

## Calendar

[Have a safe day!](#)

**Thursday, Oct. 15**

**2:30 p.m.**

[Theoretical Physics Seminar](#) -

Curia II

Speaker: Tanju Gleisberg, SLAC National Accelerator Laboratory

Title: Multiparton Production at NLO with BlackHat and Sherpa

**3:30 p.m.**

DIRECTOR'S COFFEE

BREAK 2nd Flr X-Over

**4 p.m.**

[Accelerator Physics and Technology Seminar](#) - One

West

Speaker: Yipeng Sun, CERN

Title: Beam Dynamics Aspects of Crab Cavities in the Large Hadron Collider

**Friday, Oct. 16**

**3:30 p.m.**

DIRECTOR'S COFFEE

BREAK 2nd Flr X-Over

THERE WILL BE NO JOINT EXPERIMENTAL-

THEORETICAL PHYSICS

SEMINAR THIS WEEK

**8 p.m.**

[Fermilab Lecture Series](#),

Ramsey Auditorium, \$7

Dr. Domenico Meli, Indiana University presents: Galileo and the Investigation of Nature

[Click here](#) for NALCAL, a weekly calendar with links to additional information.

## Campaigns

[Take Five](#)

[Tune IT Up](#)

[Weather](#)

## Feature

### U.S. LHC Users ready for anticipated restart



Lawrence Berkeley National Laboratory hosted the second annual meeting of the U.S. LHC Users' Organization.

More than 80 scientists attended the second annual meeting of the U.S. LHC Users' Organization, held Sept. 25 to 26 at Lawrence Berkeley National Laboratory. The users' organization represents about 2,000 U.S. collaborators who work on the LHC.

"USLUO helps the U.S. LHC community work effectively with their colleagues at CERN while they are in the United States and to adapt to work at CERN," said USLUO Chair Harvey Newman, a physicist at Caltech.

At the meeting, members of the ALICE, ATLAS, CMS and LHCb experiments provided status reports and updates on the LHC and U.S. LHC Accelerator Research Program. All reports emphasized the amount of good work achieved during the shutdown and anticipation of first beam this November.

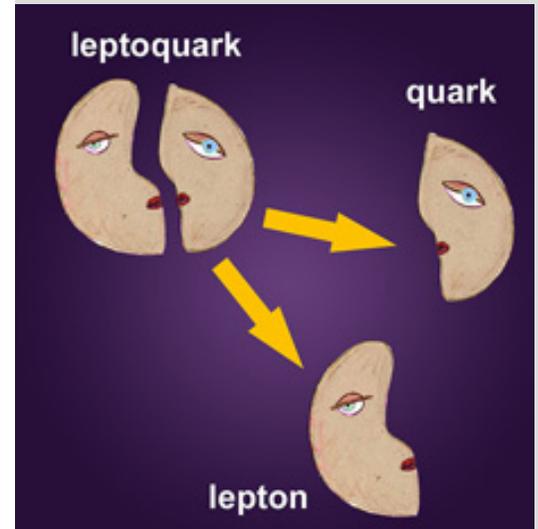
In addition, a poster session featured contributions from several graduate students. Yousi Ma of Caltech and Lauren Tompkins of Lawrence Berkeley National Laboratory won the poster competition.

A presentation from Charles Petit, a science writer for Knight Science Journalism Tracker and former reporter for the *San Francisco Chronicle* and *U.S. News and World Report*, provided another meeting highlight. He advised physicists to be patient and helpful with reporters, downplay hype around the restart until the LHC is up and running and to answer all questions raised by the press and public. "The public doesn't much understand science," Petit said, "but it likes science."

During an open session, attendees raised issues over the cost of living and increasing burdens of taxation for U.S. collaborators

## Fermilab Result of the Week

### Leptoquarks: subatomic soul mates



A leptoquark is a hypothetical particle that might have existed in the first few fractions of a second after the Big Bang. While no evidence for them has been observed, if they did exist, they would provide an important new insight into the origins of the universe.

In Plato's "Symposium," the character Aristophanes explains his theory of the origins of romantic love. In the beginning, people consisted of two heads and eight limbs. Two people were blended into one. Following an attack on the gods, Zeus split people into two and thus men and women were formed. According to him, we've been looking for our other halves ever since.

