

Calendar

Wednesday, September 29

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

4:00 p.m. Fermilab Colloquium - 1 West

Speaker: J. Karp, University of Pennsylvania

Title: Positron Emission Tomography (PET): Towards Time of Flight

Thursday, September 30

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

Speaker: P. Zerwas, DESY

Title: Reconstructing Supersymmetric Theories at High Scales

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

4:00 p.m. Accelerator Physics and

Technology Seminar - 1 West

Speaker: A. Valishev, Fermilab

Title: Beam-Beam Effects and Optics at the Tevatron

4:00 p.m. Fermilab Advanced Analysis Methods Seminar - Curia II

Speaker: B. Roe, University of Michigan

Title: A New Technique for Separating the Wheat from the Chaff in Data

Wilson Hall Cafe

Wednesday, September 29

Italian Wedding with Meatballs

Diner Style Patty Melt \$4.75

Mediterranean Style Baked Fish \$3.75

Roasted Turkey & Dressing \$3.75

Greek Chicken Panini with Feta Cheese \$4.75

Sicilian Style Pizza \$2.75

Grilled Chicken Bowtie in a Tomato

Cream Sauce \$4.75

[Wilson Hall Cafe Menu](#)

Thursday's ILC-America Meeting On Videoconference from JLab



Thomas Jefferson National Accelerator Facility in Newport News, Virginia

The ILC-America committee is meeting Wednesday and Thursday at Jefferson Lab (Thomas Jefferson National Accelerator Facility) to begin planning a direction for R&D in RF superconductivity in view of the "cold decision" for the proposed International Linear Collider.

The meetings will feature a full-day discussion on Thursday regarding plans for a Superconducting Cryo-Module Test Facility (SMTF), including presentations on the views from Fermilab, SLAC, DESY and KEK. The Thursday discussion will be available via videoconference in The Hermitage conference room on the east side of the Industrial Center Building. For more information on the Thursday videoconference, contact Margie Bruce (x3411) in the Technical Division.

Shutdown News

E-Cooling Shutdown Work on Schedule



Inside the Main Injector tunnel, showing the installed stands and magnets for e-cooling. (Click on image for larger version.)

Whether you're moving down the block or across the country, we all know that relocating is a pain. Packing up your china and crystal is one thing. Try moving a \$2.5 million device called the Pelletron, which will provide the source of electrons for cooling the antiproton beam in the Recycler. This is exactly what a group Fermilab technicians and contractors did earlier this summer when they moved the electron cooling project from its R&D location at the end of the proton beamline to a newly constructed building at MI-31 on the Main Injector ring.

Installing e-cooling in its newly constructed building is one of the driving forces behind the length of the current shutdown. If successful, e-cooling is one of several ingredients that has the potential to increase luminosity in the Tevatron by a combined factor of two. With about seven weeks left to go before the end of the shutdown, the project's imminent goal is to complete all of the installation work in the Main Injector



Sunny 69°/39°

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Successful VLHC Magnet Test

The Technical Division celebrated this month the successful tests of two new magnets. In Monday's issue, Fermilab Today reported on the new 10-Tesla dipole magnet. Today's story highlights a new 2-Tesla dipole magnet featuring a low-cost design.



The TD team that worked on the super-ferric magnet (Click on image for larger version.)

Henryk Piekarz and his collaborators at the Technical Division successfully tested this month a novel superconducting magnet intended for the first stage of a Very Large Hadron Collider. "Although the International Linear Collider is the highest priority goal of HEP, long-term R&D for the VLHC has received strong support in various HEPAP reports on long-term recommendations for the field," said Technical Division Head Bob Kephart. "This test is a great success and shows that such a design can be considered for a VLHC. The design of this transmission line magnet is based on a clever idea due to Bill Foster."

The superconducting magnet features a so-called "super-ferric" design. Its field is limited to 2 Tesla compared to the 9-Tesla superconducting magnets of the LHC. However, the design is such that it could be 5 to 10 times cheaper to build per unit length. In addition, the magnets

tunnel by November. "We are right on schedule," said Project Engineer Jerry Leibfritz. "The majority of work so far has been preparing the Main Injector tunnel for e-cooling."

