Fermilab Today

Thursday, December 7, 2006

Calendar

Thurs., December 7
12:00 p.m. Special Particle Astrophysics Seminar - The Dark Side (WH-6W) (NOTE DATE, TIME, LOCATION)
Speaker: G. Rigoloulos, Universit Utrecht
Title: The Evolution of Non-Linear Perturbations in Inflation
1:00 p.m. ALCPG ILC Physics and Detector Seminar - West Wing (WH-10NW)
Speaker: M. Thompson, University of Cambridge
Title: Particle Flow Algorithms: Current Status
2:30 p.m. Theoretical Physics Seminar - Curia II
Speaker: C. Berger, Stanford Linear Accelerator Center
Title: Bootstrapping One-Loop Amplitudes (Needles in Large HaystaCks)
4:00 p.m. Accelerator Physics and Technology Seminar - Curia II (NOTE LOCATION)
Speaker: M. Convery, Fermilab
Title: The CDF Roman-Pot Detectors

Fri., December 8
11:00 a.m. Computing Techniques Seminar - FCC 1
Speaker: N. Witheridge, Macquarie University
Title: Identity and Access Management (IAM) Suite: A Shibboleth-Based Platform for Collaborative eResearch
12:00 p.m. Wellness Works Brown Bag Seminar - Curia II
Speaker: S. Jencius (MS, LPC)
Title: 'Tis the Season to be Anxious: Using Cognitive Behavioral Therapy to Reduce Holiday Stress
3:30 p.m. Director's Coffee Break - 2nd floor crossover
4:00 Joint Experimental Theoretical Physics Seminar - 1 West
Speaker: D. O'Neil, Simon

Feature Story

Lockyer to head TRIUMF National Laboratory in Canada

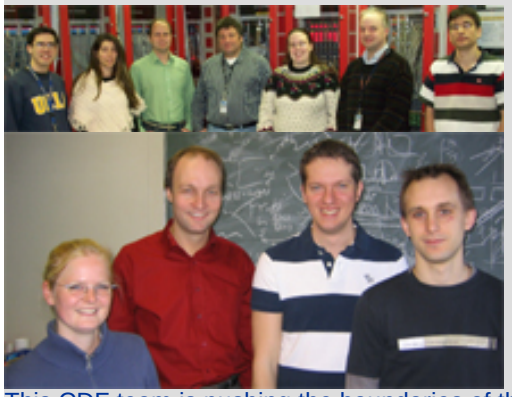
Nigel Lockyer was CDF spokesperson from 2002 to 2004.

On May 1, former CDF spokesperson and University of Pennsylvania physicist Nigel Lockyer will become director of TRIUMF National Laboratory in Canada. His appointment was announced by TRIUMF Board of Management Chair Feridun Hamdullahpur during a December 1 board meeting. "Lockyer brings to TRIUMF a wealth of experience and knowledge, along with strong management and interpersonal skills," Hamdullahpur said, adding that the board had made a unanimous decision about Lockyer's appointment.

Lockyer has conducted research at Fermilab since 1984, focusing on symmetries and heavy quarks, especially the bottom quark. Earlier this year, he won the Panofsky Prize in Experimental Particle Physics for his work at SLAC's Mark II experiment, which led to the 1983 measurement of the unexpectedly long lifetime of B mesons. More recently, Lockyer has collaborated with Fermilab, Cornell University and INFN to design cavity tuners and cavity simulations for the International Linear Collider. He served on the EPP2010 committee, which this year charted the future for particle physics in the United States, and

Fermilab Result of the Week

Life on the edge of the top quark



This CDF team is pushing the boundaries of the top quark.*

The top quark may be hiding secrets about why it has the mass near that of a gold atom. It may be just waiting to tell us whether it has heavier cousins, or if there is something peculiar with its interactions with other particles. The measured properties of top quarks have so far been limited to the production of top quark pairs, which are produced by the strong interaction. Physicists are now on the verge of measuring top quarks produced one at a time, a process which only happens via the weak interaction. Studying "single top" pushes our knowledge of the weak force to the edge, and may reveal the secret of the top quark.

The single top search is a technical tour de force. The signal rate is smaller than top quark pair production, and it is also harder to distinguish the signal from the background. CDF uses two different methods to extract a measurement of single top from the data. The first method calculates a signal and background probability for each event based on the underlying theoretical calculation. The second method combines several kinematic and angular features of the signal into an event "likelihood" which measures how likely it is that the event is signal or background.

When the data were analyzed, the first analysis found an excess in the data consistent with single top at the 2.3 sigma level, which means that there is a 1 percent chance that the background alone could produce such an excess. Using the same data

Fraser University
Title: Evidence for Single Production of Top Quarks at DZero and a First Direct Measurement of $|V_{tb}|$

8:00 p.m. Fermilab International Film Society - Auditorium - $5
Mies vailla menneisyyttä (The Man Without a Past)

Sat., December 9
8:00 p.m. Fermilab Arts Series - Auditorium
Holiday *a cappella* with Chicago *a cappella*

Click here for NALCAL, a weekly calendar with links to additional information.

