

## Calendar

**Thursday, July 17**  
**1 p.m.**

Physics and Detector Seminar  
- West Wing, WH-10NW  
Speaker: M. Palmer, Cornell University

Title: ILC Damping Rings

**2:30 p.m.**

[Theoretical Physics Seminar](#) - Curia II

Speaker: G. Mahlon, Pennsylvania State University, Mont Alto

Title: Relations Among Spin Amplitudes for  $2 \rightarrow 2$  Scattering

**3:30 p.m.**

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

**4 p.m.**

[Accelerator Physics and Technology Seminar](#) - One West

Speaker: J. Norem, Argonne National Laboratory

Title: Can We Increase the Operating Gradients of Linacs?

**Friday, July 18**

**3:30 p.m.**

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

**4 p.m.**

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

Speaker: J. Formaggio, Massachusetts Institute of Technology

Title: Twilight: Results from the Third and Last Phase of the SNO Experiment

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

## Weather

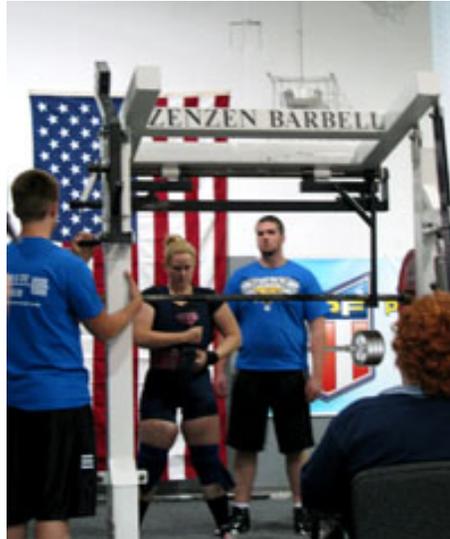


**Mostly Sunny**  
**91°/71°**

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

## Feature

### Strong force has nothing on CDF physicist



CDF graduate student Jennifer Gimmell squats 319 pounds at the American Powerlifting Federation's Chicago Summer Bash 5 competition in Willowbrook.

Jennifer Gimmell cinches a pink leather belt tight on her waist. It matches the pink bow in her hair. Dozens of onlookers watch her every move.

Few at the Willowbrook gym can do what she can - at work or play.

The 26-year-old studies the heaviest particle in the world, the top quark, at Fermilab. Today she's squat lifting 319 pounds on her way to second place in the American Powerlifting Federation's Chicago Summer Bash 5 competition.

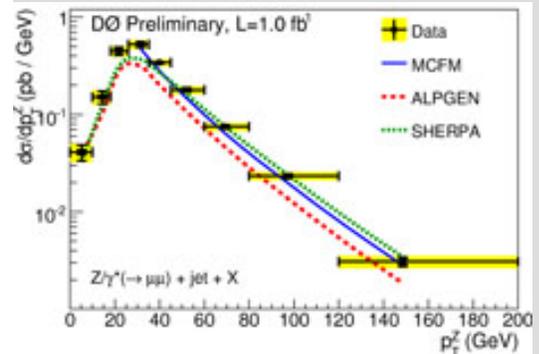
"No way," said fellow competitor Buddie Ginney, watching Gimmell's face turn purple and her cheeks puff with the strain of the lift. He's never met a physicist powerlifter, especially a female one.

Gimmell's CDF colleagues were just as incredulous. Then they saw a photo of her pulling a 23,000 pound truck with a rope to win the Align Life Strongman competition last fall.

Since then, none of her co-workers have challenged her to arm wrestle, but some have asked her to help move furniture.

## Fermilab Result of the Week

### Making hide harder than seek



This figure shows the transverse momentum distribution for Z bosons for data (black dots) and three different theoretical models (lines).

For many physicists, the Tevatron is a hunting ground for physical processes never before seen. Each day, these researchers seek out the faintest signs of any potential new physics hiding in their data. Their search takes place in a vast landscape of physical processes known to occur in the Tevatron's proton/anti-proton collisions and much of their time is spent inspecting all the nooks and crannies of these "background" processes. In efforts to simplify this work, physicists from the DZero collaboration have recently found a way to make it much harder for new physics to hide.

Many searches for new physics at the Tevatron are performed in events containing a Z boson associated with quarks or gluons, which manifest in the detector as "jets" of collimated particles. These Z+jets events can be predicted with increasing precision, but the process of tuning these predictions to match real data is a monumental task. Modern theoretical predictions must be taken through an intricate process of simulating particle decays, interactions and, ultimately, the response of the detector apparatus. Though carefully performed, this simulation can make it even easier for new physics to hide in the Z+jets background. However, DZero physicists have worked to turn this process around. By carefully unfolding the effects associated with the detector response, researchers were able to take their data back to a level where it can be compared at the level of the theoretical models. Through this comparison, intricate aspects of the theories can be quickly and

**Current Security Status**

Her next powerlifting meet, the Indiana State Meet, occurs Sept. 20 in Evansville, IN.

