

Calendar

Thursday, December 9

2:30 p.m. Theoretical Physics Seminar - Curia II

Speaker: M. Okamoto, Fermilab

Title: Full Determination of the CKM

Matrix with Unquenched Lattice QCD

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

Friday, December 10

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

4:00 p.m. Joint Experimental Theoretical Physics Seminar - 1 West

Speaker: J. Mohr, University of Illinois, Urbana/Champaign

Title: Studying Structure Formation and Dark Energy with Galaxy Clusters – In conjunction with the Workshop, "Fundamental Physics from Galaxy Clusters"

8:00 p.m. Fermilab Lecture Series - Auditorium

The Dawn of X-Ray Astronomy

Prof. Riccardo Giacconi, Johns Hopkins University

Tickets: \$5

Wilson Hall Cafe

First Collisions After Shutdown

On Tuesday afternoon at 3:20 p.m. the Main Control Room established the first post-shutdown store of the Tevatron. As expected, luminosity was rather low (10.0 E30), and the store was short-lived as the Tevatron quenched.

Kimio Niwa Awarded Nishina Memorial Prize

Kimio Niwa of Nagoya University in Japan was awarded the Nishina Memorial Prize in Tokyo Monday. The prize was in recognition of his leading role in finding the tau neutrino at Fermilab (DONUT experiment)



Kimio Niwa

and developing the automated techniques of nuclear emulsion necessary for the success of the experiment.

[read more](#)

Notes from the November UEC Meeting

At the November UEC meeting, the future of computing at Fermilab was discussed by Vicky White, head of Computing Division.

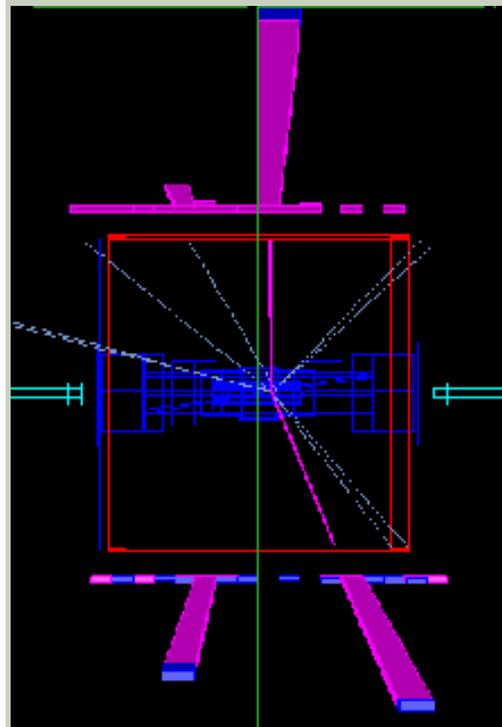


Jeff Spalding presented the plan for upgrades to the Tevatron, while Bill Foster provided an update on developments in the Fermilab Proton Driver project. Bill Flaherty

Fermilab Result of the Week

How Small is an Electron?

Searching for excited electron states



A striking CDF event from Run II with two electrons, a photon and a jet detected in the central calorimeter, with the electron-electron-photon invariant mass of 343 GeV. Tracks (shown in pink) pointing to the two central electromagnetic calorimeter clusters identify the electrons, and the third high energy central cluster without a matching track indicates the photon. (Click on image for larger version.)

Discovering the fundamental building blocks of matter has been an age-old tradition in physics. Presently, quarks and leptons are believed to be the most fundamental particles in nature. However, the number of quark and lepton species (six each) and their grouping into generations is quite reminiscent of the periodic table of elements, which suggests that quarks and leptons could be bound states of fewer, smaller particles. The discovery of their composite nature would have profound implications for our understanding of

Thursday, December 9

Sante Fe Black Bean soup
Marinara Meatball Sub \$4.75
Stuffed Manicotti \$3.75
Sauteed Liver & Onions \$3.75
Baked Ham & Swiss on a Ciabatta Roll
\$4.75
California Pizza \$2.75
Crispy Fried Chicken Ranch Salad \$4.75

[Wilson Hall Cafe Menu](#)

[Chez Leon](#)

Weather



Chance Rain **46°/38°**

[Extended Forecast](#)

[Weather at Fermilab](#)

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UEC Chair William Trischuk discussed on-site security at Fermilab and provided tips on how to prevent theft and report incidents. There was also a meeting with Jim Alexander of Cornell University, head of the Physics Advisory Committee (PAC).

