Colloquium](#) -  
One West

Speaker: E. Flynn, Senior  
Scientific

Title: Biomagnetism:  
Measuring and Imaging the  
Natural and Disease Fields  
from the Human Body

**Fri., August 24**

**3:30 p.m.**

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

**4:00 p.m.**

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

Speaker: O. Salto, Institut de  
Fisica d'Altes Energies,  
Barcelona

Title: Boson+Jets

Measurements at CDF

## Feature

### Roadmap to Fermilab's future presented Friday

At noon on Friday in Ramsey Auditorium, Fermilab Deputy Director Young-Kee Kim will present and discuss the Steering Group Committee's [draft report](#), a roadmap for the future of accelerator-based particle physics at Fermilab. Everyone is encouraged to attend.

"This roadmap provides a way for Fermilab to play a vital part in the future of U.S. particle physics with the ultimate goal hosting the ILC," said Kim.

The Steering Group, which consists of 14 members and is chaired by Kim, met with members of the Fermilab and U.S. particle physics communities throughout the spring to garner their perspective on plans for Fermilab's future.

The draft report was submitted to Director Pier Oddone on August 7 (see his [Director's Corner](#) on the report in *Fermilab Today*). The Accelerator Advisory committee reviewed the accelerator part of the roadmap between August 8 and 10. Input from the lab and user communities will be incorporated into the report, which will be presented to DOE's Office of High Energy Physics during the first week of September. Kim will then present a final report at the meeting of the Particle Physics Project Prioritization Panel (P5) on September 24-25. Kim will also lead a Town Hall meeting organized by the Users Executive Committee on Thursday, September 27, at 5 p.m. in One West.

## Milestone

## Fermilab Result of the Week

### Roaring into Summer



This figure shows the total delivered and recorded data in units of inverse femtobarns for the DZero detector in Run II of the Tevatron.

The old adage that the month of March comes "in like a lion, and out like a lamb" is often true. This year, however, following a strong showing at March conferences, forward-looking members of the DZero collaboration roared into summer like a lion.

With their recently upgraded detector, DZero physicists got right to the business of collecting the steady stream of data from the Tevatron's proton-antiproton collisions. With average data-taking efficiency over 90 percent for the past four months, they are continuously setting new standards of efficiency. However, maintaining this impressive enterprise did not distract them from the data they are collecting. The month of June came in with a bang as DZero announced the discovery of the charged cascade-b baryon. The fast, yet careful data analysis, that led to this result was certainly not unique. This work became DZero's 200th paper published in a peer-reviewed journal.

These extraordinary efforts paved the way for summer conferences. As DZero physicists were in flight on the way to Deagu, South Korea, for the Lepton-Photon conference, their colleagues were finalizing the rigorous approval requirements for some of the over 40 new results to be presented. These results were based on 1.0-2.4 inverse femtobarns of data and covered an impressive range of physics performed at DZero, including the Tevatron's tightest limits on Higgs production

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

**Weather**

 **Chance of Thunderstorms 90°/69°**

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

**Current Security Status**

[Secon Level 3](#)

**Wilson Hall Cafe**

**Thursday, August 23**

- Minnesota wild rice w/chicken
- Tuna melt on nine grain
- BBQ ribs
- Chicken casserole
- Buffalo chicken wrap
- Assorted slice pizza
- Toasted pecan chicken salad

**\*Carb Restricted Alternative**

[Wilson Hall Cafe Menu](#)

**Chez Leon**

**Thursday, August 23**

**Dinner**  
Closed

**Wednesday, August 29**

- Lunch**
- Grilled Tuna w/White Beans & Charred Onion Salad
  - Fruit Tarts

[Chez Leon Menu](#)

Call x4598 to make your reservation.

**Archives**

[Fermilab Today](#)

[Result of the Week](#)

[Safety Tip of the Week](#)

[ILC NewsLine](#)

**Info**

**On the Web: Center for Particle Astrophysics**

Do you want to learn more about COUPP, Pierre Auger, SDSS or any of the other particle astrophysics projects that Fermilab is involved in? The Fermilab Center for Particle Astrophysics has a new [Web site](#) that provides answers to your questions. It highlights eight research projects and provides contact information for all employees and visitors involved in the center. Jeffrey Kubo will serve as the Webmaster for this site in the coming year.

