Fermilab Today

Thursday, September 16, 2004

Calendar

Thursday, September 16
9:00 a.m. - 6:30 p.m. TeV4LHC Workshop - 1 West
THERE WILL BE NO THEORETICAL PHYSICS SEMINAR THIS WEEK
3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
4:00 p.m. Accelerator Physics and Technology Seminar - Huddle (NOTE LOCATION, near the Control Room)
Speaker: J.-P. Carneiro, DESY
Title: Photo-Injectors of DESY Superconducting SASE FEL's

Friday, September 17
9:00 a.m. - 6:30 p.m. TeV4LHC Workshop - 1 West
3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
4:00 p.m. Joint Experimental Theoretical Physics Seminar - 1 West
Speaker: K. Matchev, University of Florida
Title: The Tevatron-to-LHC Physics Roadmap

Wilson Hall Cafe

Thursday, September 16
Santa Fe Black Bean Soup
Marinara Meatball Sub $4.75
Butter Crumb Baked Fish $4.00
Sauteed Liver & Onions $3.75
Baked Ham & Swiss on a Ciabatta Roll $4.75
Sausage & Sweet Onion Strombolis $3.25
Crispy Fried Chicken Ranch Salad $4.75
Wilson Hall Cafe Menu
Chez Leon

Lab Services Polishes Its Customer Service Skills at Annual Picnic

(Left to Right) Joy Thomas, Gayle Stephens, and Shelley Krivich collect apples on the way to the LSS picnic. (Click on image for larger version.)

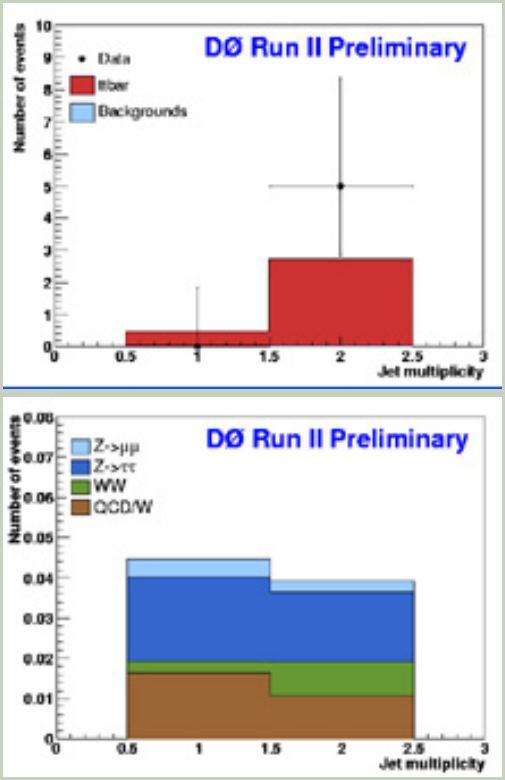
On September 1, more than 75 employees and contractors attended the annual Lab Services Section picnic at the Users Center. Following lunch, LSS staff held a section meeting and participated in a training activity.

During the meeting, Laboratory Services Section Head Kay Van Vreede discussed goals and initiatives for the upcoming performance year. This year, LSS is focusing on improving and enhancing services to the lab. After the meeting, Linda Bennett, an invited speaker from the Tri City Services, presented a talk on workplace etiquette. Bennett emphasized that the skills she was presenting are just common courtesies, but practicing them are important to building teams and providing service.

Lab Services Deputy Department Head Cindy Crego commented about the success of the annual picnic. "We look forward to our annual picnic," she said. "It gives us an opportunity to get together as

Fermilab Result of the Week

DZero: Mining 24 Carat Pure Top Quarks



(Top) The distribution of the number of measured jets in events containing an electron, a muon and at least one lifetime-tagged jet. (Bottom) A blow-up of the expected background contributions to this extremely pure sample of top events. (Click on images for larger version.)

The heaviest known elementary particles, the top quarks, may have masses comparable to gold, but they won't be found sifting with a pan in the bottom of a creek bed. Fortunately, particle physicists in the DZero experiment know of other ways to strike a rich sample of top quarks. Recently, Sara Lager and Christophe Clement of
Stockholm University, Sweden, working from an analysis developed in part by Prolay Mal from the Tata Institute, India, began measuring a collection of events with an expected purity higher than 98%, otherwise known as 24 carat by the gold

Weather

Mostly Sunny 72º/50º

Extended Forecast

Weather at Fermilab

Current Security Status

Secon Level 3

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a group for a little fun and relaxation, but it is also an opportunity for us to talk about our goals and focus our efforts for the year."

