

Calendar

Thursday, July 31
1 p.m.

Physics and Detector Seminar
- West Wing, WH-10NW
Speaker: S. Mishra, Fermilab
Title: The Fermilab 5 Year SRF
R&D Plan

THERE WILL BE NO
THEORETICAL PHYSICS
SEMINAR THIS WEEK

3:30 p.m.

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

Friday, Aug. 1

3:30 p.m.

DIRECTOR'S COFFEE
BREAK - 2nd Flr X-Over

4 p.m.

[Joint Experimental-Theoretical
Physics Seminar](#) - One West

Speaker: C. Polly, University of
Illinois, Urbana/Champaign

Title: Updates to the Low
Energy Excess in MiniBooNE

5-7 p.m.

[Fermilab Art Gallery Artist
Reception](#) - Second Floor Art
Gallery

Title: McMahon Family Affair

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

Weather



Mostly Sunny
88°/67°

[Extended Forecast](#)

[Weather at Fermilab](#)

Current Security Status

[Secon Level 3](#)

[Wilson Hall Cafe](#)

Feature

\$270,000 in seed grants awarded to joint Fermilab- UChicago Strategic Collaborative Initiatives



THE UNIVERSITY OF
CHICAGO



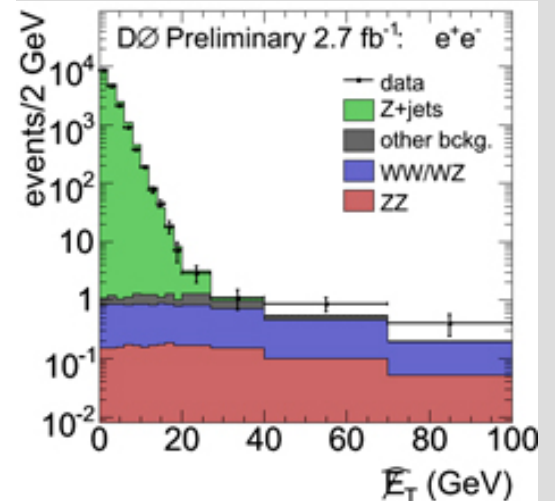
Scientists at Fermi National Accelerator Laboratory, the University of Chicago and Argonne National Laboratory have been awarded \$270,000 for new and continued joint research projects through the University's Strategic Collaborative Initiatives (SCI) program for Fermilab. The research projects cover a broad range of studies and include, in one case, collaboration with an Argonne scientist.

Proposals receiving SCI grants and their principal investigators are:

- "Fundamental Studies of the Interfacial Oxidation Chemistry of Niobium and the Influence Such Oxidation Has on High-performance Superconducting RF Materials," Steven J. Sibener, Carl William Eisendrath Professor, Department of Chemistry, and Director, The James Franck Institute, The University of Chicago; and Lance Cooley, SRF Materials Group Leader, Technical Division, Fermilab
- "The Development of Ultra-Fast Timing Detectors," Henry Frisch, Professor, Department of Physics and Enrico Fermi Institute; Erik Ramberg, Scientist II, Particle Physics Division, Fermilab, and Karen Byrum, Scientist, High Energy Physics Division, Argonne
- "Absolute Measurement of Air Fluorescence Yield for Ultra-High Energy Cosmic Rays," Paolo Privitera, Professor, Astronomy and Astrophysics, The University of Chicago; and Carlos Hojvat, Scientist II, Particle Physics Division, Fermilab

Fermilab Result of the Week

The last diboson milestone on the road to the Higgs



This figure shows the missing transverse energy that is a signature of neutrinos from the invisibly decaying Z in ZZ→eeνν candidate events.

At the Fermilab Wine and Cheese seminar last Friday, the DZero experiment announced its observation of pairs of Z bosons produced in proton-antiproton collisions ("ZZ"). This is the final and rarest state in the series of so-called gauge boson pairs, observed and studied by DZero and CDF at the Tevatron. The pairs are W_γ, Z_γ, WW, WZ and ZZ. Earlier this year, CDF published evidence for ZZ production, but the DZero results presented on Friday showed for the first time sufficient significance to rank as an observation.

