Fermilab Today

Thursday, November 10, 2005

Calendar

Thursday, November 10

11:00 - Academic Lecture Series - Curia II (Note location)
Speaker: C. Quigg, Fermilab
Title: The Electroweak Theory and Higgs Physics – Lecture 4

12:00 Wellness Works Brown Bag Seminar - Auditorium (Note location)
Speaker: S. Osman, (Ethnic Hand Drummer)
Title: Hand Drumming – Balance, Creativity, Precision

2:30 - Theoretical Physics Seminar - Curia II
Speaker: G. Nayak, State University of New York, Stony Brook
Title: Fragmentation, Factorization and Infrared Poles in Heavy Quarkonium Production

3:30 p.m. Director's Coffee Break - 2nd Flr X-Over

4:00 Accelerator Physics and Technology Seminar - Curia II (Note location)
Speaker: M. Stockli, Oak Ridge National Laboratory
Title: Readying the Injector for feeding the Spallation Neutron Source

Friday, November 11

3:30 p.m. Director's Coffee Break - 2nd Flr X-Over

4:00 Joint Experimental Theoretical Physics Seminar - 1 West
Speaker: M. Neubauer, University of California, San Diego
Title: Recent B-Physics Results from CDF

8:00 p.m. Fermilab International Film Society - Auditorium
Les Diaboliques

Lab Begins Burning to Restore Prairie Species

Bob Lootens at last year's prairie burning. (Click image for larger version.)

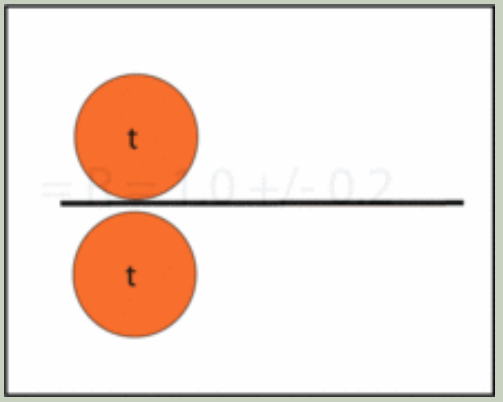
It smelled like one giant campfire last week as Roads & Grounds members conducted a series of prescribed prairie burns. The crew manages various prairie tracts by burning about every other year, with the recent focus on the swatch of land in the northwest corner of the site.

The burns are meant to clear out weedy plants and overgrowth that can smother native species. "You're trying to get rid of the Eurasian species and allow the prairie species to take a foothold," said Dave Shemanske, of Roads & Grounds. Many native prairie species have deep root systems and retain enough energy below ground to sprout new leaves when their stalks burn. The biomass of invasive species, however, is mostly above ground and has a hard time regrowing once the fire has singed their surface.

The Roads & Grounds crew plans the burns months in advance using aerial prairie photos, field checks, precaution lists and weather reports. On the day of a burn, Roads & Grounds members meet with the Fermilab Fire Department to

Fermilab Result of the Week

R You Standard Model Top?



This is a simplified drawing of top quark decay. (Click on image for larger version.)

We have all heard of the word decay and many things come to mind when we think of it. One type of decay is nuclear decay where the nucleus of a radioactive element falls apart into constituent pieces, releasing energy in the process. In the mysterious world of fundamental particles studied at Fermilab, it turns out that the basic building blocks of matter can also decay. For example, the top quark can decay into a bottom quark or other types of quark, releasing energy in the process. This is, at first glance, quite surprising since the top quark is not made of any constituent parts but is a fundamental particle. But despite its fundamental nature, the top quark can decay through quantum mechanical processes to other lighter fundamental particles. The Standard Model of particle physics exactly predicts the specific modes of decay and daughter products.

If our understanding of the physics of these elementary particles is incomplete in some way, then it is possible that the top quark could decay in some unanticipated way - which would be a

Saturday, November 12
8:00 p.m. Fermilab Lecture Series - Auditorium
C.J. Chenier and The Red Hot Louisiana Band

Weather


Mostly Sunny **51º/32º**

Extended Forecast

Weather at Fermilab

Current Security Status

Secon Level 3

Wilson Hall Cafe

Thursday, November 10
-Santa Fe Black Bean
-Sloppy Joe
-Stuffed Peppers
-Sauteed Liver & Onions
-Baked Ham & Swiss on a Ciabatta Roll
-California Pizza
-Crispy Fried Chicken Ranch Salad

Seasonal Changes in the Cafe Menu: There is now a daily oatmeal bar with all of your favorite toppings and chilli will be offered on Monday, Wednesday and Friday each week.

