Fermilab Today

Thursday, October 12, 2006

Calendar

Thursday, October 12

11:00 a.m. Academic Lecture Series - 1 West
Speaker: K. Ellis, Fermilab
Title: Introduction to QCD at Colliders – Part I

1:00 p.m. ALCPG ILC Physics & Detector R&D Seminar - Hornets Nest (WH-8XO)
Speaker: M. Breidenbach, Stanford Linear Accelerator Center
Title: SiD Surface Assembly

2:30 p.m. Theoretical Physics Seminar - Curia II
Speaker: M. Rogal, DESY, Zeuthen
Title: Charged Current Deep Inelastic Scattering at Three Loops

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

4:00 p.m. Accelerator Physics and Technology Seminar - 1 West
Speaker: V. Ranjbar, Fermilab
Title: Analysis of Beam-Beam Diffusion Effects in RHIC and the LHC

Friday, October 13

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

4:00 p.m. Joint Experimental Theoretical Physics Seminar - 1 West
Speaker: E. Eichten, Fermilab
Title: New States Above Charm Threshold

Click here for a full calendar with links to additional information.

Weather

Fermilab employees and users elected to APS's DPF

Boris Kayser (left) was elected to be Vice Chair, and Andreas Kronfeld was elected to be an Executive Committee member.

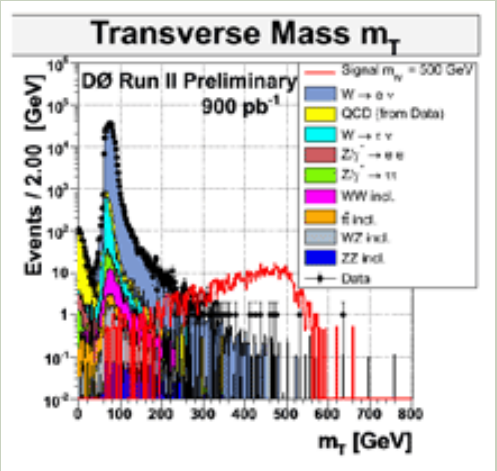
The American Physical Society's Division of Particles and Fields has just elected new leaders, and some are from Fermilab. Fermilab physicist Boris Kayser was elected to the position of Vice Chair, and Fermilab's Andreas Kronfeld was elected to the position of Executive Committee member, a 3-year term. Other elected members include Al Goshaw, a Fermilab user from Duke University who will be Secretary-Treasurer, and Cecilia Gerber, a former Fermilab research associate now at the University of Illinois at Chicago.

"The current DPF executive committee would like to congratulate the newly elected members and thank all those who participated in the election and served on the nominating committee," Treasurer Mike Tuts wrote in an email announcing the results. "The slate was excellent."

You can read more about APS's Division of Particles and Fields, and find a list of other committee members, here.

Fermilab Result of the Week

The W boson's big brother



This figure shows the reconstructed mass of an electron and missing transverse energy (the signature of a neutrino) in the plane perpendicular to the beam axis. The signature of a hypothetical W-prime boson with mass 500 GeV/c^2 is also shown on the plot.

The Standard Model (SM) of high-energy physics hides a secret that few physicists like to talk about. Despite its success at describing phenomena up to the electroweak energy scale (~200 GeV), the SM has never been rigorously tested at energies at the TeV scale or above. Therefore, even though the SM does not predict any new physics above the electroweak energy scale (and perhaps because it doesn't exsist), physicists cannot be confident that "New Phenomena" aren't hiding just around the metaphorical corner of the energy spectrum. Indeed, many theories suggest we may find new particles and types of interactions just within the reach of the Tevatron collider.

These theories commonly predict additional vector gauge bosons analogous to the well-known W and Z

Chance of Snow **41º/29º**

Extended Forecast

Weather at Fermilab

Current Security Status

Secon Level 3

Wilson Hall Cafe

Thursday, October 12
-Santa Fe Black Bean
-Sloppy Joe
-Stuffed Peppers
-Sauteed Liver & Onions
-Baked Ham & Swiss on a Ciabatta Roll
-Assorted Slice Pizza
-Crispy Fried Chicken Ranch Salad

Wilson Hall Cafe Menu

Chez Leon

Thursday, October 12
Dinner
-Tapas
-Sangria
-Stuffed Mussels/Grilled Squid
-Grilled Prawns
-Chicken Liver Timbale w/Sherry Mayo
-Tarta de Hongos
-Pork Pimento Turnovers
-Marinated Oranges w/Gran Marnier

Wednesday, October 18
-Northern Italian Lasagna
-Romaine & Endive Salad w/Olives & Lemon Vinaigrette
-Poached Pears in Red Wine

Chez Leon Menu
Call x4598 to make your reservation.

