

Calendar

Have a safe day!

Tuesday, Sept. 22
3:30 p.m.

DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY
4 p.m.

[Extreme Beam](#) - Physics at the Intensity Frontier Lecture Series - One West
Speaker: Ikaros Bigi, University of Notre Dame
Title: Come Botticelli Nella Sistina – On The Beauty of Charm

Wednesday, Sept. 23
3:30 p.m.

DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
4 p.m.
Fermilab Colloquium - One West
Speaker: Joseph Silk, University of Oxford
Title: Dark Matters

[Click here](#) for NALCAL, a weekly calendar with links to additional information.

Campaigns

Take Five

Tune IT Up

Weather



Chance of thunderstorms
78°/59°

[Extended Forecast](#)
[Weather at Fermilab](#)

Current Security Status

[Secon Level 3](#)

Wilson Hall Cafe

Tune IT Up

IMAP password reminder

If you have not already done so, please change your password for your IMAP e-mail account before the end of the day today.

If you have not reset your password since Aug. 18, you must reset it – even if your password is already at least 10 characters long. Starting tomorrow, the Computing Division will begin a week-long process of disabling accounts with unchanged passwords. If you do not reset your password, you will need to contact the Service Desk to re-enable your account.

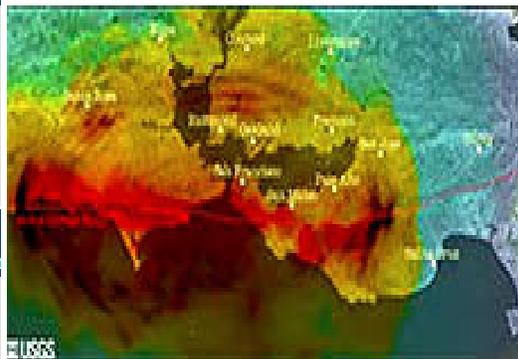
The password must be at least 10 characters in length to fulfill DOE password complexity requirements.

A secure password will include a combination of letters, symbols and numbers. For instructions on how to change your IMAP password on the IMAP server and on other clients such as Outlook and Entourage, see this [site](#).

Service Desk representatives will offer assistance at the Password Doctor booth in the Wilson Hall atrium during lunch hours today. They are also available during business hours at the Service Desk and at x2345. Please bring your Fermilab identification to the booth or Service Desk.

Feature

Fermilab aids earthquake engineering network



A screenshot of a computer simulation of the 1906 earthquake that shook the San Francisco Bay Area. The red areas indicate the most intense shaking. *Image courtesy of NEES and USGS.*

By partnering with a network of earthquake engineering research sites, Fermilab could ultimately help to reduce the losses caused by earthquakes and tsunamis.

The George E. Brown, Jr. Network for Earthquake

Director's Corner

WIN09



Fermilab Director Pier Oddone gave a presentation on muon collider and its physics reach at the 22nd International Conference on Weak Interactions and Neutrinos last week.

The 22nd International Conference on Weak Interactions and Neutrinos took place in Perugia [last week](#). The conference was the last in a series that started in the early '70s at a time when the principal thrust in particle physics was the study of the strong interaction. Today, weak interactions and neutrinos are studied by many physicists around the world. Discoveries in this area have been essential in shaping the Standard Model of particle physics and in the case of the discovery of neutrino masses provide the only definitive glimpse beyond the Standard Model.

The conference was organized along four different areas:

- electroweak symmetry breaking,
- weak decays, CP violation and CKM matrix,
- neutrino physics and
- dark matter

The conference had excellent plenary lectures summarizing the state of the field and extensive working sessions on its four specialized topics. I gave a [plenary talk](#) (PowerPoint file) on the muon collider and its physics reach.

The muon collider is one of two options if the physics discoveries at the LHC are well beyond the reach of a 0.5 TeV ILC. It is impossible to tell whether this is the case now. All we know now is that we have no solid indications from the Tevatron or the B factories that physics is “around the corner.” If the LHC points to the need for a multi-TeV lepton collider, then we have a massive amount of work ahead of us. The two technologies in contention are the two-beam accelerator concept used in the electron-positron Compact Linear Collider developed by a strong collaboration centered at CERN and the muon collider developed jointly by the

Tuesday, Sept. 22

- Golden broccoli and cheese
- Southern style fish sandwich
- Coconut crusted tilapia
- Burgundy beef tips
- La grande sandwich
- Assorted pizza slices
- Chicken fajitas

[Wilson Hall Cafe Menu](#)

Chez Leon**Wednesday, Sept. 23
Lunch**

- Stuffed filet of sole
- Green rice
- Steamed broccoli
- Apple turnovers

**Thursday, Sept. 24
Dinner**

- Closed

Archives

[Fermilab Today](#)

[Result of the Week](#)

[Safety Tip of the Week](#)

[CMS Result of the Month](#)

[User University Profiles](#)

[ILC NewsLine](#)

Info

Fermilab Today

is online at:
www.fnal.gov/today/

Send comments and suggestions to:
today@fnal.gov

Visit the Fermilab
[home page](#)

Engineering Simulation, or NEES, is a consortium of 14 research equipment sites committed to sharing both information and equipment. They share the common goal of modeling and simulating earthquakes, tsunamis, and their effects on human-made structures.