Today's Result of the Week covers a similar idea. Scientists studying the world have dug down to the very basics and found that all of the universe can be formed through a mixture of two basic particles: quarks and leptons. Quarks are found in the protons and neutrons at the center of atoms. The familiar electron orbiting the atom is a lepton. We now know of three distinct families of quarks and leptons. The first contains the up and down quarks, as well as the electron and electron neutrino leptons. This family makes up ordinary matter. The second family contains charm and strange quarks, along with the muon and muon neutrino. The third family, the one of interest today, consists of the top and bottom quarks, along with the tau lepton and its neutrino.

Just like the men and women in Plato's

 **Rain**  
44°/36°

[Extended Forecast](#)  
[Weather at Fermilab](#)

**Current Security Status**

[Secon Level 3](#)

**Wilson Hall Cafe**

**Thursday, Oct. 15**

- Apple sticks
- Santa Fe black bean soup
- Steak tacos
- Chicken Wellington
- Chimichangas
- Baked ham and swiss on a ciabatta roll
- Assorted slices of pizza
- Crispy fried chicken salad

[Wilson Hall Cafe Menu](#)

**Chez Leon**

**Thursday, Oct. 15**

**Dinner**

- Spring mix salad with ruby grapefruit and toasted almonds
- Lamb chops with herb and olive crust
- Orange-scented rice pilaf with fennel
- Vanilla ice cream with espresso-caramel sauce

**Wednesday, Oct. 21**

**Lunch**

- Cherry-glazed cornish hens with sourdough cherry stuffing
- Steamed broccoli
- Oatmeal pecan pie

[Chez Leon Menu](#)

Call x3524 to make your reservation.

**Archives**

based at CERN. Newman confirmed that USLUO can help compile and distribute information and advocate on behalf of its members regardless of their experiment.

Future USLUO meetings will provide opportunities for young physicists to present their results.

— *Jen Nahn*

**University Profile**

## Imperial College London



Imperial College physicists at the Blackett Lab in London. Front row from left: Ray Beuselinck, Ajit Kurup, Leo Jenner, Jurgen Pozimski, John Hassard, Morgan Wascko. Back row from left: Ken Long, Nicolas Osman, Gavin Davies, Joe Walding, Pawel Guzowski, Yoshi Uchida.

**NAME:**

[Imperial College London](#)

**HOME TOWN:**

London, England

**MASCOT:**

We don't really have a mascot, but we do have a motto: "Scientia Imperii decus et tutamen," which means "knowledge is the adornment and protection of the Empire."

**SCHOOL COLORS:**

Blue and white.

**PARTICLE PHYSICS COLLABORATIONS:**

Aleph, Babar, CALICE, CMS, COMET/PRISM, DZero, LHCb, LISA, MICE, MUCOOL, Neutrino Factory/Muon Collider, Project X, SciBooNE, SuperNEMO, T2K, ZEPLIN III.

**EXPERIMENTS AT FERMILAB:**

DZero, MUCOOL, Project X, SciBooNE, and accelerator collaboration with MICE and the Neutrino Factory/Muon Collider.

"Symposium", these quarks and leptons have very different properties. But what if these two particles were decay products of a hybrid particle called a leptoquark? A leptoquark would contain the properties of both quarks and leptons, and we would find it through its decay into them.

DZero scientists looked for a so-called "third generation leptoquark," a particle that could decay into the particles of the third family. This leptoquark would decay into either a top quark and a tau lepton, or a bottom quark and a neutrino. Because the top quark is so heavy and hard to make, they searched for the second type of decay.

After studying 200,000 events with the right properties, the scientists [concluded](#) that they saw only the expected number of events, without the excess that scientists require to prove leptoquarks exist. However, this experiment ruled out a broader range of masses than earlier experiments. In short, while still possible, the leptoquark idea is now a little less likely. Nevertheless DZero scientists continue searching for the new phenomena that one day could change our view on the origin of the universe.

— *Don Lincoln*

Sergey Uzunyan (left) and David Hedin (right) from Northern Illinois University were behind this interesting study. The team working on Higgs searches in the same final states also made important contributions to this analysis.



**Dookee Cho**  
Boston Univ.

**Yuji Enari**  
LPNHE, Paris  
France

Most of the day-to-day computing at DZero occurs on a cluster of computers running Linux. These two physicists have primary responsibility for keeping these computers running.