Weather

Mostly Sunny 15°/3°

Extended Forecast
Weather at Fermilab

Current Security Status

Secon Level 3

Wilson Hall Cafe

Thursday, December 7
-Santa Fe Black Bean
-Sloppy Joe
-Stuffed Peppers
-Sauteed Liver and Onions
-Baked Ham and Swiss on a Ciabatta Roll
-Assorted Slice Pizza
-Crispy Fried Chicken Ranch Salad

Wilson Hall Cafe Menu

Chez Leon

he has continued to mentor graduate students at CDF. "It's an exciting time to be doing research at the Tevatron--the discovery potential is high and my students are thrilled about it," said Lockyer, who plans to remain affiliated with CDF until the end of this run.

Canada has just released its own long-range plan for particle physics, emphasizing the importance of TRIUMF's radioactive beam program--which studies nuclear structure and nuclear astrophysics--as well as the Large Hadron Collider, where TRIUMF will serve as a Tier 1 institution for the LHC detector ATLAS. The Canadian plan also recognizes the importance of the proposed International Linear Collider. "Canadian physicists are looking forward to increased involvement in the ILC and hopefully stronger relations with Fermilab and the global ILC community," said Lockyer. "TRIUMF has an excellent program... The next decade in high energy physics will be extremely exciting and I am anxious, like everyone else, to see what we are able to discover."

--Siri Steiner

Special Announcement

Do you want to come to Fermilab by train?

Metra, the commuter rail operator in Northeastern Illinois, is looking for your input on a proposed transportation option for the Chicago region: the 55-mile-long STAR Line. This project will be the nation's first suburb-to-suburb commuter rail line and will provide an alternative to congested roads. It is slated to run from Joliet to Warrenville to Hoffman Estates and then east to O'Hare Airport. It will link nearly 100 communities. The line will allow transfers to and from the BNSF and UP-W Metra lines that connect Aurora and Geneva with Chicago. In Warrenville, the STAR Line tracks will run along the eastern boundary of the Fermilab site, and a train station is proposed near Butterfield Road.

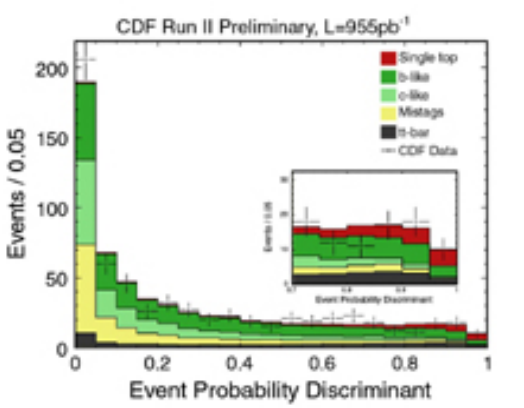
In order to better understand your travel needs (going to work and going to the O'Hare Airport), Metra is conducting a survey and would like to hear from Fermilab employees. Your input will be used to further refine the STAR Line proposal. The Metra survey takes about 10 minutes, and your answers will be held in strict confidence and not shared or sold to any outside entities.

Please assist Metra in determining the need for suburb-to-suburb commuter rail. When you

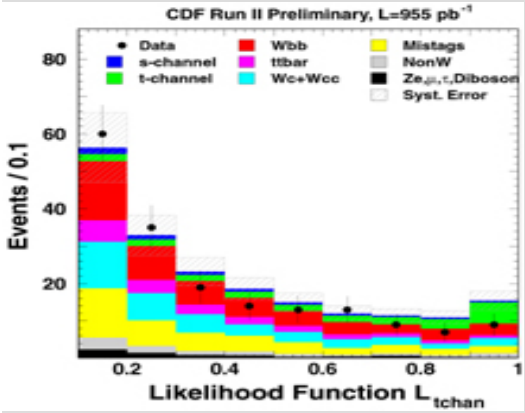
sample, the second analysis found no evidence for a signal. Differing results such as these are expected about 6 percent of the time.

Both analyses had expected to find single top with between 2 and 3 sigma certainty, but on the edge of discovery, results depend on luck as well as hard work. As more data is collected, and analysis techniques improve, the consistency of our picture of the top quark at the edge of the weak interaction will solidify.

Learn more



The event probability discriminant for data compared to the simulated expectations for signal and background. As shown in the inset, the region most sensitive to single top (x-axis close to 1) is consistent with the addition of single top (brown).



A different analysis method uses a likelihood function to compare data to the simulated expectations. A deficit of candidates is apparent in the signal region (x-axis close to 1).

*Photo at top, from left: Peter Dong (UCLA), Florencia Canelli (Fermilab), Bernd Stelzer, Rainer Wallny (UCLA), Sarah Budd, Tom Junk, Catalin Ciobanu (University of Illinois). Bottom, from left: Svenja Richter, Wolfgang Wagner, Matthias Buehler, Jan Lueck (Karlsruhe University).