On Oct. 1, the new NEES Community and Communications Center, or NEEScomm, will open its doors at Purdue University in West Lafayette, Ind., thanks to a \$105 million grant from the National Science Foundation.

"The large physics experiments have a lot of experience in terms of technical collaborations between the universities' researchers and engineers," said Ruth Pordes, associate head of Fermilab's Computing Division. "We can bring that experience to the table."

Pordes will contribute a few weeks of work each year to NEES by serving on NEES' project advisory committee and chairing the project's community collaboration subcommittee. In those capacities, she works to build synergy with related projects in cyberinfrastructure, site operations and educational outreach.

Collaborations, such as Open Science Grid, which has members at many NEES institutions, help to bridge the divide that can exist between groups at a given institution. Pordes, who also holds a leadership role in OSG, wants to make those collaborations stronger.

"I want to foster a direct connection between earthquake engineers in the engineering faculty and the other groups doing distributed data and computing at their universities," Pordes said.

NEES isn't the only one that benefits from this partnership. "The physics community and Fermilab benefit from the chance to demonstrate our physics technology in a broader setting," Pordes said. "This is a practical technical way to do so."

-- *Miriam Boon*

Photo of the Day**TD celebrates 1 million hours worked without injuries**

Muon Collider and Neutrino Factory Collaboration (NFMCC) and Fermilab. Both concepts need a lot of R&D before claiming to be ready for construction.

There are trade-offs in the physics between the two technologies. Polarization is a very useful tool in electron-positron colliders and not likely to be achieved in muon colliders. On the other hand, the much higher mass of the muon compared to the electron has two important consequences: a much narrower energy definition in the center of mass, and the ability to circulate the muons many times, relaxing the requirements on the single-crossing luminosity and making the footprint of the machine much smaller than that of single pass colliders. In fact, a 4 TeV muon collider would fit on the Fermilab site even though it has eight times the energy of the ILC. The smaller footprint gives us a chance to make the machine considerably more economical than physically larger machines.

At this moment we cannot claim that such a muon collider is feasible. After several years of work all we can tell today is that we have not found any fatal flaws. Some important experiments have been done, others like the muon cooling experiment (MICE) at Rutherford and the testing of gas filled RF cavities at Fermilab are imminent, and much work remains to do on an end-to-end simulation and on more extensive tests of cooling technologies. An important workshop to activate the physics and detector studies will take place [November 10-12](#) at Fermilab following the [Project X workshop Nov 9-10](#). We would be pleased to see you there!

Special Announcement**Spanish, Latin art lecture at 12:15 p.m today in Curia II**

A lecture on Spanish and Latin American art will take place today at 12:15 p.m. in Curia II.

Terah Walkup, a Kress Foundation Fellow, will give the lecture. Attendees will receive two free general admission passes to the Art Institute of Chicago. This event is part of the Hispanic Heritage Month celebration, which is sponsored by the Diversity Council.

From Quantum Diaries

From left: TD employees Earl Shaffer and Steve Gould staff a raffle table at the TD picnic last week. The division's employees celebrated 1 million man hours without a DART injury.

Special Announcement

Extreme Beam lecture today at 4 p.m. in One West

Another lecture of the Extreme Beam series will take place at 4 p.m. today in One West. Ikaros Bigi from the Department of Physics at the University of Notre Dame will give a lecture titled "Come Botticelli Nella Sistina -- On The Beauty of Charm." A reception will follow.

The lecture series, which features talks at Fermilab throughout 2009, gives in-depth information about the science and accelerator and detector technologies that will create a world-leading physics program at the Intensity Frontier.

Visit the [Extreme Beam Web site](#) for more information.