**Feature**

**Why lightning shuts down the Tevatron**



Lightning over the Main Ring. It can disrupt signals to the Tevatron, causing it to abort the beam. (Image courtesy of Tim Koeth.) [Click here](#) for a video on lightning in the area by AD's Darren Plant. (20 second video in .wmv format)

In rain, wind, sun or snow, business at Fermilab continues as usual. But factor in lightning, and all bets are off. Although 30 feet underground and normally unaffected by the weather, lightning can shut off the Tevatron like a light switch.

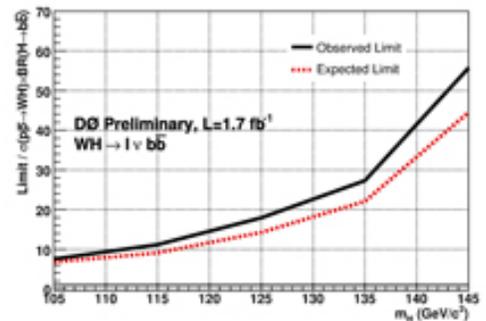
"Many elements used to monitor the Tevatron have very tiny signals," said AD's Paul Czarapata. "Lightning can create high electromagnetic fields 20-30 feet deep, which happens to be where the wiring for the signals are."

In a storm, lightning bolts result when clouds give off excess electrons. The current produced by these bolts is measured in amperes and a lightning bolt can produce 20,000 and upward of 110,000 amperes. The voltage from cloud to ground strikes can be between 100 million and 1 billion volts.

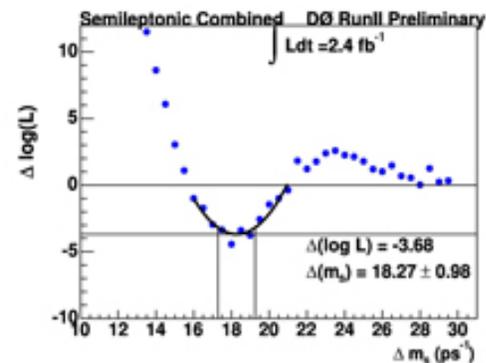
It doesn't take a direct cloud-to-ground strike to affect the Tevatron. The electromagnetic fields produced by lightning travel through the

in association with a W boson. Equally impressive was the speed at which DZero researchers were able to deliver a result using 2.4 of the 2.8 inverse femtobarns it has collected to date, illustrated in their newest result on flavor oscillations in the  $B_s$  meson system. The result included data taken through late May.

And even as the days of summer wane, there isn't a single lamb to be seen at DZero. Indeed, with just over six months to prepare for the next major conferences, DZero's lions are ready to roar all the way into March.



The 95 percent confidence level limits on associated W boson plus Higgs boson production at the Tevatron.



This figure shows the most likely values of the oscillation frequency in the  $B_s$  meson system, as measured by the DZero collaboration in 2.4 inverse femtobarns of data.

[Result of the Week Archive](#)

**Announcements**

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)

ground and can wreak havoc on the sensor's signals and cause glitches that could cause the beam to automatically terminate. When this happens valuable "physics stores" are lost, but no equipment is harmed. Lost stores due to lightning strikes often show up in Fermilab Today's Accelerator Updates.

While there is no prevention for Mother Nature's wrath, precautions can be taken to ensure the safety of equipment. Surge protectors are put in place to protect equipment from voltage that could potentially travel through the ground and burn out equipment.

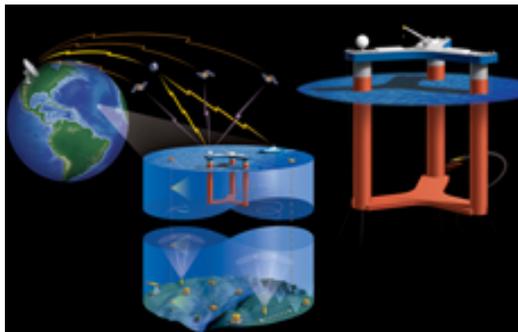
Fermilab's run coordinator also keeps an eye on the weather. In fact, Czarapata said, lightning can be seen on monitors in the main control room called the Zeus I and Zeus II, referencing the fabled Greek God and his lightning bolts.

