Fermilab Today

Tuesday, Dec. 7, 2010

Calendar

Have a safe day!

Tuesday, Dec. 7
1:30 p.m.
Particle Astrophysics Seminar
(NOTE DATE and TIME) - One West
Speaker: Eric Switzer, University of Chicago
Title: Some Aspects of Cosmological Helium
3:30 p.m.
DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR THIS WEEK

Wednesday, Dec. 8
1:30 p.m.
Special Seminar - One West
Speaker: Amanda Petersen, Fermilab
Title: Visa Extensions - An Overview
3:30 p.m.

Feature

Join your co-workers Dec. 17 for a holiday feast

To celebrate the holiday season, Fermilab wants all those who help make the laboratory such a special place to join together for an evening of food and entertainment. A potluck party followed by a talent show will take place from 5-8:30 p.m. on Friday, Dec. 17.

Between 5 and 6:45 p.m., Fermilab employees, retired employees, users, contractors, funding agency employees and their families and friends will gather in the Wilson Hall atrium to enjoy a wide variety of cultural cuisine. Please bring to share an appetizer, side or main dish that can supply at least 20 tasting portions. Foods representing your ethnicity or culture will be appreciated. The laboratory will provide non-alcoholic beverages.

Anyone bringing food to the event can drop off their dish between 4:30 and 5 p.m. in the Wilson Hall atrium. Volunteers will be waiting, ready to assist in the labeling and placement of your dish. To assist those with food allergies,

Director's Corner

Director's Corner to appear Wednesday

The Director's Corner, which normally appears on Tuesday each week, will be included in Wednesday's issue of *Fermilab Today*. Due to the schedule change, we've included the Division/Section/Center column, which normally runs on Wednesdays, below.

From the Accelerator Physics Center

The LHC splendor

Vladimir Shiltsev, director of the Accelerator Physics Center, wrote this week's column.


Vladimir Shiltsev

During the past nine months, we've witnessed great progress in the commissioning of the Large Hadron Collider. On average, the machine's peak luminosity—the maximum rate at which it produced 7-TeV proton-proton collisions--increased exponentially during that period, doubling every two weeks (see plot below). In less than six months, it reached 205×1030 cm^{-2} s^{-1}, or 2 percent of the peak luminosity that scientists designed the machine to produce. That level already is about half of the current Tevatron peak luminosity record of 402×1030 cm^{-2} s^{-1}. It exceeds previous luminosity records set at CERN for 90-GeV electron-positron collisions (102×1030 cm^{-2} s^{-1}, achieved by the Large Electron Positron Collider in 1998) and for 31-GeV proton-antiproton collisions (140×1030 cm^{-2} s^{-1}, achieved by the Intersecting Storage Rings in 1982).

How long can the exponential rise in LHC peak luminosity continue when CERN resumes proton-proton collisions in 2011? By looking at the plot below one could get the impression that it would take only a few months for the LHC to reach its design peak luminosity. That would be great. In reality, however, advances will become more difficult and slow down, as we've seen in the commissioning of particle colliders in the past. Our own Tevatron collider, for example, doubled its peak luminosity every week during three months in early 1987 and exceeded 1 percent of the peak luminosity of 1.0×1030 cm^{-}

DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
4 p.m.
Fermilab Colloquium - One West
Speaker: Taekjip Ha, University of Illinois
Title: Revisiting the Double Helix

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

Upcoming conferences

Campaigns

Take Five

Weather

Sunny
17°/5°

Extended Forecast
Weather at Fermilab

Current Security Status

Secon Level 3

Wilson Hall Cafe

Tuesday, Dec. 7

- Breakfast: Bagel sandwich
- Tomato bisque soup
- Lemon pepper club
- Beef fajitas
- Korean garlic chicken
- Grilled chicken Caesar salad wrap
- Assorted sliced pizza
- Rio Grande taco salad

Wilson Hall Cafe Menu

Chez Leon

Wednesday, Dec. 8
Lunch
- Swordfish w/ lemon butter sauce
- Spinach risotto
- Lemon Napoleon

Thursday, Dec. 9
Dinner
- Spinach & strawberry salad
- Lobster tail w/drawn butter
- Spaghetti squash w/green onions
- Sautéed pea pods
- White chocolate-raspberry

please fill out an ingredient card given to you by a volunteer. Those without offices in the high-rise, who will be attending the symposium on the 25th anniversary of the first proton-antiproton collisions at the Tevatron and need to drop off food earlier, can store it in the small dining room and One North starting at noon. Each dish must have a serving utensil. All dishes must be picked up after the evening performances.

At 5:30 p.m., children from the Fermilab daycare will sing Christmas songs in the Fermilab atrium. From 7 to 8:30 p.m., the evening's entertainment will take place in Ramsey Auditorium. Fermilab theorist Joe Lykken will emcee the event, which will include skits, songs and more. View the talent show program and find a section of frequently asked questions for the potluck at the party Web site.

Special Announcement

Trio of Chicago scientists gives dark matter talk Dec. 9

A trio of University of Chicago scientists, including Juan Collar, Carlos Wagner and Rocky Kolb will give a dark matter presentation Thursday.

