

## Calendar

Thursday, Nov. 20  
THERE WILL BE NO PHYSICS AND  
DETECTOR SEMINAR THIS WEEK  
9 a.m. - 7 p.m.

[CMS Upgrade Workshop](#)

- One West  
2:30 p.m.  
[Theoretical Physics Seminar](#) - Curia II  
Speaker: Elvira Gamiz, University of  
Illinois, Urbana-Champaign  
Title: Lattice Determination of  $B^0$ bar-  
 $B^0$  Mixing Parameters in the Standard  
Model and Beyond

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

THERE WILL BE NO  
ACCELERATOR PHYSICS AND  
TECHNOLOGY SEMINAR TODAY

Friday, Nov. 21  
8:30 a.m. - 5:30 p.m.

[Project X Collaboration Meeting](#)

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

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

Speaker: Katsuki Hiraide, Kyoto  
University  
Title: Search for Charged Current  
Coherent Pion Production by  
Neutrinos at SciBooNE

8 p.m.  
[Fermilab International Film Society](#) -

Ramsey Auditorium  
Title: [Cinema Paradiso](#)  
Tickets: \$5 for adults

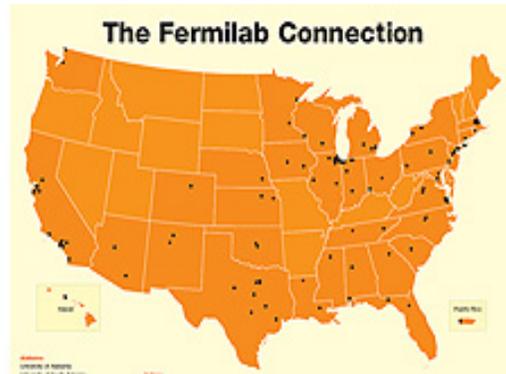
Saturday, Nov. 22  
8 p.m.

[Fermilab Arts Series](#) - Ramsey  
Auditorium  
[Klezomatics](#): Grammy Award Winning  
World Music  
Tickets: \$25/\$13

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

## Feature

### Universities, Fermilab both benefit from collaboration



View a map and list of the universities that collaborate with Fermilab. Click on the graphic above to download the pdf.

University collaboration is the norm in high-energy physics experiments. But for students interested in accelerator physics, working with a national laboratory is often essential.

Professors and students from more than 104 U.S. institutions in 34 states rely on Fermilab for their research, and the laboratories benefit from their participation as well.

Before the 1970s, universities could build their own high-energy particle accelerators, said Ashutosh Kotwal, a professor of physics at Duke University. "But eventually they became too big for any university group to build and fund locally." Since that time, accelerator expertise at universities has declined, and only a handful of universities still maintain accelerator physics programs.

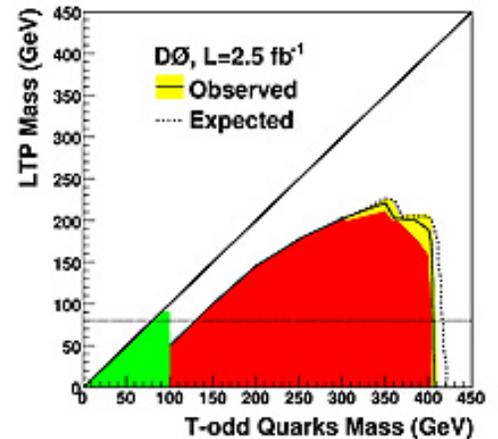
But some high-energy physics faculty, such as Sacha Kopp of the University of Texas at Austin, have formed relationships with Fermilab to allow their students to work on projects related to accelerators.

National laboratories can offer students a course of study focused intensely on the subject they want to pursue, said Bob Zwaska, a Fermilab employee and former student of Kopp. "University programs may not have special classes in accelerator physics," Zwaska said. "This is a stimulating place to be." As a student, Zwaska worked at Fermilab on a system that synchronizes the beam in the Booster accelerator with the beam already circulating in the Main Injector.

Universities offer laboratories additional manpower as well as contact with experts from different fields, such as engineering and computer science. Kotwal became involved with particle physics when one of his engineering professors helped design electronics for a

## Fermilab Result of the Week

### DZero's new phenomena dragnet



This figure shows the masses of T-odd quarks and the lightest T-odd particle (LTP) that are excluded by DZero's data analysis.

