

## Calendar

### Thursday, January 6

THERE WILL BE NO THEORETICAL PHYSICS SEMINAR THIS WEEK

**3:30 p.m.** DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

### Friday, January 7

**3:30 p.m.** Wine & Cheese - 2nd Flr X-Over

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

Speaker: C. Walter, Duke University

Title: Super-K, K2K and T2K: The Present and Future

## Wilson Hall Cafe

### Thursday, January 6

Sante Fe Black Bean

Marinara Meatball Sub \$4.75

Stuffed Manicotti \$3.75

Sauteed Liver & Onions \$3.75

Baked Ham & Swiss on a Ciabatta Roll

\$4.75

California Pizza \$2.75

Crispy Fried Chicken Ranch Salad \$4.75

[Wilson Hall Cafe Menu](#)

[Chez Leon](#) will be closed through January and February

## Weather



Chance Snow **24°/11°**

[Extended Forecast](#)

[Weather at Fermilab](#)

## LHC Physics Center Celebrates New Floor



(From left to right) Jim Strait, Kaori Maeshima and Dan Green, all of the Fermilab Particle Physics Division, talk and enjoy cake at the LPC Open House on Tuesday. ([Click on image for larger version.](#))

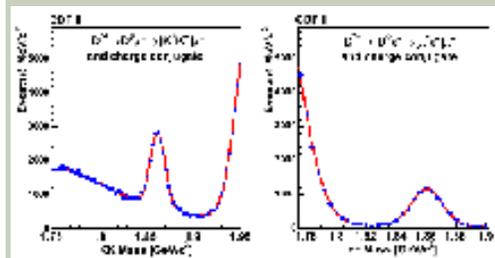
Although aerial photos of the LHC, cross-section diagrams of the CMS and a Swiss espresso machine might seem to distinctively characterize the environment at CERN, you could also just as well be on the 11th floor here at Wilson Hall. Tuesday's Open House held by Fermilab's new LHC Physics Center (LPC) celebrated the construction of a physical place at Fermilab where US physicists can contribute to the world's soon-to-be largest particle accelerator, despite a distance of several thousand miles.

"The conceptual plan of the LPC has been here for years," said Kaori Maeshima of Fermilab's Particle Physics Division and CMS department. "But only since last spring have we started the actual construction and knocking down the walls, and it was just finished in December."

Dan Green of Fermilab's Particle Physics

## Fermilab Result of the Week

### More Symmetry in Charm



Mass spectra for  $D^0$  and anti- $D^0$  to  $K^+K^-$  (left) and  $\pi^+\pi^-$  (right) after all selection criteria have been applied. The  $D^0 \rightarrow K^+K^-$  and  $D^0 \rightarrow \pi^+\pi^-$  peaks are well separated from the misidentification peak due to the  $K\pi^+$  mode. ([Click on image for larger version.](#))

The Collider Detector at Fermilab in Run II has often been dubbed the Charm Detector Facility due to its capability of recording huge samples of charm mesons, identified by their signature of a decay vertex displaced from the beam axis.

Presently CDF has more than  $10^6$   $D^0 \rightarrow K\pi$  and  $D^{*\pm} \rightarrow K\pi\pi$  decays, and has established itself as a world class facility for Charm physics.

A team of CDF researchers from Italy and the U.S. has studied the decay chain  $D^{*\pm} \rightarrow D^0\pi \rightarrow (K^+K^-)\pi^+$  and  $D^{*\pm} \rightarrow D^0\pi \rightarrow (\pi^+\pi^-)\pi^+$ , and their charge conjugate counterparts, to determine to what extent the probabilities of  $D^0$  and anti- $D^0$  decaying into the  $K^+K^-$  and  $\pi^+\pi^-$  channels are the same, or if a charge-parity ("CP") asymmetry exists.

The Standard Model predicts CP asymmetries well below the 1% level in these decay rates, but it is easy to conceive of alternative models that could produce more sizeable effects.

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Division and CMS department said that the floorplan is intended to maximize user collaboration. "This is a customer-based operation. We have a few things that aren't on your typical floor, such as a help desk to direct people to experts of different sub-systems. There are large, open spaces where people can easily communicate, three teleconferencing rooms and a remote operations center."

Fermilab employees will use the 11th floor along with researchers, post-docs and grad students from 40 universities. "We are going into a completely new area in physics," said Hans Wenzel of Fermilab's Computing Division and CMS department. "There is strong potential for major discoveries. Feedback and discussing new ideas will be very important, and in some ways, people here can participate much more actively than if they were at the site."

"This place will be here for decades to come," said Fermilab Director Mike Witherell. "It's the start of something big."

## Accelerator Update

### January 3-January 5

- Operations and the accelerator complex continued to recover from the ComEd power outage
- Tevatron used this down time to adjust the CDF low beta quad magnets
- Pbar resumed stacking on Tuesday afternoon, but then lost its stack that evening due to a breaker trip
- The TeV cryo system was ready by midnight on Tuesday

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

Using data from the first year of Run II, corresponding to  $120 \text{ pb}^{-1}$ , very clean charm samples were selected. Careful analysis has allowed CDF to put the most stringent limits to date on direct CP asymmetries:  $A_{CP}(K^+K^-) = 2.0 \pm 1.2(\text{stat}) \pm 0.6(\text{sys})\%$ , and  $A_{CP}(\pi^+\pi^-) = 1.0 \pm 1.3(\text{stat}) \pm 0.6(\text{sys})\%$ , both consistent with no CP asymmetry.

After the recent discovery of CP violation in  $B_0 \rightarrow K^+\pi^-$  decay rates and the very well known effects in  $K^0$  decays, this result confirm that charm mesons might be the only heavy flavor mesons that do not exhibit violations of this fundamental symmetry.



(Left to Right) Stefano Giagu (Rome), Marco Rescigno (Rome) and Boris Iyutin (MIT) have all worked on the search for direct CP asymmetries in Charm. (Click on image for larger version.)

[Result of the Week Archive](#)

## Announcements

### System Administrator's Roundtable

The monthly meeting of computing system administrators will be held Thursday, 1/6 at 1:30 in Curia 2. The topics this month will be an introduction of the new personnel on the computer security team, and an overview of SAZ, the Site AuthoriZation service for Grid resources. For more information, contact [Mark Leininger](#), x4776.

## In the News

### From the *Chicago Sun-Times*, January 4, 2004

#### Isotope lab would be big win for state

Illinois has a unique opportunity to raise its visibility as a world-class technology leader. In 2005 the U.S. Department of Energy will select a research organization to build, manage and operate a \$1 billion Rare Isotope Accelerator facility. Argonne National Laboratory, in conjunction with the University of Chicago and with the support of the Illinois Department of Commerce and Economic Opportunity, is a top contender to win the project.

[read more](#)

### Tevatron Events Again on Display

Artist Tim Otto Roth again uses collision events from Fermilab's Tevatron as input for his art project "I see what I see not." *Fermilab Today* reported on [December 15](#). The Fermilab-related artwork is on display this week from 10 a.m. to 1 p.m. CT and will be [broadcast via Web cam](#).

### When Irish Cows Are Smiling

Fermilab's Recreation Office is offering discount tickets for "When Irish Cows Are Smiling," an audience participation comedy. This offer is for one night only on Saturday, March 19 at 7:00 p.m. Milk Pail Restaurant, Banquet and Entertainment Complex in East Dundee. Tickets are \$45.00, dinner, tax and tip included. More information and an order form are [available online](#). The deadline to order tickets is noon on March 3.

### [Upcoming Activities](#)