The talk, titled "Chicago's Dark Matter: WIMPs of the Underground" is presented by the Chicago Council on Science and Technology. It will take place at 6 p.m. on Thursday, Dec. 9. The trio of dark matter scientists will discuss the existence of and hunt for the WIMP, the best candidate for dark matter. The particle candidate is a weakly interacting massive particle (WIMP) that scientists suspect was produced shortly after the universe began. If WIMPs are the dark matter particles, scientists should be on the threshold of producing them at accelerators like the LHC or the Tevatron at Fermilab, or detecting them underground.

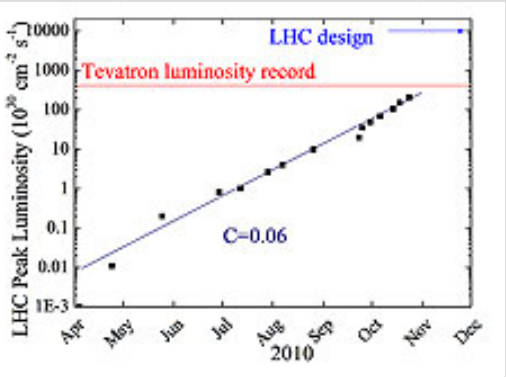
A 5 p.m. reception will precede the talk. The event will take place in the Hughes Auditorium on Northwestern University's Chicago campus, 303 East Superior. Tickets are $10 in advance and $15 at the door. Student tickets are $5. Discounted parking is available for the first 50 attendees at the 222 E. Huron St. garage.

Special Announcement

^{2} s^{-1} that the Tevatron was designed to achieve. But it took another year and a half until the Tevatron exceeded this design luminosity.

Progress beyond the initial stage requires careful step-by-step identification, analysis and resolution of many bottlenecks in an accelerator. As my good, old friend and former Tevatron accelerator scientist Rolland Johnson wrote in a 1987 Particle Accelerator Conference report about the Tevatron: “Every day there is evidence of increased understanding and improved performance. There is every reason to believe that the next two orders of magnitude in luminosity will come in good time.”

I believe this will apply to the LHC as well, and we all look forward to seeing steady LHC luminosity progress toward its design goal.



Accelerator Update

Dec. 3-6

- Five stores provided ~33.5 hours of luminosity
- Linac personnel repaired LRF1 power amplifier vacuum problem
- Cryo system and vacuum technicians work on Tevatron
- Operators find low beta quadrupole ground fault, caused by LCW leaks
- Switchyard tuning required for T-1008 beam
- Store 8335 quenched due to a broken crankshaft for the C1 wet engine

*The integrated luminosity for the period from 11/29/10 to 12/6/10 was 61.97 inverse picobarns. NuMI reported receiving 8.1E^{18} protons on target during this same period.

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

Announcements

crème brulée

Chez Leon Menu
Call x3524 to make your reservation.

Archives

Fermilab Today

Director's Corner

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

Unsubscribe from *Fermilab Today*

Call for retirement party information

'Tis the season for celebrations and we know that there are quite a few retirement events taking place during the next month or two. If you are planning a retirement event and you want to advertise the event through *Fermilab Today*, please send an e-mail containing the information with the subject line "Fermilab retirement event" to today@fnal.gov.

In the News

Quest to find a menagerie of exotic particles

From ***Discovery News***, Dec. 4, 2010

The hypothetical "X" particle recently suggested as a dark matter candidate by scientists at Brookhaven isn't the only exotic particle that physicists have proposed in recent years.

In fact, Fermilab's CMS collaboration has an "exotica hotline" staffed by about 10 physicists who review the previous day's collisions looking for anything that might break the rules or expectations of the Standard Model. And with its unprecedented energies, the Large Hadron Collider is hot on Fermilab's heels. It could turn up some exciting new physics, too: mini black holes, large extra dimensions, and a host of exotic subatomic particles, just to name a few.

Here's a sampling of some of the weirder hypothetical particles that could turn up at the LHC:

Squarks and Sleptons: Supersymmetry (SUSY) attempts to go beyond the Standard Model to help correct some of its shortcomings: namely, that the Standard Model's calculations for the masses of certain particles predict far heavier masses than found in nature.

SUSY addresses this by predicting a host of mirror particles (superpartners, or shadow particles) that match up with the various known regular particles: for instance, quarks and leptons pair up with squarks and sleptons. It's like Bizarro World for subatomic particles.

Read more

Latest Announcements

ES&H system patching - Dec. 8

Free webinar on navigating a changing tax environment - Dec. 14

Indian Creek Road will be closed at MI-8 on Dec. 7 & 8

Is your iPod affecting your hearing? - Dec. 8

Submit a topic suggestion for Disability Awareness Seminar

Scrappers Club meets today

Wilson Hall super science stocking stuffer sale - Dec. 8-9

Fermilab Arts Series presents "A Celtic Christmas" - Dec. 11

Winter Holiday Party Special Dec. 10

Fermilab Art Gallery: Artist reception - Dec. 10 5-7 p.m., Painting demo - Dec. 15 11:30 a.m.

Fermilab Today holiday schedule

Open basketball at the gym

Folk dancing on Thursdays in Dec.

Free martial arts class - Dec. 15

Annual potluck party and skits Dec. 17

Symposium celebrates 25th anniversary of first collision at Tevatron Dec. 17

Fermilab Blood Drive - Dec. 20 & 21 (Walk in only)

Fermilab Arts and Lecture Series Box Office Winter schedule

Users Office holiday hours

Accelerate to a Healthy Lifestyle Program through Dec. 31

Disney On Ice presents "Toy Story 3" Feb. 2-13

Submit an announcement