Search

-Siri Steiner

Readers Write

Cold beer or bust

Jerry Zimmerman of the Particle Physics Division wrote in response to Tuesday's Director's Corner about the Nobel Prize for two scientists working on the COBE experiment.

Dear FT:
Just an interesting side light to that story. I actually worked on COBE. I worked for Ball Aerospace who designed and built the cryogenic super fluid helium system for the satellite.

We had to perform a release test of the cover. So the cryostat was in a very large vacuum chamber and externally cooled to space conditions before pyrotechnic bolts were fired to release the cover. As it cooled, the tension kept relaxing more and more and looked like it might actually fall off before it was fired. So I bet my boss a six pack of beer that it would fall off early. The day came for the test and the band was still on so I lost the bet. But since we worked in Cryogenics I couldn't give him warm beer so I froze it under a LN2 vent. It wrecked the beer, cans split open, but I paid my debt.
--Jerry Zimmerman, PPD

If you would like to submit a letter, write to us at today@fnal.gov.

In the News

bosons (called W-prime and Z-prime). These new particles would be very heavy at roughly 10 times the mass of the known vector bosons. In one interpretation, these theories can be tested by searching for heavy versions of the W or Z with the same couplings to the particles of the SM.

Physicists at DZero have performed a search for a charged W-prime boson decaying into an electron and neutrino (a common decay of the W+/- bosons). Because Tevatron experiments have already made precise observations of this decay process for the SM W+/-, it provides a very sensitive search for the W-prime. In one inverse femtobarn of Run II data, which is about an order of magnitude greater than the luminosity collected in Run I, no evidence for such particles has been seen. This can be translated into a 95 percent Confidence Level upper limit on the mass of new charged gauge bosons of 965 GeV/c^2. This limit extends the previous world's best limit (DZero, Run I) by 165 GeV/c^2 and allows the SM to breathe a very small sigh of relief...for now.

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New York Times, October 8, 2006:

Oh, for the Simple Days of the Big Bang

FOURTEEN years ago, when a Berkeley astronomer named George F. Smoot declared that he and his satellite, the Cosmic Background Explorer, or COBE, had detected the astrophysical equivalent of the fingerprints of God, his euphoria was easy to understand. For a few happy years, one of the last big pieces of the cosmological puzzle seemed to be in place — an explanation why the universe has blossomed into such an interesting place to live.

Had it not been for the whorls and dimples Dr. Smoot and his NASA collaborator, John C. Mather, found in the background radiation — the afterimage of the Big Bang — there would be no cosmic scenery. No galaxies or other vast conglomerations of matter, just a smooth expanse of visual nothing. Kansas instead of Colorado.

Subsequent discoveries have muddled the picture, so much so that last week's announcement that the two men will share a Nobel Prize in physics was almost bittersweet — an occasion to celebrate a pivotal moment in science but also to look back with nostalgia on more innocent times.

The creation story supported by the data from the COBE satellite had seemed almost tantalizingly complete. Dr. Smoot's smudges themselves weren't sticky enough to gather particles into globs the size of the Milky Way or the Virgo supercluster. But if you spiked the Big Bang with an invisible additive called

Above: Carsten Magass of Aachen University contributed to this search for heavy charged gauge bosons. **Below:** The electron algorithm group at DZero provides a crucial contribution to all analyses which rely upon good-quality electron identification. From left, top row: Venkat Kaushik, Jovan Mitrevski, Christian Schwanenberger, Meghan Anzelc, and Lei Wang. Middle row: Jonathan Hays, Olav Mundal, and Joseph Steele. Bottom row: Terry Toole, Marc Hohlfeld, and Michel Jaffre.

Result of the Week Archive

Accelerator Update

October 9 - 11

- One store provided 18 hours and 19 minutes of luminosity
- Vacuum burst causes Recycler to lose part of stash
- Power glitch quenches TeV, looses the store, ground faults magnet, trips Linac, Booster, and many systems - all caused by a mouse
- H- Source shorts out (not caused by a mouse)
- TeV off for a week

Read the Current Accelerator Update

Read the Early Bird Report

View the Tevatron Luminosity Charts

Announcements

dark matter — a clumping factor — and hot-rodded the theory with a brief, early burst of rapid expansion called cosmological inflation, you could get the tiny irregularities in the background radiation to sprawl into something like today's sky.

Read More (registration required)

Professional Development

New classes are always being added to the professional development schedule. For the most up-to-date course offerings, go to the web page.

Hydrant Flush

FESS Operations will perform the annual Main Site ICW Hydrant Flush from October 16 through October 21, between 6:00 a.m. and 6:00 p.m. "We'll be using hoses and diffusers where possible to minimize water in the streets and parking lots," said maintenance superintendent Greg Gilbert, "but there will be some instances where it's unavoidable." Questions should be directed to Steve Shirley at x3007 or LRP at 266-8627.

Upcoming Activities