"We're at mother nature's mercy," said Czarapata. "Everything in the machine is a synchronized dance on a razor blade."

-- *Rhianna Wisniewski*

From iSGTW

## LOOKING to sea: grids reveal our deepest secrets



LOOKING allows scientists to observe and analyze data streams in real time, and then use this information to "interact" with the networks, changing each network in response to recent data analysis. This particular image shows the planned Ocean Observatories Initiative Extended Depth Platform, to be constructed for mid-ocean measurements. *Image courtesy of LOOKING*

Our oceans cover 70 percent of Earth's surface and are 99 percent its living space. They run deeper than Everest is high, and contain most of the life on this planet.

And they're changing, warming up.

What effect will this have? We're not really

## Have a safe day!

### School back in session, drive carefully

School is back in session in most communities, including Warrenville and Batavia. A school zone, with reduced speed limits during school hours, is located outside the Eastgate on Batavia Road. Please pay attention to school crossings and posted speed limits.

### NALWO end of summer picnic Aug. 24

NALWO will host an end of summer picnic on August 24 at 5:30 p.m. The event will be located in front of the Kuhn Barn in the picnic area, or in the barn in case of rain.

Employees, users and their families are invited. Attendees should bring a dish to share and something for the grill. Small favors will be provided for children. Please contact [Jennifer Jansson](mailto:Jennifer.Jansson@fnal.gov), 879-0172 for more information.

### Bowling League season starts Sept. 4

The Fermilab Tuesday Night Mixed Bowling League 2007-2008 season will begin on September 4 at Valley Bowl in North Aurora. It is a USBC-sanctioned league. Start time is 6 p.m.; \$13 covers three games and prize fund. Individuals or four-person teams can sign up. Contact [Keith Dillow](mailto:Keith.Dillow@fnal.gov) x5605, [Jackie Coleman](mailto:Jackie.Coleman@fnal.gov) x3027, or [Greg Mitchell](mailto:Greg.Mitchell@fnal.gov).

### Wed. bowling league looking for players

The Fermilab Wednesday night [bowling league](#) is looking for individuals or teams interested in joining their co-workers this season at Bowling Green Sports Center on Rt.38 just west of Rt.59. The season starts on Sept. 5, 2007 at 5:30 p.m. and lasts for 30 weeks. Cost is \$14.00 per week and includes cost of bowling plus year-end prize fund. For more information, contact Al Legan X4074, Rich Neswold X3454 or Jeff Artel X3325.

### Blood Drive Aug. 28-29

A blood drive will be held August 28 and 29 from 8:00 a.m. to 2:00 p.m. in the Wilson Hall Ground Floor NE Training Room. Although sign up is recommended to keep wait times to a minimum, walk-ins will be accepted. Reservations are available [online](#) or by contacting Diana at x3771 or Margie at x3411. Donors will receive a very nice travel mug set (see posters for details).

### Mannheim Steamroller employee ticket presale

Mannheim Steamroller, one of the biggest-selling music groups in history, will appear in a special engagement kickoff of their national

sure.

[Read More](#)

### In the News

## From *Live Science* August 21, 2007

### Greatest Mysteries: Is There a Theory of Everything?

*Editor's Note: We asked several scientists from various fields what they thought were the greatest mysteries today, and then we added a few that were on our minds, too. This article is one of 15 in LiveScience's "Greatest Mysteries" series running each weekday.*

Ancient philosophers thought wind, water, fire and earth were the most basic elements of the cosmos, but the study of the small has since grown up. Physicists continue to carve the known universe into particles to describe everything from magnetism to what atoms are made of and how they remain stable.

[Read more](#)

tour on October 3 at 7:30 p.m. at the Rialto Square Theatre. The Fermilab ticket pre-sale through Ticketmaster will be held on August 22 and August 23. Tickets are priced between \$43-\$103 and can be accessed through the [Ticketmaster](#) website. More information, including password can be found on the [Recreation](#) website.

### [Additional Activities](#)