In the beginning of the shutdown, e-cooling used outside contractors, who worked two 10-hour shifts a day continuously for nine days, rerouting the electrical bus and LCW water pipes to make room for the beamline. Contractors then pulled approximately 600 cables into the MI-31 building from the Main Injector tunnel. Fermilab technicians finished installing all of the magnet stands for the project last week, and they are now starting to install approximately 40 magnets, which will be followed by the installation of the vacuum system.

After the shutdown, e-cooling plans to complete the installation of the Pelletron in MI-31 and begin commissioning in February 2005. "Up until now, e-cooling has achieved all of its technical milestones," said Leibfritz, who has been a part of the project since the early days of R&D in 1998. "If everything goes as planned, it could significantly improve luminosity in the Tevatron. Just to be at this point is great."

[Photo Essay of E-Cooling's Move from Wide Band to MI-31](#)

require much less cryogenic and electrical support equipment. "They are also much smaller than standard superconducting magnets that have been built for other accelerators, so they take up a lot less space in the tunnel," Piekarz said. In its first stage, a 150-mile-long VLHC based on super-ferric magnets could reach energies of up to 40 TeV. In a second stage, the ring could become the injector for a 200 TeV accelerator based upon a second ring of 12 Tesla "high-field" magnets in the same tunnel.

Recently members of the CERN staff have expressed interest in the super-ferric transmission line magnet technology as a possible technique to be used for the construction of an injector to upgrade the LHC. The upgraded injector could fit in the existing LHC tunnel alongside the main accelerator.

Based on a design originally proposed by Foster five years ago, the magnet uses a steel yoke at room temperature and a high-current (87,000 amps) superconducting transmission line that runs in its center. The design combines the functions of both dipole and quadrupole magnets. Two proton beam lines would run in opposite directions in two symmetric gaps inside the steel yoke that shapes the magnetic field.

The 150-mile superconducting transmission line needed for the VLHC would be powered via a single power supply and a pair of cryogenic current leads. The leads are a difficult part as low-temperature lines must at some point connect to the power supply -- which is at room temperature -- without conducting too much heat into the superconducting material. Piekarz' team created leads that

Press Release Oak Ridge National Lab, September 24, 2004

ORNL's Spallation Neutron Source warms up for 2006

OAK RIDGE, Tenn., Sep. 24, 2004 — With the recent "warm commissioning" of its linear accelerator, Oak Ridge National Laboratory's Spallation Neutron Source (SNS) has passed a crucial test and milestone on its way to completion in 2006.

[Read more](#)

Announcements

PBS: "Origins" at 8 p.m. Tonight

PBS broadcasts the second part of its Nova series "Origins" tonight at 8 p.m. Hosted by astrophysicist Neil deGrasse Tyson, the series' content ranges from the big bang to the beginning of life.

[More information](#)

Network Outage Tomorrow

There is a network outage scheduled for Thursday September 30 from 6:30 a.m. to 7:00 a.m. Central Services such as email and web access will not be available to users during the the outage. Other affected areas include the general purpose farms and stk robots. Local access within workgroups or access to offsite will not be affected.

Unix Users Meeting

The next Unix Users Meeting will be on September 29 from 1:00 to 3:00 p.m. in Curia II. The meeting will cover: Scientific Linux Update.

International Folk Dancing

International Folk Dancing will be held at 7:30 p.m. Thursday, Sept. 30, at the Geneva American Legion Post. Info at

ran successfully at up to 104,000 amps, close to the world record for magnets. Steve Hays and collaborators in the Accelerator Division built the state-of-the-art power supply necessary to conduct the tests.

630-584-0825 or 630-840-8194 or folkdance@fnal.gov.

Recreation Travel Center

Copper Canyon Adventure, May 16

On Thursday, September 30 from noon to 1:00 p.m. in the Comitium, Collette Vacations will give a tour presentation for the Copper Canyon Adventure scheduled for May 16. Four times larger than the Grand Canyon, this spectacular area is filled with beauty and unique cultures and traditions. This 9 day vacation includes 18 meals and air for \$1,629 Twin/pp.

Upcoming Power Outages

Transfer Gallery

October 2: Feeder 43 work will begin at 7:00 AM and end around 3:00 PM on Saturday; no power to the Transfer Gallery for up to seven and a half hours, but probably less