The Wilson Hall Cafe accepts Visa, Master Card, Discover and American Express at Cash Register #1.

Wilson Hall Cafe Menu

Chez Leon

review hazards and potential problems. The crew begins by setting up a backburn, a perimeter that contains the fire. Then they light a head fire that races across the prairie in the direction of the wind. While it could take anywhere from one to three hours to do the backburning and create a safe zone, the head fire usually is over in 15 minutes.

Shemanske said his 20 years doing the burning has taught him to have respect for the fire and the team he works with. "We've done this for so long that we know what our expectations are," he said. "It can get interesting. Sometimes it gets hotter than other times. It always keeps your attention focused on safety." *—Kendra Snyder*

Pierre Auger Observatory November 10 Press Release

Pierre Auger Observatory Celebrates Progress on Detector Array and Presents First Science Results

MALARGÜE, Argentina -- Scientists of the Pierre Auger Observatory, a project to discover the origins of rare and mysterious ultra-high energy cosmic rays, began a celebration today (10 November) in Malargüe, Argentina, to mark the progress on installation of the Observatory's detectors on the Argentina Pampas, and the presentation of the first physics results.

"These highest-energy cosmic rays are messengers from the extreme universe. They represent a great opportunity for discoveries," said Nobel Prize winner James Cronin, of the University of Chicago, who conceived the Auger experiment together with Alan Watson of the University of Leeds (UK). Watson

signal for a new type of physics. Since the Tevatron accelerator at Fermilab is the only place in the world where top quarks can currently be produced, scientists from around the world have collaborated to study this particle which only existed in nature shortly after the big bang.

Physicists working on the DZero experiment have examined how often a top quark decays to a bottom quark, and how often it decays to other quark species. The b quarks are long lived and can be "tagged" by looking for the b quark decay vertex. Simply put, by finding top quarks and looking for the number of secondary vertices we can tally the number of decays to b quarks and the number of decays to lighter quarks.

If the ratio of the number of top quark decays to a bottom quark to the number of top quark decays to any quark (including the bottom quark) is different from 1 (the Standard Model prediction), it would be a sure sign that our understanding of nature was incomplete. As it is, the measured ratio, R = 1.0 ± 0.2, is found to be consistent with the Standard Model prediction. However as the Tevatron continues to produce record amounts of data, the DZero team will be able to more accurately measure this ratio and thereby test the physics of the big bang.

Thursday, November 10
Dinner
BOOKED

Wednesday, November 16
Lunch
-Rouladen
-Buttered Dill Egg Noodles
-Pickled Carrots
-German Chocolate Cake

Chez Leon Menu
Call x4512 to make your reservation.

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added: "How does nature create the conditions to accelerate a tiny particle to such an energy? Tracking these ultrahigh-energy particles back to their sources will answer that question."
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Zydeco star C.J. Chenier To Perform this Weekend

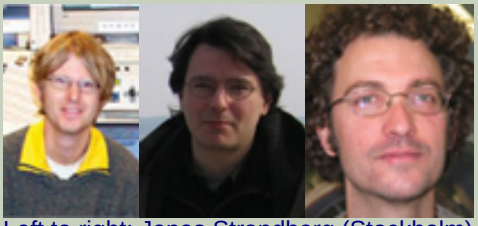
C.J. Chenier and the Red Hot Louisiana Band will hit the stage on Saturday at 8 p. m. in Ramsey Auditorium. Chenier, who has produced five albums, is regarded as a leading performer of zydeco, a fast-paced blend of music dominated by the accordion. Influenced by his father, zydeco musician Clifton Chenier, C.J. Chenier infuses traditional zydeco with a contemporary punch. "C.J. Chenier attacks the accordion with the tension and drive of James Brown, creating contemporary, turbo-charged dance music," said The Boston Globe. Tickets for the performance are $19 for adults and $10 for those ages 18 and under. For more information call 630-840-2787 or visit the Website.

Science Grid This Week

Grids and Gluons

The PHENIX detector at Brookhaven National Laboratory.

