Fermilab Today

Thursday, October 7, 2004

Calendar

Thursday, October 7

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

Speaker: Y. Grossman, Technion

Title: Soft Leptogenesis

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

THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

Friday, October 8

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

4:00 p.m. Joint Experimental Theoretical Physics Seminar - 1 West

Speaker: M. Velasco, Northwestern University

Title: NA48 Results

Wilson Hall Cafe

Thursday, October 7

Southwestern Chicken Tortilla Soup

Philly Style Cheese Steak $4.75

Baked Fish w/ Roasted Leeks and Peppers $3.75

Tomato Basil Chicken Parmesan $3.75

Classic Cuban Panini $4.75

4 Cheese Pizza $2.75

Marinated Grilled Chicken Caesar Salads $4.75

Wilson Hall Cafe Menu

Chez Leon

Weather

NUMI Project Offers Extra Tours for Employees and Users

Advance Registration Required

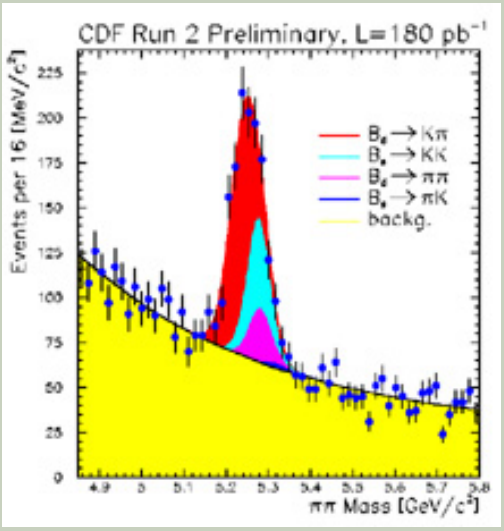
A group of employees and users who took the tour of the NUMI tunnel and MINOS near detector hall on September 15. (Click on image for larger version.)

Due to the popularity of the recent tours of the NUMI tunnel and the MINOS near detector hall, the NUMI project will offer additional tours to employees and users starting Tuesday, October 12. The additional tours will be available every Tuesday afternoon at 2:30 p.m. and 3:30 p.m. until the end of October. Ten people will be allowed to sign up for each tour. A bus will pick up the tour groups in front of Wilson Hall and bring everyone back at the end of the tour. Employees and users must register in advance. The NUMI project recommends that interested employees and users sign up right away for these extra Tuesday tours because the Wednesday tours filled up within minutes of being announced.

Each tour lasts for about an hour and a half and consists of a vigorous underground hike. An elevator ride will take the group down 140 feet at the MI-65 entry point, where employees and users can view the beamline that delivers

Fermilab Result of the Week

CDF discovers the Charm of Charmless Beauty



Mass spectrum of charmless 2-body decays at CDF. Different colors indicate the contributions from different decay modes. (Click on image for larger version.)

The B_d and B_s decay modes into two light (charmless) mesons (B->h+h-) offer unique opportunities to study the elusive effects of CP violation and their relationship with the fundamental weak phases of the CKM matrix. Unfortunately, they are not easy to observe: the signal to background ratio is on the order of 10^{-8} at the Tevatron, and the decay products are very common particles within the much larger QCD backgrounds. It is a needle-in-a-haystack situation, and one where the needle looks very much like the hay.

Nevertheless, a clean signal of about one thousand such decays has been reconstructed by a CDF team from Pisa, Padova, Roma and Trieste universities, using 180 pb^{-1} of data collected by triggering on displaced vertices. The signal peak is actually a superposition of several closely spaced signals, B_d->pipi,

Partly Cloudy **74º/58º**

Extended Forecast

Weather at Fermilab

Current Security Status

Secon Level 3

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protons to the two magnetic 'horns', whose peak power reaches 40 MegaWatts. The next part of the tour consists of a long walk down the decay tunnel, which is very damp and somewhat dark and cramped. Rock strata and newly formed stalactites will be visible at various locations. The tour ends up 360 feet underground in the MINOS near detector hall, where 980 tons of steel and scintillator are waiting to observe their first neutrino interactions.

This tour is not for everybody, especially if you are claustrophobic, physically infirm or don't like to get wet. Parts of the tour involve stairs and walking down a slope, which will be similar to walking on a wet hiking trail. A dress code of hiking boots or sneakers and long pants is mandatory. Tank-tops and sleeveless shirts are not allowed. Employees and users who are not properly dressed will not be allowed to join the tour. A light coat is also recommended. Hard hats, eye protection and personal rescuers will be provided for each person.

Employees and users who would like to sign up for a tour should contact Nancy Lanning at edreg@fnal.gov or x5588. Please indicate which tour you would like to sign up for and provide contact information. The deadline to sign up for the October 12 tour is noon on October 11.

DOE Funding Helps Fermilab and the Environment

B_d->Kpi, B_s->KK and B_s->Kpi being the largest contributors.

