Fermilab Today

Thursday, October 14, 2004

Calendar

Thursday, October 14
2:30 p.m. Theoretical Physics Seminar - Curia II
Speaker: D. Kosower, Saclay
Title: From Twistors to Computations
3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

Friday, October 15
3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
4:00 p.m. Joint Experimental Theoretical Physics Seminar - 1 West
Speaker: G. Landsberg, Brown University
Title: Search for Hidden Dimensions in Space at D0

Wilson Hall Cafe

Thursday, October 14
Sante Fe Black Bean
Marinara Meatball Sub $4.75
Braised Pork Chops $4.00
Sauteed Liver & Onions $3.75
Baked Ham & Swiss on a Ciabatta Roll $4.75
Sausage & Sweet Onion Strombolis $3.25
Crispy Fried Chicken Ranch Salad $4.75
Wilson Hall Cafe Menu
Chez Leon

Weather

Revised Fermilab Flu Shot Program

Fermilab's Medical Office (Click on image for larger version.)

Fermilab's flu shot program has been modified in response to the nationwide shortage of flu vaccines. In addition to being an active full-time regular employee, term employee or temporary employee, recipients must also meet at least one of the high risk flu criteria (partial list):

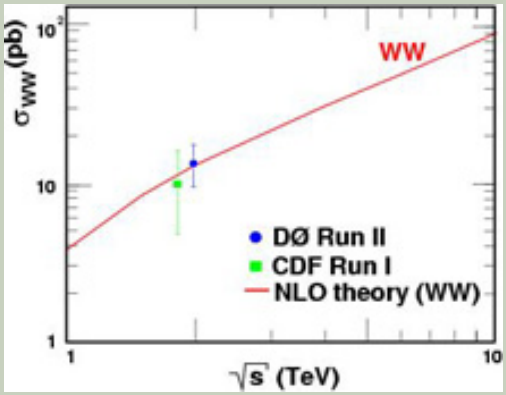
- **Persons aged 65 years and older**
- **Persons with chronic medical conditions**
- **Women who will be pregnant during the flu season**
- **Persons who can transmit flu to those at high risk**

At the present time, a single flu shot clinic has been scheduled for Tuesday, 10/19/2004 at Wilson Hall Ground Floor East. If you qualify, you should sign up, as before, using the scheduling application on the ES&H Section's website.
more information and sign-up form

Shutdown News

Fermilab Result of the Week

DZero Double Ws



Comparison of the DZero double W cross section with the theory prediction (Click on image for larger version.)

W bosons are the carriers of one the four fundamental forces in nature. These very short-lived particles are produced comparatively often in particle collision such as in the proton-antiproton collision at the Tevatron collider. Twenty years after the W was discovered in 1983, it is now a benchmark for experiments.

Theory, however, predicts another much rarer way of making W's: producing both a W+ and a W- at the same time. This has never been observed in a proton-antiproton collider. It's important to look for this, even though the rate is small, because it allows us to test the structure of the standard model of particle physics which predicts the properties of the W very precisely. If this W-pair production turns out to happen more frequently than expected it could be a sign of unexpected properties of the W bosons or even a signal of new particles such as the Higgs boson (which is predicted to decay into pairs

Chance Showers 57º/43º

Extended Forecast

Weather at Fermilab

Current Security Status

Secon Level 3

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Safety Planning the Key In MiniBooNE Horn Move

Shielding requirements called for five inches of steel around the MiniBooNE horn, which came to 37 tons. The weight of the horn and the lifting device ran the total to 40 tons. (Click on image for larger version.)

The MiniBooNE horn ran flawlessly in producing nearly two years of experimental data, and now the first stage of replacing this beam-focusing apparatus for the short-baseline neutrino experiment has also gone flawlessly--and safely.

With exacting attention to specifically-developed safety procedures, the old horn was removed from its location at MI-12 on Tuesday afternoon and transferred by truck (with a Fermilab Security escort) to the Target Station Building (TSB). The second stage will involve the installation of a replacement horn, modified to avoid some of the water-leakage and ground-fault problems that eventually affected the original while it produced a world record of 96 million pulses. A focusing horn at Brookhaven National Lab has

of W bosons).