DZero observed ZZ production in 2.7 inverse femtobarns of data with a combination of two analyses that look for Z boson decays into different final states. One analysis looked for a Z decaying into two electrons or two muons and the other Z decaying into neutrinos. The neutrino signature is challenging experimentally because the neutrinos aren't directly detected, but worthwhile to pursue because it occurs relatively frequently. Still, researchers predict even this decay signature to occur less than once every trillion collisions. The second analysis searches for both Z bosons decaying to either electrons or muons and is an even more rare process. In this search, three candidate events were observed with an expected background of less than 2/10

Thursday, July 31

- Tomato Florentine
- *Pork BBQ sandwich
- Olive & artichoke paella
- Smart cuisine: chicken Marsala
- Smoked turkey melt
- Assorted slice pizza
- SW chicken salad w/roasted corn salsa

[Wilson Hall Cafe menu](#)

Chez Leon**Thursday, July 31****Dinner**

Closed

Wednesday, Aug. 6**Lunch**

- Spicy Italian sausage & 3 cheese calzone
- Caesar salad
- Fresh fruit plate

[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/

Send comments and suggestions to:

today@fnal.gov

The above proposals were selected on the basis of the importance of the work, whether the collaboration creates a more powerful or convincing research program than could be achieved by working independently and potential to achieve an ongoing collaboration. The first two projects are continuations; the third is a new project.

The University-Fermilab SCI program was developed by the University as part of the Fermi Research Alliance, LLC laboratory management contract. A similar program for Argonne was also developed by the University as part of the UChicago Argonne, LLC management contract for Argonne. SCIs provide additional opportunities for collaboration between University researchers and scientists at Argonne and Fermilab to create more powerful research programs in areas that support the scientific priorities of both laboratories. The University has committed \$1.5 million per year, and \$7.5 million, collectively, over a five-year period toward the establishment of SCIs that include collaborative research projects, strategic joint appointments, and joint institutes.

-- Lisa La Vallee, University of Chicago

Special Announcement**U.S. Visa application changes**

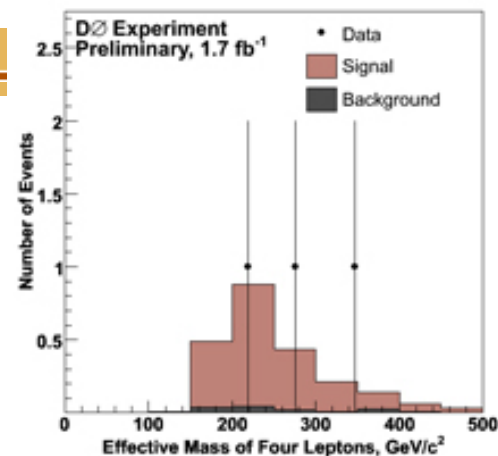
Applicants might experience longer-than-usual waits at U.S. Consulates during their visa application process. The Visa Office has reported that applicants have experienced waits for visas in excess of five weeks. While five weeks is unusual, it is a trend toward longer visa processing caused, in part, by security clearances.

Applicants for U.S. visas should make sure that they provide all the paperwork required for their visa. Check the U.S. Consulate's Web site prior to applying to find out what paperwork is required. Do not rely on past experience - processes change. Anyone whose visa application has been pending for four weeks should notify the Visa Office. Similarly, anyone contemplating applying for a U.S. visa abroad should contact the Visa Office prior to making travel plans. You also should advise the Travel Office of your visa application plans during the travel authorization process.

In the News

of one event. The statistical significance of the combined analysis is 5.7 standard deviations, which firmly establishes the discovery of this process. DZero measured a cross section for ZZ production of 1.5 ± 0.6 picobarns. This is in excellent agreement with the prediction of the Standard Model. This is important since in the Standard Model Z bosons do not couple directly to one other. A higher rate would have implied anomalous self-couplings.

The observation of ZZ is connected with the search for the Higgs boson in several ways. The next rarest diboson production processes after ZZ are those involving Higgs bosons; seeing ZZ was an essential step in demonstrating the ability of the experiment to see the Higgs. Pairs of Z bosons also constitute one of the backgrounds to Higgs searches. At small values of the Higgs mass, ZZ can mimic the signature for a Higgs boson produced in association with a Z boson. At large values of the Higgs mass, the Higgs can itself decay into WW or ZZ. In more ways than one, ZZ observation is an essential prelude to finding or excluding the Higgs boson at the Tevatron.



