

Calendar

[Have a safe day!](#)

Thursday, July 30
2:30 p.m.

[Theoretical Physics Seminar](#) - Curia II
Speaker: Enrique Fernandez-Martinez, MPI Munich
Title: Non-Unitary and Non-Standard Neutrino Interactions
3:30 p.m.
DIRECTOR'S COFFEE
BREAK - 2nd Flr X-Over
THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

Friday, July 31
3:30 p.m.

DIRECTOR'S COFFEE
BREAK - 2nd Flr X-Over
4 p.m.
[Joint Experimental-Theoretical Physics Seminar](#) - One West
Speaker: Lindley Winslow, Massachusetts Institute of Technology
Title: KamLAND: Neutrinos from the Earth, the Sun and Nuclear Reactors

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

Campaigns

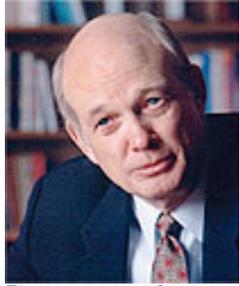
[Take Five](#)

[Tune IT Up](#)

Weather

Special Announcement

Office of Science Director Brinkman to speak today



Department of Energy Office of Science Director William Brinkman

William Brinkman, director of the U.S. Department of Energy's Office of Science will speak on the Initial Perspectives on the DOE Science Program from 1:05-1:35 p.m. CDT (Fermilab time) at Brookhaven National Laboratory.

You can access a

Webcast of the talk at Brookhaven's [streaming video site](#).

University Profile

Harvard University



From left: undergraduate student Merritt Moore, professor Melissa Franklin and postdoc Shulamit Moed in the CDF control room.

NAME:
[Harvard University](#)

HOME TOWN:
Cambridge, MA

MASCOT:
Harvard Pilgrim

SCHOOL COLORS:
Crimson

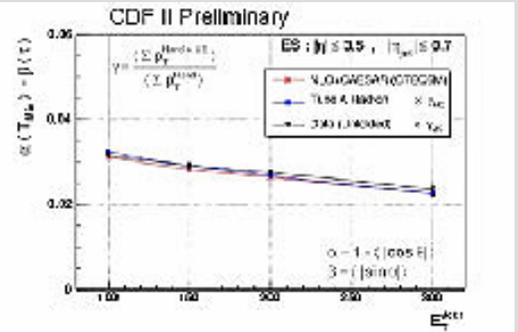
PARTICLE PHYSICS COLLABORATIONS:
ATLAS, CDF, MINOS, NOvA and LUX

EXPERIMENTS AT FERMILAB:
CDF, MINOS and NOvA



Fermilab Result of the Week

Studying shapes to understand color



The thrust event-shape observable for different transverse jet energy. The theory predictions for this variable are in good agreement with the CDF data.

When scientists collide protons and antiprotons at the Tevatron, they also are colliding quarks and gluons, the tiny particles that make up the protons and antiprotons. These fundamental particles are unique within the Standard Model because they are the only carriers of the color charge.

Usually, particles carry a positive or negative electric charge. But in quantum chromodynamics, three kinds of charges exist, referred to by a loose analogy as the three base colors: red, green and blue.

As carriers of the color charge, quarks and gluons are the only particles in the Standard Model to interact with the strong force. While the majority of events at the Tevatron are born from strong interactions, studying this force in detail remains a significant challenge.

For one thing, the strength of the interactions makes theoretical calculations notoriously difficult. More critical, though, is the fact that scientists have never observed isolated quarks. Instead, observable particles only exist as bound states of either two or three quarks where the color charge cancels. As a result, in order to study the strong interactions, physicists need to design a way to make measurements, called observables, based on final-state particles that are capable of probing the underlying QCD nature (color) of the collisions.

Scientists call one such class of observables event shapes. In general, event shapes are



Chance of storms
79°/59°

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

[Current Security Status](#)

[Secon Level 3](#)

[Wilson Hall Cafe](#)

Thursday, July 30
- Minnesota wild rice w/chicken
- Tuna melt on nine grain
- Italian meatloaf
- Chicken casserole
- Buffalo crispy chicken wrap
- Assorted sliced pizza
- *Mandarin chicken

[Wilson Hall Cafe Menu](#)

[Chez Leon](#)

Thursday, July 30
Dinner
- Closed

Wednesday, August 5
Lunch
- Antipasto salad
- Strawberry mousse w/ butter cookies

[Chez Leon Menu](#)

Call x3524 to make your reservation.

[Archives](#)

[Fermilab Today](#)

[Result of the Week](#)

[Safety Tip of the Week](#)

[User University Profiles](#)

[ILC NewsLine](#)

[Info](#)

SCIENTISTS AND STUDENTS AT FERMILAB:

Six total scientists and students

COLLABORATING AT FERMILAB SINCE: 1972

MAJOR CONTRIBUTIONS TO FERMILAB EXPERIMENTS:

The Harvard group at CDF concentrates on top quark physics, which are the different measurements of top quark pair production cross sections and their properties. Harvard has also invested a lot of effort and gained expertise in hardware development and detector operations at CDF.