Accelerator Update

Thursday, December 7
Dinner
Steamed Mussels in White Wine, Garlic & Thyme
Veal Marsala
Orzo with Pine Nuts
Sautéed Spinach with Lemon Zest
Pear Hazelnut Soufflé

Wednesday, December 13
Lunch
Roast Pork Loin with Lingonberry Sauce
Braised Red Cabbage
Dilled New Potatoes
Spiced Honey Cake

Chez Leon Menu
Call x4598 to make your reservation.

Archives

Fermilab Today

Result of the Week

Safety Tip of the Week

ILC NewsLine

Info

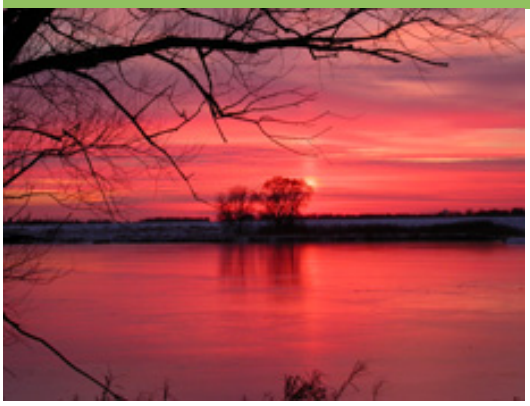
Fermilab Today is online at: www.fnal.gov/today/

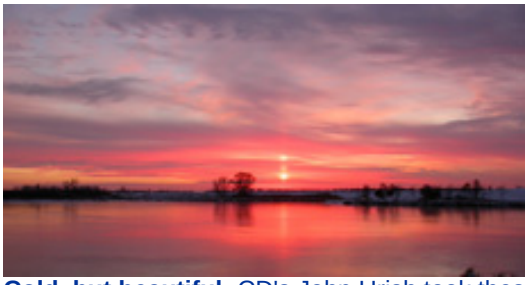
Send comments and suggestions to: today@fnal.gov

take the survey, please submit the intersection of "Pine Street/Kirk Road" as your work location, and list "Fermilab" as your employer. Participation in the survey is voluntary.

--Kurt Riesselmann

Photo of the Day





Cold, but beautiful: CD's John Urish took these pictures Wednesday, around 4:30 p.m., on Batavia road in the Village looking southwest.

In the News

Physics World, December, 2006:

Colourful calculations

The formidable computational power of lattice QCD is finally allowing researchers to make solidpredictions about the force that binds quarks inside protons and neutrons....

Understanding how the universe works at the most fundamental scale is often likened to peeling away the layers of an onion. The outermost layer of the onion represents atoms, and we have known about these for a century or so. The next layer of structure, which was revealed by Rutherford in 1911, is the atomic nucleus – a much smaller object that contains almost all of the atomic mass. Some 20 years after that discovery, physicists realized that the nucleus is composed of more fundamental objects called protons and neutrons. However, peeling back the next layer of the onion has turned out to be much more of a challenge.

December 4 - 6
- Three stores provided 38 hours and 53 minutes of luminosity
- MI vacuum problems
- Booster repeater and BOM trouble
- NuMI suffers Intermittent beam loss when MI stashes
- Linac Debuncher water skid trip

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

Announcements

'Tis the Season to be Anxious
Wellness Works presents a Brown Bag Seminar on Friday December 8, in Curia II. Titled "'Tis the Season to be Anxious," the seminar will teach techniques for using cognitive behavioral therapy to reduce holiday stress.

EAP Office will close for Holidays
The Employee Assistance Program Onsite Office at Fermilab will be closed Friday, December 22, and Friday, December 29. As always, the EAP is available 24/7 at 800-843-1327 or online at www.vmceap.com. To login, use the company name "fermilab," or "fnal," password 8008431327.

International Folk Dancing
International Folk Dancing will meet Thursday, December 7, at Kuhn Barn. 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. Dancing will continue without a break through the holidays.

Entertainment Books
This is your last chance to buy an entertainment book for 2007 in the Recreation Office (WH15W). If you register with the company that prints the books after your purchase, you'll receive a $25.00 restaurant gift certificate. Need a gift for someone out of town? Books are available to more than 156 cities. We can order the books for you or you can order them online at Entertainment.com using the Fermi code “338935”. Books cost $20; the sale ends December 12!

Fermilab volunteers live on TV
Last week a WTTW 11 documentary featured Fermilab. Now Fermilab can help with WTTW 11 fundraising. The station is looking for 10 to 15 volunteers from Fermilab to help with on-air

Read More

fundraising on Sunday, Dec. 10. Volunteers need to arrive at the studio in Chicago by 4:00 p.m. and be willing to help until 10:30 p.m. Participants might appear live on TV. If you want to join the Fermilab group of volunteers, please email Kurt Riesselmann, kurtr@fnal.gov, with your name and the name of a guest/spouse you might bring. For additional information call Kurt at x5681.

Upcoming Activities