

## Calendar

### Thursday, March 10

**11:00 a.m.** Research Techniques

Seminar - Curia II

Speaker: D. Reyna, Argonne National Laboratory

Title: Double-CHOOZ: A New Experiment to Measure Theta<sub>13</sub>

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

Speaker: H-C. Cheng, Harvard University  
Title: Little Hierarchy Problem and Little Higgs Theories

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

BREAK - 2nd Flr X-Over

THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

### Friday, March 11

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

BREAK - 2nd Flr X-Over

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

Speaker: J. Olsen, Princeton University

Title: The Other Angles: Measurements of  $\alpha$  and  $\gamma$  at BaBar

## Weather



Light Snow **35°/26°**

[Extended Forecast](#)

[Weather at Fermilab](#)

## Current Security Status

[Secou Level 3](#)

## Wilson Hall Cafe

## Party Photos Show the Fun



More than 1,000 people attended the lab-wide party last Friday. (Click on image for larger version.)

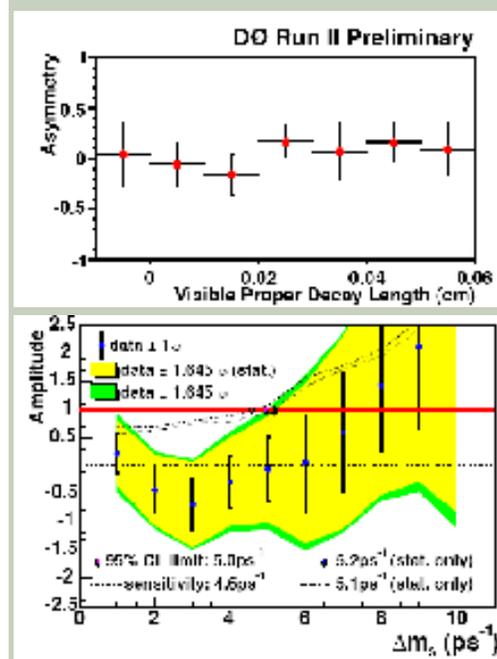
The turnout was great, the music was lively, and people had fun. On Friday afternoon, March 4, more than 1,000 people celebrated a lab-wide party in the balloon-decorated atrium of Wilson Hall, following the dedication of the NuMI/MINOS project in Ramsey Auditorium.

Deborah Guzman, Visual Media Services, and Jackie Coleman, Directorate, found lots of smiling faces as they captured the event with their cameras. Fermilab Today invites its readers to browse through a [photo album of the best photos](#).

The party, sponsored by URA, was organized by committee chaired by Jeff Appel, with a membership of Margie Bruce, Liz Buckely-Geer, Linda Christiansen, Jackie Coleman, Ethel Hall, Catherine James, Barb Kristen, Traci Langford, Elizabeth May, Elaine McCluskey, Mike Perricone, Monica Sasse and Marilyn Smith. From the improved setup to the larger amount of food, the party organization committee followed the suggestions made by

## Fermilab Result of the Week

### Flip-Flopping Matter and Anti-Matter



A sample of 13,300 reconstructed decays of  $B_s \rightarrow D_s \mu \nu X$  ( $D_s \phi \pi$ ) are available for flavor tagging using muon and secondary vertex information from the opposite side of the reconstructed  $B_s$  meson. The asymmetry between "mixed" (with a  $B_s$  meson formed at production, but an anti- $B_s$  meson at decay, or vice versa) and "unmixed" candidates as a function of visible proper decay length is shown in the top plot. Since no significant oscillations are observed in the asymmetry, the  $B_s$  mixing frequency is determined to be greater than  $5.0 \text{ ps}^{-1}$  (bottom plot). (Click on image for larger version.)

A curious property of a neutral  $B_s$  meson (b-antiquark and s-quark), is that it can spontaneously become (or "oscillate into") its own anti-particle, i.e., become an anti-meson that contains a b-quark and a s-antiquark, and back again. Such oscillations are characterized by a frequency related to a parameter called  $\Delta m_s$ .

The same phenomenon was observed for the neutral  $B_d$  meson (b-antiquark and a d-

## Thursday, March 10

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  
Double Stuffed Pizza \$3.25  
Chicken Pecan Salad \$4.75

The Wilson Hall Cafe now accepts Visa,  
Master Card, Discover and American  
Express at Cash Register #1.

[Wilson Hall Cafe Menu](#)

[Chez Leon](#) is now open. Call x4512 to  
make your reservation.

### Search

**Search the Fermilab Today Archive**

### Info

Fermilab Today is online at:  
<http://www.fnal.gov/today/>

Send comments and suggestions to  
[today@fnal.gov](mailto:today@fnal.gov)

[Fermilab Today archive](#)

[Fermilab Today PDF Version](#)

[Fermilab Result of the Week archive](#)

[Fermilab Safety Tip of the Week archive](#)

[Linear Collider News archive](#)

[Fermilab Today classifieds](#)

[Subscribe/Unsubscribe to Fermilab Today](#)

employees after the last lab-wide party.  
Fermilab Today thanks everybody for the  
fun event.

- Kurt Riesselmann

## Computing Division Achieves New Safety Record



Vicky White (left) and Jed Brown get ready to  
cut the cake at Tuesday's scheduling  
meeting. (Click on image for larger version.)

