

Calendar

[Have a safe day!](#)

Thursday, July 15
2:30 p.m.

[Theoretical Physics Seminar - Curia II](#)

Speaker: Sourav K. Mandal,
Tokyo University, IPMU
Title: Quarks and Leptons as
Nambu-Goldstone Fermions
3:30 p.m.

DIRECTOR'S COFFEE
BREAK - 2nd Flr X-Over
4 p.m.

[Accelerator Physics and Technology Seminar - One West](#)

Speaker: Zachary Conway,
Cornell University
Title: Superconducting-
Niobium Accelerator Cavity
Defect Localization and Repair

Friday, July 16

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

[Joint Experimental-Theoretical Physics Seminar - Auditorium](#)

Speaker: Marco Verzocchi,
Fermilab
Title: New DZero Results for
ICHEP

Speaker: Tom Wright,
University of Michigan
Title: CDF's New Results for
ICHEP

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

[Upcoming conferences](#)

Campaigns

Feature

Fiber Central: a quantum leap in computer networking



Bottom-up view of Fiber Central cables in a repurposed dumbwaiter.

Tucked away on the eighth floor of Wilson Hall is an unassuming room with an aura of science fiction. It might not look like much, but like the nondescript phone booth so crucial to the plot of the movie "The Matrix," that room has great powers of high-speed connection.

The room is the nerve center of Wilson Hall's fiber-optic communication network. Every byte of data that fires from an experiment to a Wilson Hall office desktop passes through a fiber optic cable in the room known as Fiber Central.

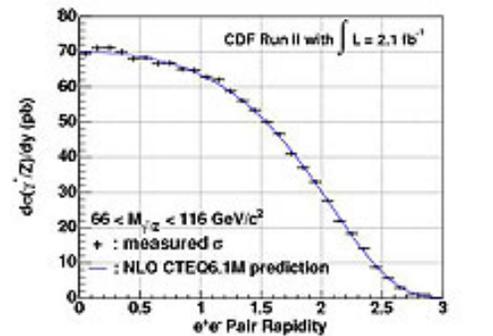
"Even the cafeteria has a connection to Fiber Central," said Orlando Colón, a network analyst in the Computing Division.

When information destined for Wilson Hall leaves any remote laboratory location, it travels down a nine-micron-core glass fiber to a repurposed dumbwaiter shaft in the high rise. The shaft, which connects the building's 15 floors, houses 96 snake-like hoses, each encasing 19 tubes containing bundles of between two and 18 glass fibers. The hoses all end up under the floor tiles in Fiber Central. The thousands of color-coded fibers inside them rise from under the floor and terminate tidily in slots on approximately 200 labeled cartridges.

The system can connect any point A on the

Result of the Week

Quark speed



The figure shows the measured $d\sigma/dy$ for p and $pbar \rightarrow Z/\gamma \rightarrow e^+ e^-$ over the entire rapidity range. The points are the measured cross section versus rapidity and the solid line is the theory prediction.

The production of Z bosons at the Tevatron occurs via the annihilation of a quark and an antiquark. When the momentum of the quark is larger than the momentum of the antiquark, the Z boson ends up moving in the same direction as the proton beam. Conversely, when the antiquark momentum is larger, then the Z boson ends up moving in the direction of the antiproton beam.

A recent CDF analysis looked at the prediction of Z boson production by measuring the particle's differential cross section. Collaborators conducted this analysis to help improve the collaborators' understanding of the structure function of the proton and antiproton. Improving this understanding will also help physicists understand experiments done at higher energies, such as experiments at the LHC.

Since the direction that the Z moves in the detector is related to the difference between the quark and anti-quark momentum, a measure of the angular distribution of the Z boson (called rapidity) yields detailed information on the momentum distributions of quarks in the proton. These distributions are a single quark carries a very large fraction of the fast-moving proton, a region for which the parton distribution functions are not well known.

Members of the CDF Rochester group have extracted the rapidity distribution from a sample of approximately 170,000 Z bosons decaying into positrons and electrons. The

[Take Five](#)[Tune IT Up](#)[H1N1 Flu](#)

For information about H1N1, visit Fermilab's flu information [site](#).