Data collected between April 2002 and March 2004 of the Tevatron Run II have been used by the DZero collaboration to measure the W boson pair production rate in final states where the W bosons decay into electrons or muons and their corresponding neutrinos. The data were searched for events with two leptons of high transverse momentum with respect to the beam axis and significant missing transverse energy due to the undetected neutrinos. 25 candidate events are observed in data. This compares to about 17 events expected from W boson pair production with a background expectation from other standard model processes of about 8 events. The data is in good agreement with theoretical predictions and is the first observation of W boson pair production in proton-antiproton collisions.

This measurement has been conducted along with other measurements like the search of the Higgs boson by Marc Hohlfeld (graduate student at University of Mainz, Germany) and Johannes Elmsheuser (graduate student and now post-doc at the University of Munich, Germany).

produced 13 million pulses for second place.

"Part of the reason it was able to rack up so many pulses is that it's the fastest-running horn in the world, at 5 Hz," said engineer Larry Bartoszek. "Everybody else runs at 0.5 Hz or less, so there's an order of magnitude difference in terms of the rate."

Rob Reilly of AD-Mechanical Support had coordinated the development of the removal procedure, which finally contained 128 distinct steps. Critical factors included the tight quarters at MI-12 and the 20-ton lifting capacities of the cranes there and at TSB. O'Reilly said the shielding requirement for the old horn was five inches of steel all around, which came to 37 tons. Add the weight of the horn itself and the lifting device, and the total was 40 tons.

AD safety expert Mike Gerardi said there were "many too many" contributors to list all, but he cited the assistance of the Mechanical Department, the Engineering Department, the contract rigging crews and Fermilab Security for providing the escort "on short notice."

Don Cossairt, Associate Head of ES&H, referred to leading roles by Gerardi, Kathy Graden of ES&H, Tom Kobilarcik of AD-External Beamlines and Roger Zimmermann, Joel Fulgham, Gary Lauten and Tony Busch of AD-ES&H. "There was a large group working on the planning," said Cossairt, "and everything has worked very well."

Adam Lyon, of Fermilab's computing division, works on the SAM system used to store and deliver DZero's data. Daniel Wicke, who is visiting Fermilab from the University of Wuppertal in Germany, is working on the data processing infrastructure, especially in setting up for large scale data processing at sites remote from the lab. (Click on image for larger version.)

This analysis was performed by Johannes Elmsheuser, Univ. Munich (left) and Marc Hohlfeld, Univ. Mainz

Result of the Week Archive

In the News

PPARC, October 12, 2004

UK celebrates 50 years of CERN

A celebratory review of the past, present and future of Europe's Particle Physics Laboratory

Today, October 12th, the UK celebrates 50 years of partnership with CERN, Europe's Particle Physics Laboratory. In addition to world-leading research that has won Nobel prizes, CERN was the birthplace of the World Wide Web and has seen a host of other innovations that have led to advances in information technology, electronics, detector materials and

Loaded on a truck bed, the MiniBooNE horn gets an escort for its trip from MI-12 to the Target Service Building on Tuesday afternoon. (Click on image for larger version.)

instrumentation for healthcare.
Read more

Announcements

New Book Purchase Suggestion Lists
New Book purchase suggestion lists for the week of October 12 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." Please send an email to sllee@fnal.gov with your book purchase recommendations from these lists, or from other sources.

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Power Outage News
Tevatron Tunnel, Service Buildings, Sumps, and Computer Links
October 16 – Power will be off to all of Tevatron for 10 hours starting at 7 AM on Saturday. This outage is for Feeder 45 work.
Kautz Road Substation
October 18 – The power will be off to all of the Main Injector service buildings and tunnel, including MI-12a, MI-12b, MI-13, and MI-65, for one half hour starting at 7 AM.