The B_s->KK mode had never previously been observed. CDF measured its branching fraction to be 34.3+-5.5(stat)+-5.9(syst)x10^{-6}, thus confirming recent predictions based on QCD factorization. With more data, lifetime and time-dependent CP asymmetries will be measured, which when combined with B_d->pipi asymmetries will constrain the angle gamma of the CKM matrix, a fundamental parameter on which little experimental information is available.

The B_d->Kpi mode, a first at a hadron collider, is the only B decay where "direct" CP violation has been demonstrated. CDF's measurement of the asymmetry is -0.04+-0.08(stat.)+-0.01(syst.). CDF expects from data on tape a B_d->Kpi sample of same size as current B-factories samples, plus a measurement of the asymmetry in the B_s->Kpi mode, inaccessible to other experiments.

(Left to Right) Michael Morello, Giovanni Punzi, Diego Tonelli, Simone Donati from Pisa. Tonelli and Morello are graduate students and are writing their thesis on B->hh decays. (Click on image for larger version.)

Result of the Week Archive

Accelerator Update

The type of dehumidifier that earned Fermilab an FY04 award for Condensation Control on the Rings Project. (Click on image for larger version.)

The DOE Federal Energy Management Program (FEMP) has been helping to fund energy efficiency projects at Fermilab that were conceived under the lab's former Utility Incentive Program (UIP). "Working with Victor Petrolati of FEMP's Departmental Utilities Energy Team (DUET), Fermilab has received over $1.2 million dollars over the past few years to implement these energy savings projects," said Steve Krstulovich of FESS.

Even in this period of lean budgets, this year Fermilab has been awarded $330K for three more projects. These include the A-0 Wing Lighting Retrofit, and the Sitewide Lighting Retrofit Phase 2 & 3 projects. The projects completed in the last three years have earned the lab several Federal Energy and Water Management Awards while helping reduce operating costs by about $350K annually. Most recently the lab was notified of an FY04 award for the Condensation Control on the Rings Project, which added dehumidifiers in the TeV enclosure. In total, the FEMP funded projects avoid the use of over 8,500 MWh of electricity and nearly 6 Million cubic

During the shutdown, the Accelerator Update will offer a series on the history and operation of the laboratory's accelerator complex. The Linac Side-Coupled Cavities is the fifth in a series.
Read the Current Accelerator Update

View the Tevatron Luminosity Charts

Announcements

New Book Purchase Suggestion Lists
New Book purchase suggestion lists for the week of October 5 are nowavailable 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."

SPIRES HEPJobs Database
The Fermilab Library maintains the SPIRES HEPJobs database, listing particle physics jobs all over the world . You can search for jobs or post jobs free of charge.

Power Outage News
Feeders 30 & 31 (All Meson and Site 40)
Thursday, October 7 - The work will begin at 4 PM and last approximately three hours
MW9, MP9, MAB, and Site 40
This power outage scheduled for October 9 has been canceled. The work will be done during the October 7 outage.

Fermilab Arts Series Saturday
The Fermilab Arts Series will present the Fine Arts Quartet at the 30th Anniversary Celebration this Saturday at 8:00 p.m. Tickets are still available!
more information

feet of natural gas annually, which in turn preclude nearly 1,500 metric tons of carbon emissions to help improve the environment.

In the News

From *FYI: AIP Bulletin of Science Policy News*, October 6, 2004

Presidential Candidates on Science Issues

While science and technology issues have not been raised in the presidential and vice-presidential debates thus far, there are a number of web sites featuring the positions of President George Bush and Senator John Kerry on science policy. These include articles in two magazines published by the American Institute of Physics, in Science, Science Express, and Nature. Last week, the American Association for the Advancement of Science held a well-attended candidates' forum at which spokesmen for President Bush and Senator Kerry presented the two candidates' views on science policy and funding questions. An audio archive is available of this forum.

Read more

Fermilab Film Series Friday

The Fermilab Film Series will present "Henry V" on Friday at 8:00 p.m. in Ramsey Auditorium.

more information

1900 Productions Presents "Copenhagen" at Elmhurst College

1900 Productions presents "Copenhagen" by Michael Frayn at Elmhurst College, running October 8 through November 14. Performances are Friday and Saturday at 8:00 p.m., Sunday at 2:00 p.m. at the Accelerator Art Space, 200 W. Park Ave. Elmhurst, IL. Tickets purchased by Fermilab employees are $10.00 for all performances (regular price is $20.00). Reservations can be made by calling the 1900 Productions box office at 630-251-7525.

more information

Fermilab Participates in St. Charles Scarecrow Festival This Weekend

Fermilab will have a booth with hands-on science activities for kids at the St. Charles Scarecrow Festival this weekend. The booth will be located in Family Fun Square A. Don't forget to check out Fermilab's Einstein scarecrow in the Scarecrow Display area!

more information