

Calendar

[Have a safe day!](#)

Thursday, Feb. 25
2:30 p.m.
[Theoretical Physics Seminar](#) - Curia II
Speaker: David Shih, Institute for Advanced Study
Title: Recent Progress in (General) Gauge Mediation
3:30 p.m.
DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

Friday, Feb. 26
3:30 p.m.
DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
4 p.m.
Joint Experimental-Theoretical Physics Seminar - One West
Speaker: Mike Albrow, Fermilab
Title: Central Exclusive Production: from Glueballs to Higgs Bosons

Sunday, Feb. 28
2:30 p.m.
[Gallery Chamber Series](#) - 2nd Flr X-Over
Tickets: \$17
Chicago Early Music Consort

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

[Upcoming conferences](#)

Campaigns

[Take Five](#)

[Tune IT Up](#)

H1N1 Flu

Special Announcement

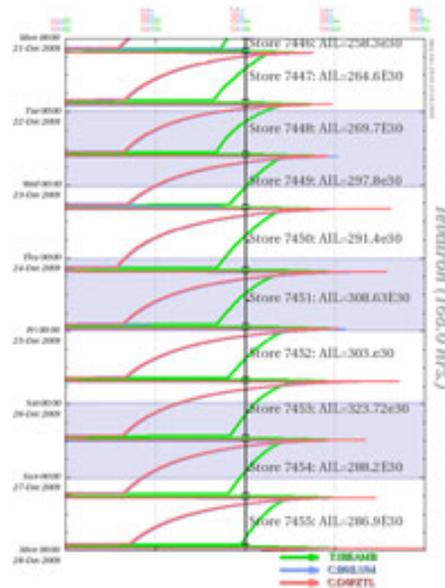
Administrative employees event at 1:30 p.m. today



Managing priorities and balancing your personal and professional goals can be difficult. An event to help administrative employees achieve this work/life balance will take place at 1:30 p.m. today in One West. Marcie Stern from Vocal Consulting will give a talk titled "WAAMM! 5 Steps to Managing Your Life's Priorities." During this 90-minute presentation, Stern will teach strategies and skills to help attendees manage their priorities, align their organizational and personal goals and more. All administrative professionals are welcome.

From *symmetry breaking*

Fermilab's CDF, DZero cite banner year at the Tevatron

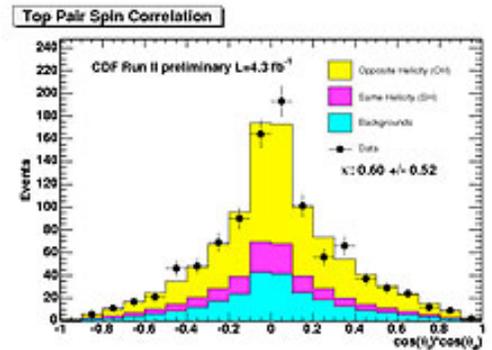


Fermilab's Accelerator Division achieved two new records in late 2009. During the week of Dec. 21, the Tevatron set a record for the number of store hours: 151.25. The complex produced physics data during nine stores for a total of 151 hours. The plot shows how little time passed between each store. During that same week, the Antiproton Source produced a record number of antiprotons, equivalent to 4,033 milliamps.

As physicists from Fermilab's Tevatron collider

Result of the Week

Secrets of spinning tops



The top spin correlation shows up in the product of the lepton helicity angle from one top decay and the down-quark helicity angle from the other top decay. When Tevatron collisions create particle pairs, they act like spinning balls.

The way the spins of two particles relate to each other depends on the properties of the forces involved in the collision. Physicists call this relation of the spin states a correlation.

In quantum computing, scientists can use the weird rules of quantum mechanics to translate a spin correlation into a huge leap in processing power. Similarly, in particle physics, scientists can use theoretical predictions to translate the two-particle spin correlation, κ , into an incisive measure of the forces involved in the particle pair creation.

Scientists from the CDF collaboration have recently measured the spin correlation in the pair production of massive top quarks. The theory of the strong force predicts that the top quark spins should be correlated, but undiscovered interactions might modify this prediction. Scientists may see these new interactions in this measurement even though they have not shown up anywhere else.

This new CDF measurement uses top decays in the single lepton-plus jet decay channel. This huge sample has greater statistical precision than previously used samples that contained two leptons. In this case, the crucial role of the second lepton is played by a down-type quark, which must be identified in the thicket of the four quark jets in the event. The CDF scientists use a clever trick proposed by [Mahlon and Parke](#): The jet from the down quark is closest to the b-quark jet, which is always present in top-quark decay and can be identified. Using the lepton,

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

Weather



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

Current Security Status

[Secon Level 3](#)

Wilson Hall Cafe

Thursday, Feb. 25

- 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, Feb. 25

Dinner
- Closed

Wednesday, March 3

- Lunch
- Roasted flank steak w/herb rub
 - Smashed potatoes
 - Baby carrots
 - Lemon cheesecake

[Chez Leon Menu](#)

Call x3524 to make your reservation.

Archives

experiments, CDF and DZero, prepare to share their newest results at upcoming winter 2010 physics conferences, they took a few moments recently to look back on the accomplishments of 2009.

"By every measure," said DZero spokesperson and University of Manchester physicist Stefan Soldner-Rembold, "the Tevatron set new records and built upon its stellar physics program of exciting discoveries and ultra-precise measurements."