Fermilab Health Fair Benefits Employees

The massage therapy booth was very popular at last week's health fair. (Click on image for larger version.)

You weren't halucinating if you heard drums banging or saw employees doing yoga in Wilson Hall last week. More than 400 employees attended the Fermilab's Health Fair last Thursday, making it one of the most successful fairs so far. From checking vision to blood pressure, a number of health screenings were available for employees. Although many of the booths had a steady turnout, the massage therapy booth was particularly popular. "The fair was successful," said Employee Assistance Counselor, Bernie Dugan, who was one of the fair organizers. "Employees took advantage of the free screenings and information from the health representatives who were available to answer questions."

Accelerator Update

Christophe Clement of Stockholm University

standard. Top quarks make a swift transition to bottom quarks, radiating a W boson. This comes from the mass of the top quark, which allows it to be uniquely the only known strongly interacting particle whose decay to lighter quark flavors is nearly unaffected by the mass of the W boson, taking the weakness out of the weak interaction.

Lager and Clement focused on the most defining properties of the decays of top quarks and compared these with the probability to

Sara Lager of Stockholm University

reproduce these signatures through other high pT events (fools-gold). The combination of having top quark events in which both the top quark and the pair produced top anti-quark particles decay to separate lepton flavors, namely the electron and muon, refined significantly the purity of the top sample. They added to this combination the requirement that the b-quark coming from the top decay be identified through the secondary decay vertex of a long-lived b-quark containing hadron, long-lived because unlike the top quark, the weak decay of the b-quark is truly weak. This selection predicts a sample of 2.70 top quarks with a background of 0.04 events. They measured 5 events. This corresponds to a top cross section measurement of $11^{\{+5.8\}}_{\{-4.3\}}$+/-1.4 pb.

During the shutdown, Fermilab Today will offer a series on the history and operation of the laboratory's accelerator complex. The pre-accelerator is the second in the series.

The Preaccelerator is the beginning of the Fermi accelerators. The H- ions created there go through the 750 keV line, through the Linac's drift tubes and cavities, through the 400 MeV transfer line, and on to the Booster where the H- ions get stripped of the electrons, leaving just a proton to continue the journey.

Read the Current Accelerator Update

View the Tevatron Luminosity Charts

In the News

From the ***Chicago Sun-Times***, September 15, 2004

New theory vies with Big Bang

by Sandra Guy

The Big Bang may have been smaller than we suspect. That's the intriguing conclusion of two researchers at the University of Chicago who ponder the mysteries surrounding the origin of the universe.

The Big Bang is the dominant scientific theory about the origin of the universe, and it asserts that the universe was created sometime between 10 billion and 20 billion years ago from a cosmic explosion that hurled matter in all directions.

Read more

While top physics at DZero cannot claim a return to the days of bubble chamber events, where every event was a discovery, we are confident that the study of high purity samples of top quarks will shed more light on the nature of nature's heaviest elementary particle.

Russ Rucinski (left) and Peter Simon, both of Fermilab, are key members of the team that maintains the DZero physical plant, crucial for the collection of quality data. Many maintenance activities are taking place during the present accelerator shutdown. (Click on image for larger version.)

Result of the Week Archive

Announcements

NALWO Talk on Peru

NALWO invites Fermilab women to a talk on Peru by Cynthia Albright on Thursday, September 19 at 10:00 a.m. at the Users' Center. Refreshments will be served. Contact Sue Mendelsohn at x5059 or click here for more information.

Wilson Hall Elevator Maintenance

Elevator 1 and Elevator 4 will be out of service on Thursday from 9:00 a.m. to 11:00 a.m. for maintenance. Elevator 2 and Elevator 3 will be out of service on Friday from 9:00 a.m. to 11:00 a.m. for maintenance. For more information contact Stan Boyson at x4753.

Listserv Downtime Scheduled

As part of the listserv upgrade process the system will be unavailable from 6:00 a.m. to about 7:30 a.m. on Thursday, September 16 when DNS is reloaded.

More information is available online.

Upcoming Power Outages
September 24
Wilson Hall (and all of Fermilab except for the Village and the Main Injector) will have no power for half an hour beginning around 7:00 a.m.