**Secon Level 3****Wilson Hall Cafe****Thursday, July 17**

- Santa Fe black bean
- Sloppy Joe
- Chicken cordon blue
- Smart cuisine: Spinach enchiladas
- Baked ham & Swiss on a ciabatta roll
- Assorted slice pizza
- Crispy fried chicken ranch salad

[Wilson Hall Cafe menu](#)**Chez Leon****Thursday, July 17****Dinner**

-Closed

**Wednesday, July 23****Lunch**

- Tinga tostada
- Rice & beans
- Napolitano flan

[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)

"I admire her passion," said coach Pete Arroyo at the June Willowbrook meet where Gimmell earned a spot at nationals for amateur powerlifting. "She's never missed one practice. I wish the other guys were like her."

Gimmell picked up the hobby at Fermilab two years ago from fellow physicist Dan McCarron. They train every other day at gyms in the area or at the laboratory.

Fitting that in with detector shifts and Ph.D. work takes effort, but it pays off at meets and in the laboratory.

"It's a huge stress relief. I'm physically exhausted, so I can fall asleep at night without my mind speeding around all the work remaining in my thesis," Gimmell said.

-- Jennifer Johnson

**In the News****BaBar gets to the bottom of bottomonia**

From *Physicsworld.com*, July 16, 2008

Physicists working on the BaBar experiment at the Stanford Linear Accelerator Center in California are the first to see the lightest member of the "bottomonia" family of mesons — 30 years after the first of its heavier siblings was discovered. physicsworld.com talks to BaBar team member Tim Gershon of the University of Warwick about the significance of the discovery.

So what exactly is bottomonia?

It is a family of mesons comprising a bottom quark and an anti-bottom quark, which can pair up to form a number of different mass states. The  $\Upsilon$  meson was the first bottomonia particle to be seen (at Fermilab in 1977) and is an excited or heavier mass state. Since then physicists have detected 12 other excited states — but never the lowest mass (or ground state) meson called  $\eta_b$ .

[Read more](#)

**In the News**

accurately tuned. This procedure will help improve the understanding of a vast range of Tevatron physics.

Using just over one inverse femtobarn of DZero data, scientists studied Z+jets events in which the Z boson decayed to a muon/anti-muon pair. After unfolding to the particle level, they measured the production rate in four differential distributions. These distributions are carefully compared to the theoretical predictions of the MCFM, Alpgen, Pythia, and Sherpa event generators, providing essential feedback for their tuning. Ultimately, this work can even help improve predictions at the LHC. By providing a well-understood view of background processes, this work greatly improves searches for new physics. By making the Tevatron landscape a harder place to hide, these physicists have made the process of "seek" that much easier.



Gavin Hesketh  
Markus Wobisch  
Northeastern University Louisiana Tech University

Gavin Hesketh of Northeastern University and Markus Wobisch of Louisiana Tech University made primary contributions to this analysis.

The DZero muon identification team develops and studies the algorithms used to identify muons in the DZero data. Their efforts to optimize this identification process in RunIIb of the Tevatron has helped improve a large range of DZero physics results.



Marion Anlauf  
Frederic Deloz  
Boris Tuchming  
IFU, Saclay, France



Mike East  
Dave Hedin  
Yuri Yatsenko  
University of Nebraska, Lincoln  
Northern Illinois University  
JINR, Dubna, Russia

**Announcements****[Have a safe day!](#)****Pool tags available at Recreation Office**

Pool members can pick their pool tags at the Recreation Office on WH15 Tuesday and Wednesday from 9:30 a.m. - 12:30 p.m. Memberships and swim lesson registration are also available at the Recreation office. Registration for the second session lesson (July 21-Aug 1) remains open until Thursday, July 17 at noon.

**Family Public Quadrat Study Saturday**

Families can help restore the prairie this weekend. A Public Quadrat Study for families will take place Saturday, July 19, from 9-11:30

## 'Physics, who wants that?'

From *[nationalpost.com](http://nationalpost.com)*,  
July 16, 2008

Howard Burton is certainly not a household name, and as head of the Perimeter Institute for Theoretical Physics in Waterloo, Ont., he oversees a group of about 46 researchers who may never produce anything in most people's lifetimes. Yet BlackBerry e-mail-device creator Mike Lazaridis was willing to give the group of brainiacs located about an hour southwest of Toronto \$100-million with no strings attached to get the institute off the ground in 2001. RIM executives Jim Balsillie and Doug Fregin and three levels of government have chipped in another \$78-million. Mr. Burton spoke with the Financial Post's Kevin Restivo about his organization's mandate and progress. Here are some excerpts of the interview:

[Read more](#)

a.m. Regular sessions of the quadrat study will take place on July 29 and Aug. 5. More information is available [online](#).

### **Paving project update**

The Roads and Grounds Group would like to thank the employees and users who were inconvenienced by the A1/A2 paving project on Tuesday and Wednesday. Drivers had to take alternate routes and at times cars were delayed. With only a few exceptions drivers were courteous and accommodating. We understand that often at this time of year drivers experience many delays and detours. We appreciate Fermilab's courteous employees and users. Striping operations will complete the project within the next couple days.

### **[Additional Activities](#)**