This figure shows the distribution of the four-lepton invariant mass for the three candidate-ZZ events with four charged leptons. The brown and black histograms represent the predictions for ZZ signal and background, respectively.

Let the proton smashing begin. (The rap is already written.)

From *New York Times*, July 30, 2008

After 14 years and \$8 billion, lawsuits and the occasional exploding magnet, the world's largest physics experiment seems to be getting close enough to becoming a reality for its participants to plan the opening parties.

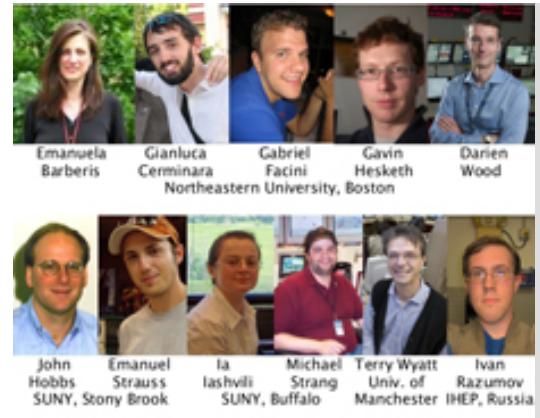
The Large Hadron Collider, under construction at CERN, outside Geneva, is designed to accelerate protons to energies of seven trillion electron volts and then smash them together in search of new particles and perhaps new forces of nature. Although no schedule has been officially announced, sources in the physics community and CERN's own Web site indicate that scientists and engineers will try to shoot the first beam of protons through one section of 17-mile-long racetrack on the weekend of Aug. 9. If all goes well, the first protons will begin circulating around the entire machine on Sept. 2 or 3.

After that, the engineers estimate that it will take one or two months of tweaking and ratcheting up the intensity of the beams before they begin colliding and producing "pilot physics." The initial collisions will be at five trillion electron volts apiece because the engineers have not had time to condition the giant superconducting magnets that funnel the protons around the racetrack to produce fields strong enough to bend seven-trillion-electron volt protons.

CERN shuts down the accelerators for the winter to save on electricity costs, so the magnets will be "trained" for the higher energies then. In the meantime the armies of physicists that have built the machine's two giant detectors, called Atlas and C.M.S., have planned start-up parties in October, and CERN is planning a big event on Oct. 21.

For those who like their physics in rhyme, there is now a rap [video](#). The author and rapper is Kate McAlpine, aka alpinekat, a science writer who works at CERN and who also has a rap about neurons on YouTube.

[Read more](#)



A team of DZero collaborators made primary contributions to the above analyses.

Accelerator Update

July 28-30

- Three stores provided ~36 hours and 17 minutes of luminosity
- TeV sector D1 wet engine bearings replaced
- TeV tilt meters register earthquakes
- Pbar magnet D:H717 develops leak and arcing
- Experts attempt to repair Pbar magnet in place

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

Announcements

Have a safe day!

Performance review help for supervisors

Managers and supervisors who need help with the performance review can attend a review briefing from 8:30 - 11:30 a.m. on Thursday, Aug. 7. The briefing will help answer questions about the performance review process, including the form and compensation. [Learn more and enroll](#)

UEC elections underway

Elections for the 2008-2009 Users' Executive Committee are now open. Votes must be cast by Aug. 5. More information is available [here](#).

Swimming lesson registration ends Thursday

The final swimming lesson session starts on Monday, Aug. 4, and lasts for two weeks.

Four classes are offered:

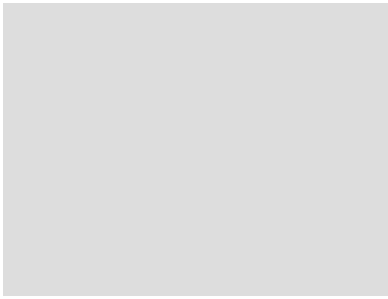
9-9:40 a.m. - Youth Lessons

9:50-10:30 a.m. - Youth Lessons

10-10:30 a.m. - Preschool Lessons

10:40-11:10 a.m. - Preschool Lessons

Registration will close on Thursday, July 31, at



noon. Register at the Recreation Office on WH15 (x5427).

Summer intern photo Aug. 5

VMS will take a photo of all summer interns at 11:45 a.m. in the Wilson Hall atrium. Please come on time.

[Additional Activities](#)