Both CDF and DZero investigate proton-antiproton collisions at 2 TeV, the world's highest energy for a particle-antiparticle collider. Combined, the two experiments involve more than 1000 scientists from about 146 institutions in 27 countries. They have been operating the CDF and DZero experiments since 2001. The two collaborations expect to continue taking data through 2011, doubling the number of collisions that each experiment analyzed for their 2009 results.

"The Fermilab accelerator complex has continued to operate in superb fashion," said CDF spokesperson Rob Roser. "The Tevatron set many new records for the number of collisions per second and the number of collisions delivered to experiments in a given week, month and year. The Tevatron has now substantially exceeded its design parameters, providing CDF and DZero physicists with ever-expanding scientific opportunities."

In the final week of 2009, the Fermilab accelerator complex set a lifetime record for the hours of collider operation in a single week, producing 151 hours of physics data.

The experiments have made good use of the torrent of data. In 2009, they published more than 100 scientific papers and presented more than 150 new results at physics conferences all over the world. Major highlights include the discovery of the production of single top quarks in the first observation of this extremely rare process. The collaborations made the world's most precise measurement of the top-quark and W-boson masses with a precision of less than 1 percent and 1 per mille, respectively; and they observed and studied new particles containing b quarks. By combining their data, the CDF and DZero experiments also reached important new conclusions on the possible mass of the proposed Higgs particle, now excluding a mass range near that of twice the mass of the W boson (162-166 GeV/c²).

down-quark jet and b-quark jet in 1,001 CDF data events, the scientists measure $\kappa = 0.60 \pm 0.52$, which is consistent with the Standard Model prediction. By adding new improvements, combining samples and incorporating the rest of the complete Tevatron data set, measurements of these spin correlations may yet reveal well-hidden top secrets.

[Learn more](#)

-- Edited by Craig Group



This study was performed by three researchers from the University of Michigan: David Miettlicki, Alexei Varganov, and Dan Amidei, as shown from left to right.

Accelerator Update

Feb. 24-26

- Four stores provided ~42.25 hours of luminosity
- MTA conducted studies
- Booster problems due to BRF8
- Linac personnel worked on LRF5

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

Announcements

[Benefits Office Ask HR session - Friday](#)

[Fidelity representative at Fermilab Friday](#)

[DreamWeaver CS3: Intro offered March 9 or March 16](#)

[Interpersonal Communication Skills - March 16](#)

[Facilitating Meetings That Work course - March 17](#)

[Word 2007 Advanced class - March 16](#)

[Influence and Motivation: The Empowering Leader course - March 24](#)

[PowerPoint 2007 Advanced course March 25](#)

[Fermilab Today](#)

[Result of the Week](#)

[Safety Tip of the Week](#)

[CMS Result of the Month](#)

[User University Profiles](#)

[ILC NewsLine](#)

Info

Fermilab Today

is online at:

www.fnal.gov/today/

Send comments and suggestions to:

today@fnal.gov

Visit the Fermilab

[home page](#)

[Read more](#)

-- Judy Jackson

In the News

Kids have a blast learning science at Fermilab event

From the *Beacon News*, Feb. 24, 2010

A thick white fog poured from the top of the plastic bottle, as Jerry Zimmerman -- who goes by the name Mr. Freeze -- asked a very important question.

"Are you ready?" he shouted, and the chorus of children gathered in Fermilab's Ramsey Auditorium replied with an exuberant "Yeeeeeaaahhh!"

With a flourish, Mr. Freeze capped the bottle, which contained water and liquid nitrogen, boiling at a mind-numbingly cold -320 degrees.

He quickly shoved the bottle into a cardboard box full of newspapers, and then stood back. With a deafening crack, the bottle and box both exploded, sending paper and cardboard flying all over the stage.

The children, of course, were delighted, oohing, aahing and applauding.

[Read more](#)

Fermilab Open House 2010 video highlights



Watch video highlights of this year's Fermilab Open House [here](#).

[Excel Programming with VBA class offered March 30 and April 1](#)

[Muscle Toning class begins March 2](#)

[Employee discount at Batavia Rosati's](#)

[Harlem Globetrotters special ticket price - April 15](#)

[Introduction to Argentine Tango series of classes - FREE](#)

[Qi Gong, Mindfulness and Tai Chi Easy for Stress Reduction](#)

[Ask HR Sessions to be held at the Computing Division and Wilson Hall - Feb. 23-25](#)

[International Folk Dancing, Thursday evenings at Kuhn Barn](#)

[Fermi Martial Arts classes](#)

[Immigration Law Information session - March 1](#)

[Conflict Management and Negotiation Skills offered March 3 and 10](#)

[Hiring Summer Students for 2010](#)

[Adobe Acrobat Professional 9.0 Level 1 class offered March 4](#)

[March 5 deadline for The University of Chicago Tuition Remission program - March 5](#)

[English country dancing - March 7](#)

[On-site Housing for Summer 2010 - March 8 deadline](#)

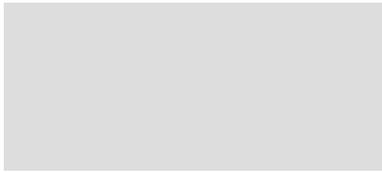
[Adaptive Leadership: Coaching for Individual Differences class - March 9](#)

[Art Gallery talk - Virginia Broersma - March 10](#)

[Excel Power User / Macros class - March 11](#)

[Influence and Motivation: The Empowering Leader course - March 24](#)

[FRA Scholarship 2010](#)



[Additional activities](#)

[Submit an announcement](#)