Fermilab Today

Friday, March 12, 2010

Calendar

Have a safe day!

Friday, March 12
11 a.m.
Special Joint Experimental-Theoretical Physics Seminar - One West
Speakers: Matthew Herndon, University of Wisconsin, Gregorio Bernardi, LPNHE, University of Paris
Title: Joint CDF/DZero Seminar: New Results (to be) Presented at Winter Conferences
3:30 p.m.
DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
4 p.m.
Joint Experimental-Theoretical Physics Seminar - One West
Speaker: Clem Pryke, University of Chicago
Title: First Direct Search for Gravitation Modes in the CMB Polarization

Monday, March 15
THERE WILL BE NO PARTICLE ASTROPHYSICS SEMINAR THIS WEEK
3:30 p.m.
DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
4 p.m.
All Experimenters' Meeting - Curia II
Special Topics: Completion of ArgoNeuT Run; NuMI Target Pile Cooling

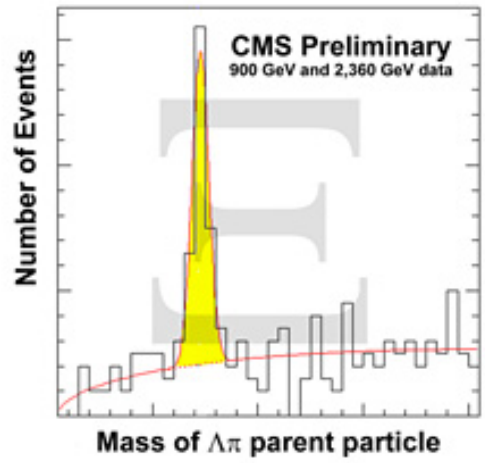
Click here for NALCAL, a weekly calendar with links to additional information.

Upcoming conferences

Campaigns

CMS Result of the Month

The strangest thing we've ever seen



CMS has observed the Ξ baryon by looking for events containing both lambda baryons and pi mesons. If these two particles are observed and came from a single parent particle, we expect to see a narrow peak in our data. This measurement used data taken in December, including the data taken during the period when the LHC ran at record-breaking energy, 20 percent higher than the Tevatron.

Some things are far stranger than others, and this week I'm reporting on the strangest thing CMS has seen so far. "Strange" in this context doesn't mean "weird" but rather describes something about the quarks inside the newly rediscovered particle.

There are many particles that are produced at the LHC. One particular type is called the baryon. Baryons are a class of particles that contain exactly three quarks. The most familiar baryons are the proton and neutron, which are made of up and down quarks. Indeed, the up and down quarks are all that is necessary to make up our universe. However, we know that four other kinds of quarks exist: strange, charm, bottom and top. Finding particles with these additional quarks is an important way-station in the CMS collaboration's journey to fully understanding our detector.

One interesting particle is the Ξ (the Greek letter xi) baryon. Discovered in 1964, this type of particle is also called the cascade particle because of its distinctive decay pattern. All baryons contain three quarks, but in order to

Recovery Act Feature

Wilson Hall to receive new emergency generator

Fermilab obtained the current emergency generators in Wilson Hall as government surplus from the Korean War.

After close to 60 years in service, the emergency backup generators in Wilson Hall will retire this spring.

First used in the Korean War in the 1950s, Fermilab obtained the two generators in 1975 from government surplus and made them key components in the emergency power system in Wilson Hall. But after years of ever-increasing maintenance and questionable reliability, Fermilab will remove the two generators and replace them with a single, diesel-powered one.

"The generators run our fire pumps and are a very important safety unit in case of an emergency," said Fermilab engineer Jim Niehoff. "Replacing the old generators with a single unit will greatly increase reliability."

With funding provided by the American Recovery & Reinvestment Act, Fermilab purchased the new generator from Patten Industries, a local distributor for Caterpillar, for roughly $150,000. Fermilab awarded the contract for the excavation and removal of the old generators and the installation of the new one to Pandecon, Inc. in North Aurora for roughly $260,000.

Similar to the type of emergency generator that hospitals use, the new unit will provide emergency power to Wilson Hall for 24 to 36 hours, depending on the electrical demand in the building. "If the electricity gets cut off, the generator automatically comes on in 10

Take Five

Tune IT Up

H1N1 Flu

For information about H1N1, visit Fermilab's flu information site.

