

Calendar

Wednesday, December 1

11:00 a.m. Fermilab ILC R&D Meeting - 1 West

Speaker: A. Xiao, Fermilab

Title: Lattice Design of 6km ILC Damping Ring

Speaker: B. Ng, Fermilab

Title: Instability Issues of the Small ILC Damping Ring

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

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

Speaker: R. Geroch, University of Chicago

Title: Faster Than Light?

Thursday, December 2

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

Speaker: I. Schienbein, Hamburg University

Title: Mass Effects in Single Inclusive Hadroproduction of Heavy Mesons

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

THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

Wilson Hall Cafe

NuMI Project Receives Engineering Award



Drilling 10 to 15 foot-long "rock bolts" upwards to consolidate the ceiling of the target hall, essentially turning it into a solid beam. (Click on image for larger version.)

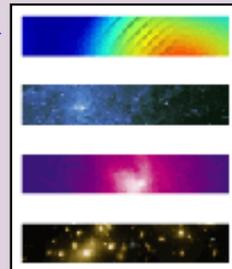
With its neutrino beam that will shoot through the earth's crust from Fermilab to a Minnesota mine, the NuMI-MINOS experiment is unprecedented in its science methods, and posed unusual requirements and constraints on the construction of Fermilab's new NuMI tunnel. For its work on the tunnel, engineering firm MWH Global, Inc. of Broomfield, Colo., received the 2005 Special Projects Engineering Excellence Award from the American Council of Engineering Companies of Illinois, a trade organization.

From 1995 to 2002, MWH worked with principal contractor Fluor Daniel and with Fermilab engineers to excavate the tunnel and consolidate the geology of the rock around it. For digging, MWH used a combination of two techniques, drill-and-blast and a tunnel boring machine.

Workshop Kickstarts New Center

Talking science is perhaps the best way to celebrate the upcoming inauguration of Fermilab's new Particle Astrophysics Center. From Dec. 9 to Dec. 11, scientists will explore the manifold aspects of galaxy clusters, the universes' most gigantic inhabitants, at the workshop

[Fundamental Physics from Galaxy Clusters.](#)



The workshop will study the four main methods of observation of

clusters: Visible light, gravitational lensing, X-rays, and the effects of clusters on the cosmic background radiation that crosses them, or Sunyaev-Zel'dovich effect. "The purpose of the workshop," says Rocky Kolb, a member of the Theoretical Astrophysics group and the head-to-be of the new center, "is to see how we can use these observations to understand something about fundamental physics: How galaxies are put together through the interaction of ordinary matter, dark matter, and dark energy."

Cluster research interests several disciplines, including astronomy, particle physics, astrophysics, and cosmology, and ties in with several Fermilab research efforts. "The study of clusters of galaxies connects what we're doing in the Sloan Digital Sky Survey, and the work at the Theoretical Astrophysics group on dark energy and the identity of dark matter. And it could be that clusters of galaxies are the origin of ultra-high-energy cosmic

Wednesday, December 1
Portabello Harvest Grain Soup
Santa Fe Chicken Quesadilla \$4.75
Garlic Herb Roasted pork \$3.75
Jambalaya \$3.75
Roast Beef on Ciabatta w/ Red Pepper Mayo \$4.75
Meatlover's Pizza \$2.75
Pesto Shrimp Linguini with Leeks & Tomatoes \$4.75

[Wilson Hall Cafe Menu](#)

[Chez Leon](#)

Weather



Sunny 37°/24°

[Extended Forecast](#)

[Weather at Fermilab](#)

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"It was a tough design problem," said Tom Lackowski of FESS. Lackowski said the tunnel project was original and innovative, and required unusual prediction, treatment and conditioning of the rock, such as drilling 10 to 15 foot-long "rock bolts" upwards to consolidate the ceiling of the target hall by essentially turning it into a solid beam.

"MWH ended up providing exactly what Fermilab needed to do the physics, and the result was very successful in a lot of ways," Lackowski said.



Excavation of NuMI's Target Hall (Click on image for larger version.)

In the News

From the *New York Times*, November 30, 2004

Congress Trims Money for Science Agency

By Robert Pear

WASHINGTON, Nov. 29 - Congress has cut the budget for the National Science Foundation, an engine for research in science and technology, just two years after endorsing a plan to double the amount given to the agency.

Supporters of scientific research, in government and at universities, noted that the cut came as lawmakers earmarked more money for local projects like the Rock and Roll Hall of Fame in Cleveland and the Punxsutawney Weather Museum in Pennsylvania.

rays," Kolb says.

The meeting will include plenary sessions next Thursday and Saturday, and parallel sessions next Friday. Nobel Prize winner Riccardo Giacconi of Johns Hopkins University will give a special lecture on Friday Dec. 10 at 8 p.m., entitled "The Dawn of X-ray Astronomy." for details see the lecture [web site](#).

Announcements

Recently Completed Your Ph.D. Thesis? Have you recently completed your Ph.D. thesis? Please upload it to the Fermilab system [available online](#). The number of Ph.D. theses is an important measure of Fermilab's activity.

Symmetry Email Notification

Hard copies of the new issue of Symmetry will be distributed on Thursday. To receive an email notification with the table of contents and links to online versions of all stories, please [sign up now](#).

Wilson Hall Super Science Stocking Stuffer Sale

The Wilson Hall Super Science Stocking Stuffer Sale will be outside One West on December 1 and 2 from 10:00 am to 1:00 pm. Fermilab apparel, coffee mugs, keychains, science kits and more.

International Folk Dancing

International Folk Dancing will be held at 7:30 p.m. Thursday, December 2, at the Geneva American Legion Post. Info at 630-584-0825 or 630-840-8194 or folkdance@fnal.gov.

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