

**Calendar**

**Mon., January 29**  
**2:30 p.m.** Particle Astrophysics Seminar - Curia II  
 Speaker: A. Stebbins, Fermilab  
 Title: An Anthrocentric Universe?  
**3:30 p.m.** DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over  
 4:00 p.m. All Experimenters' Meeting - Curia II  
 Special Topics: Recent Antiproton Source Operations; New Pbar Cogging in the Tevatron

**Tue., January 30**  
**11:00 a.m.** Academic Lecture Series - 1 West  
 Speaker: E. Lunghi, Fermilab  
 Title: Course 1, Part 3 - Introduction to Flavor Physics In and Beyond the Standard Model  
**11:00 a.m.** Computing Techniques Seminar - FCC1  
 Speaker: N. Gnedin, Fermilab  
 Title: Creating Virtual Universes  
**3:30 p.m.** Director's Coffee Break - 2nd floor crossover  
**4:00 p.m.** Accelerator Physics and Technology Seminar - 1 West  
 Speaker: S. Holmes, Fermilab  
 Title: The Future of Accelerator R&D at Fermilab

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

**Weather**

Light Snow 21°/12°

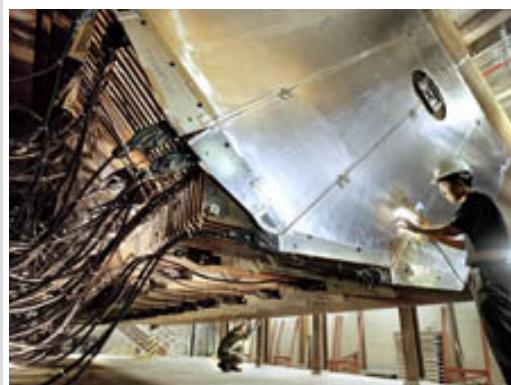
[Extended Forecast](#)  
[Weather at Fermilab](#)

**Current Security Status**

[Second Level 3](#)

**Feature Story**

## Neutrinos and nuclei: An inter-experiment hunt



The MINERVA detector would be constructed just upstream of the MINOS near detector, shown above.

Neutrinos, those tiny, nearly-massless particles that can slip imperceptibly through solid rock, have puzzled particle physicists since their first detection in 1956. Collaborations at Fermilab and at other laboratories are beginning to discover, however, that neutrinos can interact with matter in ways never thought measurable.

Within the MINOS experiment, neutrinos travel from the near detector at Fermilab and change, or oscillate, into other types of neutrinos before reaching the far detector 735 kilometers away in Soudan, Minnesota. But back here at Fermilab, there's plenty of interaction going on within the steel plates of the MINOS near detector before the "ghost" particles whiz off to Minnesota. Since neutrinos are known as the loners of the subatomic world, there's still a lot to learn about the way they interact with matter. "One of the interesting ways that neutrinos can interact is with a nucleus as a whole, not just the smaller particles," said Peter Shanahan of MINOS. This interaction is called coherent neutrino-nucleus scattering and gives a different picture of how neutrinos "see" matter.

Because the NuMI neutrino beam is so intense, the MINOS near detector collects a huge number of events, which makes researchers hopeful that they might be able to find coherent neutrino-nucleus scattering. In addition, scientists working on the K2K (KEK to Kamioka) experiment in Japan have

**Safety Tip of the Week****Distracted driving**

Behavior	Increased risk factor
Reaching for a moving object	9
Drowsiness	4
Looking at external object	3
Reading while driving	3
Applying makeup	3
Use of cell phone	
Dialing	3
Talking/Listening	1

A recent [study](#) by the National Highway Traffic Safety Administration and the Virginia Tech Transportation Institute concluded that driver distraction is the leading cause of traffic accidents. Video cameras and sensors monitored 100 automobiles in the Washington, DC metro area. Data collection lasted a year, encompassing two million miles and 42,000 hours of driving. The study recorded a total of 82 crashes, 761 near crashes, and 8,295 critical incidents.