Weather

Showers
55°/41°

Extended Forecast
Weather at Fermilab

Current Security Status

Secon Level 3

Wilson Hall Cafe

Friday, March 12
- Chorizo burrito
- Chunky vegetable soup w/ orzo
- Buffalo chicken wings
- Cajun breaded catfish
- Teriyaki pork stir-fry
- Honey mustard ham & swiss panini
- Assorted slices of pizza
- Carved turkey

Wilson Hall Cafe menu

Chez Leon

Wednesday, March 17 Lunch
- Orange-herb game hens
- Buttered green beans
- New potatoes
- Key lime pie

Thursday, March 18 Dinner
- Bacon, potato & gruyere souffle
- Medallions of beef with morel sauce
- Parmesan orzo
- Steamed asparagus
- Creme brulee

Chez Leon menu

be a Ξ baryon, two of those quarks must be strange quarks. Scientists observe these particles by their decay into a π (pi) meson and a λ (lambda) baryon. The lambda baryon contains a single strange quark and CMS collaborators observed the lambda baryon in December.

CMS physicists searched in their data, looking for collisions in which lambda baryons and pi mesons were created. They then asked the question “If these two particles were the decay product of a single particle, what would be the mass of the parent particle?” They then plotted the mass of the potential parent. If the two particles didn’t have a single parent, all masses would occur with nearly equal frequency. However, if they had a single parent, we expect to see a narrow peak on a wide background. As seen in the figure above, these scientists clearly observed the Ξ baryon with the mass we expect from earlier measurements.

With this success, CMS continues its rediscovery of the Standard Model.

-- Don Lincoln

These physicists from the University of Colorado, Boulder, performed this search for Ξ baryons.

seconds,” said Greg Klyczek of Patten Industries.

A crew of 14 workers from Pandecon, Inc. will first remove the old generators and then install the new one, which weighs about 30,000 pounds and is roughly the size of a small train car. It will reside outside Wilson Hall, adjacent to the southwest corner of the building. Visual screening and landscaping will be added after the construction project is complete.

Excavation of the area is scheduled to begin next week. Drivers and pedestrians should take caution and be aware of the construction that will occur on the west side of the building.

Pandecon, Inc. expects to hook up the new generator in June.

-- Elizabeth Clements

Announcements

Watch your mail station for the arrival of your Fermilab Statement of Benefits

Employee Discount at Batavia Rosati's

Harlem Globetrotters Special Ticket Price - April 15

Qi Gong, Mindfulness and Tai Chi Easy for Stress Reduction

Fermilab Management Practices seminar beginning Feb. 11

International Folk Dancing, Thursday evenings at Kuhn Barn

Argentine Tango through March 31, student discount

Hiring summer students for 2010

Calling all softball players

Robert Oppenheimer play at Waubonsee in Sugar Grove - March 20

Influence and Motivation: The Empowering Leader course offered March 24

PowerPoint 2007 Advanced course offered March 25

Call x3524 to make your reservation.

Archives

Fermilab Today

Result of the Week

Safety Tip of the Week

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

These physicists played important roles in track reconstruction in the first collisions at CMS. Efficient track reconstruction makes this and many other analyses possible.

In the News

A first look at the Earth interior from the Gran Sasso underground laboratory

From ***INFN***, posted Mar. 11, 2010

The Borexino Collaboration announced the observation of geo-neutrinos at the underground Gran Sasso National Laboratory of Italian Institute for Nuclear Physics (INFN), Italy. The data reveal, for the first time, a definite anti-neutrino signal with the expected energy spectrum due to radioactive decays of U and Th in the Earth well above background.

The International Borexino Collaboration, with institutions from Italy, US, Germany, Russia, Poland and France, operates a 300-ton liquid-scintillator detector designed to observe and study low-energy solar neutrinos. The low background of the Borexino detector has been key to the detection of geo-neutrinos. Technologies developed by Borexino Collaborators have achieved very low background levels. The central core of the Borexino scintillator is now the lowest background detector available for these observations. The ultra-low background of

English country dancing - Sunday, March 28

Requesting donations for Fermi Maternity Closet

Excel Programming with VBA class offered March 30 and April 1

March 31 deadline to enroll young adult dependents

Intermediate/Advanced Python Programming offered May 19-21

Interpersonal Communication Skills offered March 16

Word 2007 Advanced class offered March 16

Fermilab Blood drive had a $100 gas card winner

DreamWeaver CS3: Intro offered March 16

Facilitating Meetings That Work course offered March 17

Additional activities

Submit an announcement

Classifieds
Find new classified ads on *Fermilab Today*.

Borexino was developed to make the first measurements of solar neutrinos below 1 MeV and has now produced this first, firm observation of geo-neutrinos.

Read more