[Fermilab Today](#)

[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/](http://www.fnal.gov/today/)

Send comments and suggestions to:  
[today@fnal.gov](mailto:today@fnal.gov)

Visit the Fermilab [home page](#)

## SCIENTISTS AND STUDENTS AT FERMILAB:

Currently we have nine faculty (SciBooNE, DZero and the accelerator collaborations with NuFact and MICE), two postdocs (DZero and MICE), five grad students (SciBooNE and DZero), one research fellow (DZero), one Fermilab International Fellow (DZero) and two Fermilab-Imperial Joint Fellows (MUCOOL, Project X).

## COLLABORATING AT FERMILAB SINCE: 1972

## MAJOR CONTRIBUTIONS TO FERMILAB EXPERIMENTS:

For DZero: trigger, Level Three (and grid) computing, leadership of Higgs search and B physics groups; RF cavity R&D. For SciBooNE: proposal and leadership of collaboration, design of muon range detector and charged current quasi-elastic analysis.

## PARTICLE PHYSICS RESEARCH FOCUS:

Discovery of the Higgs (at both the Tevatron and LHC), precise measurements of CP violation parameters in the quark sector, precise measurements of neutrino masses and mixing angles and the hunt for CP violation in the lepton sector, as well as discovery of dark matter, gravitational waves, the search for Majorana neutrinos and development of the next generation of accelerators.

## WHAT SETS PARTICLE PHYSICS AT IMPERIAL COLLEGE LONDON APART?

We are one of the largest particle physics groups in the United Kingdom, with nearly 150 people. We have a broad range of experimental efforts covering accelerators, collider physics and neutrino physics. We also have nine current and former spokespeople from 11 particle physics collaborations among our faculty.

## FUNDING AGENCY:

The Science and Technology Facilities Council, Royal Society and Fermilab.

## FAVORITE NATIONAL LABORATORY:

Fermilab (but don't ask us what we said when CERN and J-PARC posed the same question).

**Imperial College**  
London

View all [University profiles](#)

## Accelerator Update

### Oct 12-14

- Three stores provided approximately 35.5 hours of luminosity
- TeV studies
- Two-hour access on Wednesday morning for Booster, MI, NuMI and MiniBooNE

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

## Announcements

### Latest Announcements

[Chicago Blackhawks discount tickets available](#)

[Last day to claim your bike outside Wilson Hall](#)

[International folk dancing tonight at Kuhn Village barn](#)

[Fermilab Toastmaster can help you find your voice - Oct. 15](#)

[Applications of High-Intensity Proton Accelerators workshop - Oct. 19-21](#)

[Access 2007: Intro class - Oct. 20](#)

[Interpersonal Communication Skills - Oct. 21](#)

[Children's Halloween Party - Oct. 23](#)

[Buttered Rum performs at Fermilab Arts Series- Oct. 24](#)

[Director's Award nominations accepted until Oct. 26](#)

[Conflict Management and Negotiation Skills - Oct. 28, Nov. 11](#)

[Facilitating Meetings That Work - Nov. 4](#)

[Fred Garbo Inflatable Theatre at Fermilab Arts Series - Nov. 7](#)

[Process Piping \(ASME B31.3\) class offered in October and November](#)

["The Night Before Christmas Carol" at Fermilab Arts Series - Dec. 5](#)

## Einstein's theory of general relativity may have been flawed

From *USA TODAY*, Oct. 12, 2009

Is Einstein finally wrong? Far-off galaxies are tugging each other more tightly than Einstein's gravity theory predicts, suggests an analysis of light from distant stars.

Now available in an online physics paper archive, the analysis by Cornell cosmologist Rachel Bean looks at how galaxies attract one another roughly one billion light-years away. Einstein's theory of gravity, General Relativity, suggests that gravity should attract light just as strongly as it attract other matter, but the Hubble Space Telescope's "COSMOS survey" data suggest gravity attracts light less than it does stars in the survey data.

[Read more](#)

[Annual Enrollment now running](#)

[Discount movie tickets available](#)

[Discounted Fright Fest tickets](#)

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[Thai Village restaurant discount](#)

[Additional Activities](#)

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