In the News

Endgame for the Tevatron

From *Discover Magazine*, Sept. 21, 2009

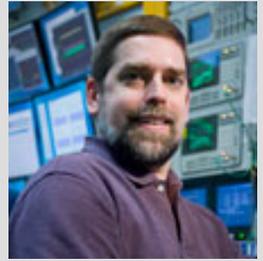
With little fanfare, last week the Tevatron at Fermilab, and the two experiments CDF and D0, emerged from an 11-week shutdown for what will likely be the final run of the collider, which is over 20 years old. In the past year, the machine has regularly set new records for luminosity (essentially the number of collisions per second) and delivered over 2 fb^{-1} (inverse femtobarns) of proton-antiproton collisions at a center of mass energy of 1.96 TeV to the experiments, still the highest in the world. The startup has gone very smoothly, and the Tevatron delivered a solid load of data to the experiments last week.

This funny unit, inverse femtobarns, allows us to calculate how many collision events of a certain type to expect. Take top quark pair production, for example. For protons colliding with antiprotons at Tevatron energies, we can calculate (or measure) what we call the production cross section. This cross-section is in fact expressed as an area, a very small area, since protons and antiprotons are so small. One "barn" is 10^{-28} m^2 , and the cross section for top pair production is about 7×10^{-12} barns, or 7 picobarns. By multiplying the cross-section times the integrated luminosity we can get the number of top quark pairs events produced. To get the number we actually observe in the detector, we need to take into account the efficiency for reconstructing them.

[Read more](#)

The Tevatron is Back!

Yahoo! We just succeeded putting in our first colliding beam store since the long shutdown ended! The initial luminosity was only ~20% of the norm before the shutdown, but the proton and antiproton intensities were intentionally low. All of the accelerators still need more tune-up work, but delivering the first collisions after a shutdown is a big stepping stone. The experiments need colliding beams to shake out their detectors, too.



Ron Moore, a blogger for [Quantum Diaries](#).

While this first store spins, we can catch our breath, get a good night's sleep (I hope), and prepare for the additional tune-up work.

We're back!

[See Ron's blog](#)

Read other shutdown and startup related blogs by [Jonathan Asaadi](#) and [Homer Wolfe](#).

Shutdown Report

Sept. 18 - 21

- Six stores provided ~ 54.0 hours of luminosity
- MI-10 power supply PLC card replaced
- TeV quench at A1 and F4
- Operators replace TeV C1 HFU capacitor bank
- MiniBooNE off for HVAC work

The integrated luminosity for the period of 9/14/09 to 9/20/09 was 19.01 inverse picobarns.

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

Announcements

Latest Announcements

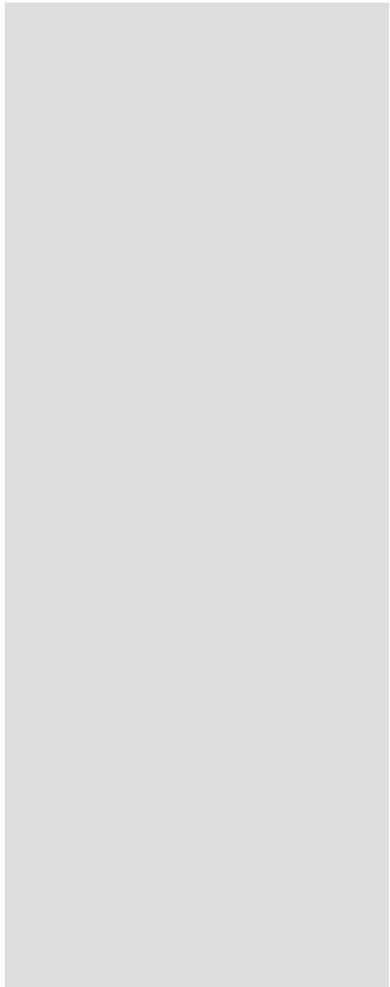
[English Country Dancing, Oct. 4](#)

[International folk dancing, Thursday evenings at Kuhn Village Barn](#)

[Scottish Dancing Tuesday evenings begins Sept. 22 at Kuhn Village Barn](#)

[Cholesterol Education Lunch & Learn Wednesday - Sept. 23](#)

[Argentine Tango through Sept. 30](#)



[NALWO - Annual Autumn Potluck Luncheon - Oct. 2](#)

[Prairie Seed Harvest Oct. 3](#)

[Thai Village restaurant discount](#)

[Sign up for fall Science Adventures classes](#)

[Buttered Rum performs on Fermilab Arts Series Oct. 24](#)

[Fred Garbo Inflatable Theatre - at Fermilab Arts Series - Nov. 7](#)

[Process piping \(ASME B31.3\) class offered in October and November](#)

["The Night Before Christmas Carol" at Fermilab Arts Series - Dec. 5](#)

[Fermi Kyuki-Do martial arts - next session begins on Sept. 21](#)

[Additional Activities](#)

[Submit an announcement](#)