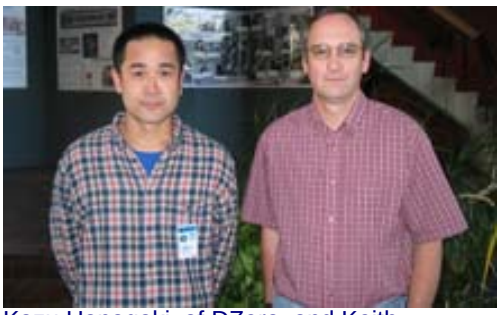
Grid tools are helping scientists solve a nuclear physics mystery—how the proton gets its spin. The origin of the proton's spin has been the subject of experiment and speculation for over 15 years, and



Left to right: Jonas Strandberg (Stockholm) Christophe Clement (Stockholm), Aurelio Juste (FNAL) and Flera Rizatdinova (Oklahoma; not pictured) have contributed to this analysis. Matt Wetstein, Jovan Mitrevski and Jon Hays (not pictured) worked on the calorimeter algorithms used in this analysis.

Result of the Week Archive

Gollwitzer and Hanagaki Promoted to Scientist I



Kazu Hanagaki, of DZero, and Keith Gollwitzer, of the Accelerator Division. (Click image for larger version.)

Keith Gollwitzer and Kazu Hanagaki have recently been promoted to Scientist I, an appointment without term limit. Gollwitzer, of the Accelerator Division, first came to Fermilab in 1989 as a graduate student from the University of California, Irvine. He was promoted from Associate Scientist for his role in the Antiproton Source and continued involvement in the analysis for experiment E835. Gollwitzer works on the operations of the accelerator complex, striving to make improvements in the antiproton stacking rate. He also worked earlier on experiment E760. "I hope we can increase the stacking rate," he said. "And I hope the Antiproton Source stays around for future experiments."

Hanagaki, of DZero, joined Fermilab in

preliminary results from the PHENIX experiment show that the proton is not as strange as some may have thought.

"We are striving to understand the fundamental structure of matter," said Abhay Deshpande, a physicist from the State University of New York at Stony Brook. "Protons and neutrons form 99% of the matter around us, and mass and spin are their two fundamental properties."

Spin is the direction a particle spins around an axis as it travels, just as the Earth spins on its axis as it travels around the sun. Until 1989, physicists assumed that the spin of the three quarks that make up a proton combine to create the total proton spin. That year, a European nuclear physics experiment using a method called Deep Inelastic Scattering reported that the three quarks only carry 20–30% of the proton's spin. This result, later confirmed by DIS experiments around the world and labeled the "spin crisis," caused physicists to suspect that the gluons that bind quarks together may be the carriers of the missing spin.

Read More

In the News

Press Release, House Committee on Science, November 9, 2005:

Boehlert Promises to Kill Fusion Project If Funding Agreement is not Reached

WASHINGTON, DC - House Science Committee Chairman Sherwood Boehlert (R-NY) made the following statement today during debate over the Energy and

2001 as a Wilson Fellow, but spent a few years previously working at the lab as a graduate student from Osaka University. He was promoted for his contributions to DZero, including the silicon system, b-tagging and the Z+b/Z+ jets analysis. Hanagaki said in the future, he looks forward to seeing the new silicon system put to use. "We're working on the silicon detectors now, but we're still waiting for their installation," he said. "Hopefully, that will be next spring.

—Kendra Snyder

Accelerator Update

November 7 - 9

- Two stores provided 37 hours of luminosity to the experiments.
- TeV RF spark caused quench.
- Pelletron down for work.
- Multiple problems troubles NuMI.

Read the Current Accelerator Update
Read the Early Bird Report
View the Tevatron Luminosity Charts

Announcements

Payday Change

Due to the upcoming Veteran's Day on Friday November 11, 2005 and the fact that most banks will be closed, employees will paid on Thursday, November 10, 2005. Advices will also be distributed on Thursday.

Mileage Reimbursement Rate Increase

In recognition of recent gasoline price increases, the Internal Revenue Service and the General Services Administration have increased the standard mileage rate reimbursement to 48.5 cents per mile for business miles driven between September 1 and December 31, 2005.

Water appropriations bill:

“Mr. Chairman:
I rise in support of this bill, and I want to thank Chairman Hobson for working on behalf of the civilian research and development programs of the Department of Energy. Needless to say, I wish the bill could have been even kinder to those programs, but I know that Chairman Hobson pressed on their behalf.
Read More

Hand Drumming Today
Suzanne Osman will be doing a Hand Drumming Brown Bag Seminar on Thursday November 10 at Noon in Ramsey Auditorium. Suzanne will have a short drum circle following the clinic, drums will be provided.

International Folk Dancing
IFD will meet tonight at Kuhn Barn on the Fermilab site. Dancing begins at 7:30 p. m. with teaching and children's dances earlier in the evening and request dancing later on. Newcomers are always welcome and you do not need to come with a partner. Info at 630-584-0825 or 630-840-8194 or folkdance@fnal.gov.

Upcoming Activities