In Tuesday's scheduling meeting, ES&H  
presented Computing Division Head  
Vicky White with a cake in recognition of  
the division's recent safety record. As of  
March 8, Fermilab's Computing Division  
has worked 1,509,153 hours without a  
DART case. This accomplishment  
surpassed the Particle Physics Division's  
record of 1,500,459 hours.

"This is really an excellent achievement  
and shows that people are keeping their  
heads focused on working safely,  
sensibly assessing and dealing with  
hazards, and following procedures,"  
White said in a congratulatory e-mail to  
the Computing Division. "Thank you to  
everyone for working safely and for the  
lively participation in formulating our  
safety plan."

Director Mike Witherell presented the  
Computing Division with a plaque for the  
best sustained safety record at the ES&H

quark) in the mid 1980's, and almost  
everyone was surprised by the large  
probability of oscillation. In fact, this large  
value



Sergey Burdin

implied that the top  
quark would have to  
be very heavy, which  
was subsequently  
confirmed by its  
discovery in 1995 at  
Fermilab.

Our current  
understanding of the theory of matter  
leads us to believe that  $B_s$  mesons  
oscillate much faster than  $B_d$  mesons;  
consequently their oscillations are very  
difficult to detect; almost all  $B_s$  mesons  
turn into anti-mesons in a fraction of a  
trillionth of a second. Measuring the  
frequency of oscillation is of the utmost  
importance,

since a deviation from  
predictions could point  
to some unexpected  
new force or  
interaction lurking  
around the corner.



At present,  $B_s$  mesons [Dmitri Tsybychev](#)  
can only be studied at  
Fermilab. DZero has made an attempt at  
measuring  $B_s$  oscillations, and for now we  
claim that  $\Delta_{M_s}$  is larger than  $5.0 \text{ ps}^{-1}$   
(this is already ten times faster than  $B_d$   
oscillations). Although this initial result is  
not as restrictive as some previous  
results, it is a proof of principle that this  
analysis can be performed by DZero. We  
have many improvements in the works.  
Stay tuned!

Executive Committee meeting on February 22. "I'd like to give credit to all the people who made safety a priority, and to have you pass this on to all the people in your division," Witherell said. Fermilab's Business Services Section also received an award for the most improved safety record.

- Elizabeth Clements

### Accelerator Update

#### March 7- March 9

- During this 48 hour period Operations established one store that combined with an existing store provided the experiments with approximately 27 hours and 13 minutes of luminosity
- Pbar and NuMI commission new stacking TLG module
- KRF6 problems held off beam
- Booster Watchdog power supply held off beam
- H- Source suffers from intensity drop
- Store 4027 quenched
- Debuncher Kicker problem halted stacking
- TeV trim magnet fails

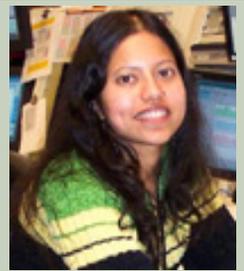
[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

### In the News

*Sara Stein was married to architect Martin Stein, the president of Urban Associates in New York City. Urban Associates was one of three architectural firms that worked with founding director Robert Wilson to design Fermilab's site as we know it today. Stein recently told Associate Director Jed Brown that he is most proud of his work at Camp Drum in Upstate New York, Cape Canaveral and Fermilab.*



Hal Evans (left) and Tulika Bose (right), both of Columbia University, and Dmitri Tsybychev (above), of SUNY Stony Brook, and Sergey Burdin (above), of Fermilab, have contributed, with many other colleagues, to this analysis and other analyses involving B hadrons.



Wyatt Merritt (left) and Adam Lyon and work on DZero's data grid project SAM which allows access to experimental data to researchers around the world.

### [Result of the Week Archive](#)

### Announcements

#### New issue of *symmetry*

The March issue of [symmetry](#) is now online. To get notified when the next issue is available, please sign up for the [email notification](#).

#### Fermilab Employee Art Show

The deadline to submit an intent application for the Fermilab Employee Art Show is March 10. Artwork must be submitted to the gallery on April 4 and April 5. The Artist Reception for the show will be on April 20 from 5:00 p.m. to 7:00 p.m. Employees will pick up their artwork on June 1 and June 2. Contact [Georgia Schwender](#) for more information.

#### Volunteer Translators Needed for Education Materials

In celebration of the World Year of Physics the Fermilab Education Office is

**From the *New York Times*,  
March 9, 2005**

**Sara Stein, Garden Advocate for the  
Use of Native Plants, Dies at 69**

By Christopher Lehman-Haupt

Sara Stein, an influential advocate for gardening with native plants, died Feb. 25 at her home in Vinalhaven, Me. She was 69.

The cause was lung cancer, said her husband, Martin Stein.

[read more](#)

looking for volunteers to translate a few of our resources. After polling teachers internationally, we have selected some physical science and physics materials at the middle and high school levels. With assistance, we can share these activities in some of the major world languages. If you would like to volunteer, Susan Dahl at [sdahl@fnal.gov](mailto:sdahl@fnal.gov) or x3094 Please include what materials and what language you are able to translate.

[more information](#)

[Upcoming Activities](#)