[read more](#)

Fermilab Lecture Series Tomorrow Night

Nobel Laureate Riccardo Giacconi of Johns Hopkins University will present "The Dawn of X-Ray Astronomy" tomorrow night at 8:00 p.m. in Ramsey Auditorium.

The study of celestial sources in their X-ray light has provided a powerful new tool for discovery of new aspects of the



[Riccardo Giacconi](#)

Universe. The astrophysical problems, which were posed by the first discovery of extra-solar X-ray emissions, were solved over a period of four decades. This progress was made possible by the advent of ever more sophisticated observations and techniques. The scientific and technological developments in particular areas of interest to Giacconi will be described in tomorrow's lecture, which is in conjunction with the inaugural celebration for the Particle Astrophysics Center.

[read more](#)

Accelerator Update

particle physics. The Tevatron accelerator, with the world's highest energy, provides the microscope with the smallest resolution to probe this possibility.

If quarks and leptons do have substructure, they could be observed in excited states which decay by the emission of a photon. CDF physicists have studied dielectron+photon events from Run II to see if the masses of electron-photon pairs cluster around any particular value. The observation of such a mass 'bump' would be spectacular confirmation of new constituents of matter. The search, the first to be performed at a hadron collider, has excluded excited electron states with mass below 430 GeV, which is the world's best sensitivity in certain models. The observed events (one of which is shown above), while consistent in number with expectations from known sources, are very interesting because of the presence of very high energy electrons and photons. The CDF experiment continues to take more data to find out if these events are harbingers of new physics.



Heather Gerberich and Ashutosh Kotwal from Duke University worked on this analysis. (Click on image for larger version.)

[Result of the Week Archive](#)

Announcements

December 6 - December 8

- Operations put the TeV into shot setup on Monday, but the Main Injector had a problem with their phase detector.
- The Switchyard 120 beam problem was found.
- The I- Source died late on Monday night. The H- Source was brought on line early Tuesday.
- The TeV had a problem with an abort kicker.
- Operations established store 3821 with an initial luminosity of $10.03E30$ on Tuesday afternoon. Unfortunately, a separator spark caused a quench three hours later.

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

In the News

From *The New York Times*, December 7, 2004

String Theory, at 20, Explains It All (or Not)

by Dennis Overbye

They all laughed 20 years ago.

It was then that a physicist named John Schwarz jumped up on the stage during a cabaret at the physics center here and began babbling about having discovered a theory that could explain everything. By prearrangement men in white suits swooped in and carried away Dr. Schwarz, then a little-known researcher at the California Institute of Technology.

[Read more](#)

Upcoming Power Outages

Neutrino Labs A, B, D, E, & F

12/11/04 - These Neutrino Labs will be without power for four hours starting at 7 AM on Saturday.

Neutrino Labs A, C, & D

12/14 or 15/04 - These Neutrino Labs will be without power for one hour while they get connected to a generator. They will be on the generator for about a week and then go down for another hour to connect back to regular power.

Fermi Singers' Upcoming Performances

The Fermi Singers will give a Winter Concert early in 2005. They will also perform during lunch at Chez Leon on December 15 and at the Chapel at Naper Settlement on Friday, December 17 at 6:30 p.m.

[more information](#)

Fermilab Blood Drive

Mark your calendars for Fermilab's blood drive on December 13 and 14 from 8:00 a.m. to 2:00 p.m. at Wilson Hall, Ground Floor NE Training Room. Schedule an appointments below or by calling Lori at x6615. There is a prize drawing for all who donate - including 2 lunches for Chez Leon - courtesy of URA!

SciTech Exhibit

A T. rex Named Sue will be on display from November 27, 2004 to February 21, 2005 at SciTech in Aurora. Fermilab employees receive 2-for-1 admission on Friday, December 10, 2004 from 4:00 to 7:00 p.m.

[Upcoming Activities](#)