

## Calendar

Thursday, August 26

2:30 p.m. Theoretical Physics Seminar - Curia II

Speaker: A. Daleo, Fermilab/Universidad de la Plata

Title: Fracture Functions and Higher Order QCD Corrections to Semi-Inclusive DIS

3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over

THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

Friday, August 27

3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over

THERE WILL BE NO JOINT EXPERIMENTAL THEORETICAL PHYSICS SEMINAR THIS WEEK

## Wilson Hall Cafe

Thursday, August 26

Minnesota Wild Rice with Chicken

Tuna Melt on Nine Grain \$4.75

Breaded Veal with Mushroom Cream Sauce \$3.75

Sweet & Sour Pork over Rice \$3.75

BLT Ranch Wrap \$4.75

Cheesy Breadsticks \$1.85

Toasted Pecan Chicken Salad \$4.75

[Wilson Hall Cafe Menu](#)

[Chez Leon](#)

## Weather

## Pierre Auger Observatory Reaches Milestones



"Ezra," one of the 400 completed surface detector stations. All 1600 will be named, many by Argentine schoolchildren. (Click on image for larger version.)

The Pierre Auger Observatory collaboration recently celebrated two construction milestones. Half of the observatory's fluorescence telescopes and one-quarter of its surface detector stations are now completed and taking cosmic-ray data.

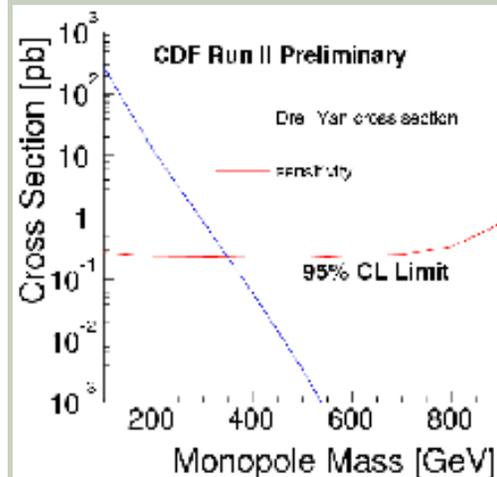
"We are recording lots of beautiful events," said Fermilab's Paul Mantsch, project manager for the observatory. "We see many cosmic-ray showers in both the surface detectors and fluorescence telescopes--a few of them are quite high in energy."

The observatory is measuring ultra-high-energy cosmic rays, particles that hit the earth's atmosphere with energies 100 million times higher than the Tevatron produces. The origin of such cosmic rays is a decades-old mystery.

"Only 10 to 15 cosmic rays with energies above  $10^{20}$  eV have been seen," said Mantsch. "We don't know where they

## Fermilab Result of the Week

### CDF Searches for Magnetic Charge



The cross section limit at 95% CL versus magnetic monopole mass. The excluded region is above. The theory curve for a Drell-Yan pair production mechanism intersects at the mass limit: 350 GeV.

Haven't we all played with magnets, arranging them to attract or repel each other? These forces are caused by the magnet's north and south poles. Every magnet has two poles; if you break one, each piece still has two poles.

In 1931, Dirac hypothesized a magnetic monopole, a single north or south pole by itself. We see electric monopoles all the time as negative electrons, but magnetic monopoles have not been discovered.

Electricity and magnetism are closely interrelated. Magnetic monopoles would be accelerated by a magnetic field like electrons in an electric field. Monopoles would also be highly ionizing, so to find them, CDF triggers on large light pulses in Time-of-Flight scintillator bars. In the tracking detector, monopoles would cause high energy hits in a pattern resembling a high pT track.



Chance Thunderstorms 88°/72°

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come from or how they're made."

The cosmic rays collide with an air molecule and produce a shower of up to 100 billion subatomic particles. Fluorescence telescopes detect the ultraviolet light produced as the shower of particles moves through the atmosphere, and surface detectors measure the energies of the particles that reach the earth's surface. The completed observatory will have 1600 surface detector stations placed over an area of about 3000 square kilometers. Four stations containing six fluorescence telescopes each will be located on hills surrounding the surface detector stations.



One of Auger's fluorescence telescope stations (Click on image for larger version.)

### In the News

From the *Daily Herald*, August 21, 2004

Student's perfect ACT score no surprise  
By Lisa Smith

Learning she scored a perfect 36 on the ACT didn't surprise Hannah Newfield-Plunkett.

After all, the St. Charles East High School honor student also earned a near-perfect 1580 on her SAT and achieved the highest score possible on her advanced placement calculus exam.

A team at CDF searched for magnetic monopoles in 25 pb<sup>-1</sup> of data. While none were found, the team determined that monopoles cannot be produced with a cross section (rate) greater than 0.3 pb<sup>-1</sup>. Furthermore, if they are produced in pairs like electrons--the Drell-Yan mechanism--then monopoles must have a mass greater than 350 GeV. These are currently the world's best limits from a direct search for magnetic monopoles.



Ch. Paus, J.D. Lewis, P. Schieferdecker, and M.J. Mulhearn stand in front of the open crate containing part of CDF's magnetic monopole trigger. (Click on image for larger version.)

[Result of the Week Archive](#)

### Announcements

#### Wilson Hall Power Outages

- On August 28 and 29, Wilson Hall will have power but no air conditioning.
- Power will be out September 13 for half an hour starting at approximately 7:00 a.m.
- Power will be out September 24 for half an hour starting at approximately 7:00 a.m.

For more information, contact Wilson Hall Building Manager Stan Boyson at x4753.

#### Booster, CUB, and Cross Gallery Power Outages

- Cross Gallery footprint area: No air conditioning Saturday, August 28 or Sunday, August 29.

"We're thrilled but it's just one in a series of successes, so in a way it didn't seem that unusual to us," said her mom, Mady Newfield. "We're utterly thrilled with who she is and what her hopes are."

...In addition to visiting Ivy League campuses, Newfield-Plunkett spent most of the summer working with her father at Fermilab. She served as a member of the famed "neutrino project" team with her father, Rob Plunkett, a physicist and deputy project manager for Neutrinos at the Main Injector, or NuMI.

The project aims to measure the masses involved in the transformation of the subatomic particles.

[read more](#)

- Booster West: No power 12:00 a.m. to 6:00 a.m. Saturday, August 28; no power all morning Sunday, August 29.

- Booster East: No power all afternoon Sunday, August 29.

- CUB Feeder 42 and Booster Feeder 41 will be down for two hours Sunday, August 29 to clean a Tie switch that connects the two systems. There will be no power during that time to either system.

For more information, contact the MCR (x3721) or Bob Mau (x4429).

**Scheduled Downtime for IMA Server1**

On August 28 and 29, IMA Server1 will undergo a upgrade. This will consist of system changes as well as an upgrade to the IMA software. This upgrade will take several hours -- 12 to 14 is our current estimate. Work will start at 10:00 pm on August 28 with a planned time for the system to be available for users on noon on August 29.

**New Book Purchase Suggestion Lists**

New Book purchase suggestion lists for the week of August 24 are now [available online](#). These include Majors book lists in four subject areas. There is also an Amazon suggestion list in the form of a shopping cart, viewable by entering the password "library."

**GSA Triathlon Saturday**

The annual GSA triathlon will take place this Saturday, August 28 at 8:00 a.m. in the village. This is an informal race for anyone who wants to have a go - you don't need to be an athlete or have spent months training! Please register ahead of time by emailing [gsa\\_officers@fnal.gov](mailto:gsa_officers@fnal.gov) as this makes things easier for the organisers! However, you may just turn up on the day and take part.