[Weather](#)

 Chance of thunderstorms
90°/66°

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

[Current Security Status](#)[Secou Level 3](#)[Wilson Hall Cafe](#)

Thursday, July 15
- Breakfast: Apple sticks
- Southwestern chicken tortilla
- Philly-style cheese steak
- *Garlic herb-roasted pork
- Mardi Gras jambalaya
- *Southwestern turkey wrap
- Assorted sliced pizza
- *Marinated grilled chicken caesar salads

**Carb restricted alternative*

[Wilson Hall Cafe Menu](#)[Chez Leon](#)

Thursday, July 15
Dinner
- Closed

Wednesday, July 21
Lunch
- Chile rellenos
- Spanish rice
- Refried beans
- Pineapple flan

[Chez Leon Menu](#)

Call x3524 to make your reservation.

Fermilab site to point B in Wilson Hall.

Keith Chadwick, head of the Grid Facilities Department in the Computing Division, helped consolidate all of Wilson Hall's network cables to a single accessible location beginning in 1995. Replacing the old copper-based network, his team eliminated the trouble-prone shared co-axial cabling (think cable TV) with dedicated stretches of glass fibers.

"The longest fiber-optic run in the building is less than 500 meters," Chadwick said. "It's well beyond the capabilities of high-speed copper-based networks, but it's a piece of cake for fiber."

Fiber Central is a significant improvement over the original distributed copper network, which was "like lots of spaghetti," Colón said. "When all connectivity is within arm's reach, you can greatly improve the speed of service."

-- Leah Hesla

[Photo of the Day](#)**New employees - July 6**

Hugh Lippincott, Bradley Verdant, Jessie Bockelman, Ivan Morozov and Ciprian Zahan.

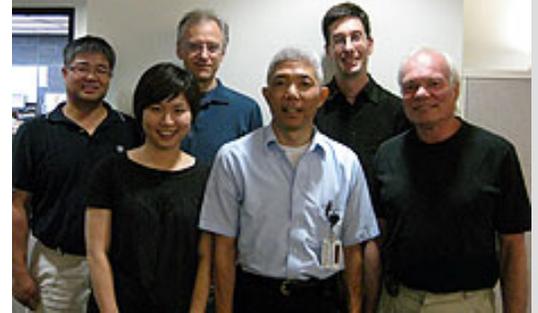
[In the News](#)**Neutrino mass less of a mystery thanks to deep space imaging**

From *Ars Technica*, July 13, 2010

Researchers are getting closer to nailing down the actual mass of neutrinos by studying their interaction with the Universe as a whole. A paper published in *Physics Review Letters* this week describes how the history of galaxy formation indicates that the mass of neutrinos must be less than 0.28 electron volts. This lowers the mass ceiling by half, and researchers hope that technology will allow them to find the exact neutrino mass within the next decade. Knowing the exact mass would offer insight into particle physics and

measurement confirmed that the most recent parton distribution functions accurately describe the fractional momentum distribution of quarks in the proton. A paper on this analysis, based on the [Ph.D. thesis](#) of Jiyeon Han, has been accepted for publication in [Physics Letters](#).

- edited by Andy Beretvas



First row from left: Jiyeon Han, Willis Sakumoto and Arie Bodek. Second row from left: Yeon Sei Chung, Howard Budd and Kevin McFarland.

[Accelerator Update](#)

July 12-14

- Four stores provided ~39.25 hours of luminosity
- Pre-accelerator switched to H⁻ Source
- Recycler kicker caused the loss of one antiproton transfer
- Pelletron repaired
- MTA reported finding their tuning problem
- P1 line vacuum burst

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

[Announcements](#)**Latest Announcements**

[Habitat Restoration at Fermilab](#)

[Toastmasters - today](#)

[Artist Reception - Saturday, July 24, from 5-7 p.m.](#)

[Grounding and shielding of electronic systems course - Aug. 12-13](#)

[Take 5 Challenge quiz](#)

[Pre-K & youth swim lesson sessions 4 deadline](#)

[Last week's walking program drawing winner](#)

- [Archives](#)
- [Fermilab Today](#)
- [Result of the Week](#)
- [Safety Tip of the Week](#)
- [CMS Result of the Month](#)
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cosmology, among other things.

Scientists know that neutrinos are some of the lightest particles around. They come in three flavors: muon, tau, and electron, and it's possible to get some sense of their relative masses. However, details on their physical nature have been hard to come by, and their absolute mass has been difficult to determine.

[Read more](#)

- [Housing Office still accepting requests for fall 2010 & spring 2011 on-site housing](#)
- [Argentine Tango - July 7-28](#)
- [Format change for new personnel requisition form](#)
- [Deadline approaching for requests for fall 2010 & spring 2011 on-site housing](#)
- [Day Camp payments due](#)
- [All supervisors: Do you need help preparing for performance reviews?](#)
- [Time to complete accomplishment reports](#)
- [10,000 Steps-a-Day walking program](#)
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