In the mad morning rush to get to work or school, there's nothing worse than discovering you've lost your keys. After racking your brain, you realize those keys could be anywhere. Once you've narrowed down the possible hiding places (they're not in the freezer!), the only thing left is to begin a search.

Every day physicists at the Tevatron dive headlong into the farthest depths of the unknown in an effort to find signs of new physics. Theoretical physicists help narrow down the hiding places by constructing theories that are consistent with experimental evidence. Often these searches come up empty, but these results are valuable because they tell physicists where the particles, like keys, are not hiding. Physicists at the DZero experiment have found a way to speed this process up. Surely to the envy of distraught key seekers worldwide, these physicists have shown that they can search in two places at the same time.

A simultaneous probe for two different new phenomena scenarios increases the chances for DZero physicists to find the key to new physics. Many models for new phenomena predict heavy, stable, electrically neutral particles that interact very little with ordinary matter. If produced at the Tevatron, these particles would pass through detectors unnoticed, just like the well-known neutrino. Such particles can arise in theories known as Little Higgs models. Little Higgs models with T parody predict heavy cousins of quarks (T-odd quarks) that could decay to a heavy, stable cousin of the photon and a normal quark.

This signature could also be produced by the decay of

**Weather**

Chance flurries  
32°/15°

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

**Current Security Status**

Secou Level 3

**Wilson Hall Cafe**

Thursday, Nov. 20  
- Tomato Florentine  
- \*Pork BBQ sandwich  
- Pasta primavera  
- Smart cuisine: chicken marsala  
- Smoked turkey melt  
- Assorted sliced pizza  
- SW chicken salad w/roasted corn salsa  
  
\*Carb restricted alternative

[Wilson Hall Cafe menu](#)

**Chez Leon**

Thursday, Nov. 20  
Dinner  
- Steamed mussels with white wine & thyme  
- Grilled marinated lamb chops  
- Mushroom risotto  
- Sautéed spinach  
- Mocha soufflé

Wednesday, Nov. 26  
Lunch  
- Cheese fondue  
- Marinated vegetable salad  
- Mixed berry parfait

[Chez Leon menu](#)

Call x3524 to make your reservation.

**Archives**

**Fermilab Today**

[Result of the Week](#)

[Safety Tip of the Week](#)

[ILC NewsLine](#)

detector at Fermilab.

For students, working at a laboratory means joining a collaboration instead of simply turning work in to a professor, Zwaska said. "It's more collegial than at universities, where there's a larger difference between professors and students," he said. "At the lab, everyone works together."

-- Kathryn Grim

**Photo of the Day**

**Fermilab earns award for marsh restoration project**



Fermilab Roads and Grounds employee Dave Shemanske (center) accepted a natural landscaping award from the Chicago Wilderness Council and the U.S. EPA Nov. 12 on the laboratory's behalf. Shemanske stands with Gary Gulezian, director of the U.S. EPA Great Lakes National Program Office (left) and John Rogner, the chair of Chicago Wilderness. The award was given for the conversion of a former sewage treatment area into a natural marsh. Read more about the Nepese Marsh restoration in the [Nov. 12 issue of Fermilab Today](#).

**In Brief**

**The Klezmatics perform at Fermilab Saturday, 8 p.m.**

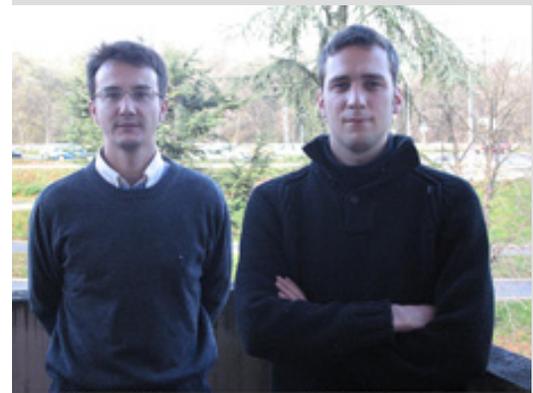


The Klezmatics

[leptoquarks](#), which are particles that provide a link within the three generations of quarks and leptons and have both quark and lepton properties. Dzero has constructed a search that accommodates these two similar signatures.