The researchers concluded that "nearly 80 percent of crashes and 65 percent of near crashes involved some form of driver inattention within three seconds before the event." The tabulated data (above) show that reaching for a moving object or looking at an external object increase the risk by factors of nine and three, respectively. These conclusions are in line with Fermilab's vehicle accident data. Talking or listening on a cell phone, however, does not appear to carry a significant risk, though dialing does increase the hazard. The one behavior that actually reduced the risk was having a passenger in the adjacent seat.

Here are three suggestions to reduce your risk of a crash from distracted driving.

- Secure everyone and everything that could be a distraction.
- Do not drive when you are tired.
- Do not perform tasks that require multiple glances in a short period of time, such as operating a PDA.

**Safety Tip of the Week Archive**

**Wilson Hall Cafe****Monday, January 22**[Wilson Hall Cafe Menu](#)[Chez Leon](#)**Wednesday, January 31****Lunch**

Chili Rellenos

Rice and Beans

Pico de Gallo

Cold Lime Soufflé with Cookies

**Thursday, February 1****Dinner**

Beef Fondu with Assortment of Sauces

Salad of Greens with Pears and Shaved Parmesan

Chocolate Almond Mousse in Nut Cups

[Chez Leon Menu](#)

Call x4598 to make your reservation.

**Archives****Fermilab Today****Result of the Week****Safety Tip of the Week****ILC NewsLine****Info**Fermilab Today is online at:  
[www.fnal.gov/today/](http://www.fnal.gov/today/)Send comments and suggestions to:  
[today@fnal.gov](mailto:today@fnal.gov)

observed a surprisingly low incidence of these interactions based on predicted values. To intensify the search for this process, the MINERvA experiment is developing a six-ton, high-precision neutrino detector to operate just upstream of the MINOS near detector.

MINERvA underwent a combined [CD1, CD2, and CD3a](#) DOE review in December.

Experiment co-spokesperson Jorge Morfin said CD3a approval would allow MINERvA to stay on schedule with advance purchasing of components that have a long lead time. The MINERvA detector would further investigate neutrino interactions with three different nuclei -- steel, lead, and graphite, said MINERvA project manager Debbie Harris. The results of these experiments would help to fine-tune neutrino oscillation measurements at the far detector.

"We'll be able to look at all the different ways neutrinos interact with matter in better detail than anyone ever has before," Harris said.

--Christine Buckley

**Special Announcement****Who's who: Check your skills**

On [Friday](#), we linked to part of Fermilab's 1969 directory and invited you to guess who's who. Here are the answers:

- [Directorate](#)
- [Scientific and Technical](#)
- [Administrative and General Services](#)

**In the News****NPR Science Friday,  
January 26, 2007:****A conversation about particle physics**

Science Friday's guest host Joe Palca speaks with Jacobo Konigsberg, cospokesman for the CDF collaboration at Fermilab; Dave Barney, outreach coordinator for the CMS collaboration at CERN; and Barry Barish, director of the Global Design Effort for the proposed International Linear Collider. They talk about the Tevatron, the Large Hadron Collider, the ILC and the search for the Higgs boson.

- [Read More](#)

- [Listen](#)

**Accelerator Update****January 24 - 26**

- Two stores provided 23 hours and 18 minutes of luminosity
- D-Zero needed a 10 hours access to make detector repairs
- All the accelerators except MI and Recycler, used this time for maintenance
- Pbar replaced a magnet and its antiproton target

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

**Announcements****Wilson Video**

The Fermilab Library has a DVD of an interview with Robert Wilson made for French television (it is in English). To borrow a copy, please stop by the Library on the 3rd floor of Wilson Hall, or request [a loan online](#).

**International Folk Dancing:  
New Location**

International Folk Dancing will meet Thursday, February 1, in Ramsey Auditorium instead of the Barn, just for this week. Dancing begins at 7:30 p.m. with teaching and children's dances earlier in the evening and request dancing later on. Newcomers are welcome and you do not need to come with a partner. Info at 630-584-0825 or 630-840-8194 or [folkdance@fnal.gov](mailto:folkdance@fnal.gov).

**Professional Development**

The Professional Development training schedule is posted on the [Web](#).

**Upcoming Activities**