Using 2.5 inverse femtobarns of data, DZero researchers studied events with the particle-jet signature characteristic of quarks along with the missing energy signature of neutrinos. In events with two jets that are not back-to-back and have large amounts of missing transverse energy, the physicists found no evidence for new phenomena. These results allow them to produce the world's tightest limits on the masses of T-odd quarks and also to improve on existing limits for scalar leptoquarks coupling to neutrinos and quarks within the first and second generations. This efficient search technique will be an important strategy as DZero researchers study their ever-growing dataset, hopefully uncovering those keys that will unlock our knowledge of the universe.

[Read more](#)



Patrice Verdier  
Yohann Tschudi  
IPN Lyon / IN2P3

A team of DZero collaborators made primary contributions to this analysis.



Alexey Atramentov  
Florida St. University  
Dmitry Bandurin  
Kansas St. University  
Maiko Takahashi  
University of Manchester

DZero's electromagnetic objects identification group is responsible for developing and maintaining algorithms to select electrons and photons in data and simulation. After years as co-convenor of the group, Alexey Atramentov (left) has handed the torch to Maiko Takahashi (right) who will join Dmitry Bandurin (center).

**Accelerator Update**

## 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)

World-renowned and Grammy-winning band The Klezmatics will bring their unique brand of klezmer music to Ramsey Auditorium on Saturday, Nov. 22, at 8 p.m. Klezmer, from the Yiddish word for "musician," has its roots in the celebratory music that Ashkenazi Jews traditionally played at weddings and other occasions for dancing.

The Klezmatics erupted out of New York City's East Village in 1986. Over the course of 20 years, the group has released nine albums of provocative, reflective and ecstatically danceable music played with fiddle, bass, cello, clarinet, drum, hammer dulcimer and accordion. A multitude of mainstream media outlets such as the BBC, PBS, MTV and NPR have featured the band on their programming.

Tickets are \$25 for adults and \$13 for children aged 18 and under. For more information or to make reservations, call (730) 840-ARTS (2787) weekdays from 9 a.m. to 4 p.m. At other times, an answering machine will give you information and a means of placing ticket orders. Ramsey Auditorium is located in Wilson Hall, the central building at Fermilab.

## In the News

**Antarctic balloon on the trail of dark matter?**

From *Scientific American*, Nov. 19, 2008

New results from an instrument that detects energetic particles in the upper altitudes above Antarctica show an excess of cosmic-ray electrons that may be a signal of dark matter, researchers say. The study, published today by Nature, examines data from a balloon-borne detector called ATIC (Advanced Thin Ionization Calorimeter). The unexpected wealth of electrons in a specific energy range, about 300 to 800 giga-electron-volts, points to a nearby source, the authors write.

One of the possible sources is the annihilation of dark matter, a mysterious type of particle that current theories indicate is many times more prevalent in the universe than the ordinary matter we can see and touch. Some candidates for dark matter, including the so-called Kaluza-Klein particles, would have energies that fit the bill. (The authors speculate that other astronomical objects, such as pulsars or microquasars, could also be responsible.)

[Read more](#)

Nov. 17-19

- Three stores provided ~35.25 hours of luminosity
- Store 6566 lost due to quench
- The #2 NuMI horn might need replacing

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

## Announcements

[Have a safe day!](#)

[Annual enrollment Nov. 17 - Dec. 10](#)

[Weekly time sheets due Nov. 20](#)

[International Folk Dancing, Nov. 20](#)

[Fermilab singers to perform Nov. 20](#)

[Fermilab Health and Wellness Fair prizes](#)

[Annual enrollment carrier meetings Nov. 21, Dec. 4, 9](#)

[Fermilab Arts Series presents Klezmatics Nov. 22](#)

[English Country Dancing, Nov. 23](#)

[Director's volunteer award Nov. 25](#)

[Exciting Explorations! child care program offered Nov. 24-26](#)

[No International Folk Dancing on Thanksgiving, resumes Dec. 4](#)

[Fidelity representative at Fermilab Dec. 3](#)

[Education Office Holiday Sale, Dec. 3 & 4](#)

[International Folk Dancing, Dec. 4](#)

[NALWO Winter Holiday Tea, Dec. 5](#)

[NALWO Christkindlmarket Chicago, Dec. 13](#)

[The University of Chicago Tuition Remission Program deadline Dec. 17](#)

[Additional Activities](#)