PARTICLE PHYSICS RESEARCH FOCUS:

Harvard has a broad particle physics program, including physics analyses at CDF, different hardware and software projects on the ATLAS MUON spectrometer, the ATLAS trigger for the Large Hadron Collider upgrade, jet-energy scale corrections at ATLAS and getting ready for LHC data, in particular to perform analyses from first collisions in the following areas: top physics, Higgs and supersymmetry searches and W-and Z-related measurements.

WHAT SETS PARTICLE PHYSICS AT HARVARD APART?

Our group focuses on a wide variety of experimental research topics, and brings a range of expertise. Harvard University also has a strong group of theorists and phenomenologists, who work in close collaboration with us. We have a very strong electronics group, including technicians and engineers, who have taken a major part in designing and constructing infrastructure for particle experiments.

FUNDING AGENCY:
Department of Energy

FAVORITE NATIONAL LABORATORY:
Fermilab



View all [University profiles](#)

variables that describe geometric properties of the way particles are distributed after a collision. Quite literally, they describe the shape of an event. One can imagine any number of such variables; however, only a very few number of them can be calculated using perturbative QCD, the theory that best describes our understanding of the strong interactions.

At the Tevatron, one event-shape observable that was singled out for study is called the thrust, defined as a linear sum over the transverse momentum of particles in the final state. One can think of the thrust observables as a measure of how columnated or pencil-like the particles in an event are distributed. In contrast, another event-shape variable called 'sphericity' is a measure of the spherical symmetry of the distribution of particles in an event.

A direct comparison to theory was difficult due to the limitations of the theoretical calculations to include all aspects of the hadron collider environment. In addition, detector effects distort measurements with standard event-shape variables. Nevertheless, CDF scientists were able to construct auxiliary event-shape observables that were not affected by these issues. Their results indicate the latest QCD predictions of event shapes at a hadron collider agree well with data.

-- edited by Craig Group



When they are not eating sushi, these CDF scientists use event shapes variables to study the color charge of QCD. From left to right: Andrey Korytov and Lester Pinera, University of Florida; and Sergo Jindariani, Fermilab.

[Video of the Day](#)

Fermilab Today

is online at:

www.fnal.gov/today/

Send comments and suggestions to:

today@fnal.gov

Visit the Fermilab

[home page](#)

In Brief

CHUBB, MEDEX explained



For those employees that have received the CHUBB/MEDEX cards, this article can help explain the relationship between CHUBB, MEDEX and your medical insurance plan.

CHUBB is the business travel insurance carrier for employees of Fermi Research Alliance, LLC. One feature of CHUBB is MEDEX, a travel assistance network provider. In the event of a business travel-related emergency, MEDEX will provide emergency assistance services worldwide 24 hours a day. The MEDEX Emergency Response Center contact number is 1-410-453-6330.

Most of the services MEDEX provides pertain to travel abroad. MEDEX provides assistance to travelers for:

- Replacing lost or stolen travel documents, including passports;
- Emergency fund transfers;
- Locating the nearest, most appropriate medical care;
- Establishing contact with family, personal physician and employer;
- Translation services and referral to local interpreters;
- Knowledgeable legal referral;
- Medical evacuation and repatriation Services;
- Incidental aid and other travel-related services.

MEDEX is not medical insurance; it does not replace your medical insurance coverage. If you are planning to travel for business, you should make sure that you carry your medical insurance card as well as the MEDEX identification card at all times. If an emergency arises while you are traveling, follow your medical insurance carrier's procedures for notification of emergencies and for inpatient admission to a hospital. You must comply with all of the terms and conditions of the medical plan in which you are enrolled. The contact

Fermi Singers contribute to Tune IT Up campaign



The Fermi Singers recorded a short song to help spread the word about the survey that employees need to fill out for the Tune IT Up campaign. The song is playing on demand on a flat screen panel at the front of the atrium in Wilson Hall. You can also view it on [YouTube](#).

Feature

Oscar-winning musician performs at Fermilab Saturday



Musician Ma Xiaohui will perform at Fermilab on Saturday, August 1.

If you have heard the hauntingly beautiful musical score from the movie "Crouching Tiger, Hidden Dragon", then you are familiar with Ma Xiaohui.

The premier musician from China will give a performance at 8 p.m. Saturday in Ramsey Auditorium as part of the Fermilab Art Series.

Xiaohui is best known for her Oscar-winning duet with cellist Yo-Yo Ma in the 2003 martial-arts drama, but has received several other recognitions as well. She has performed at Carnegie Hall and at the Kennedy Center for the Performing Arts. She also serves as China's Cultural Ambassador for the 2010 World Exposition in Shanghai.

Xiaohui plays the Erhu, sometimes called in the West the "Chinese violin" or the "Chinese two-stringed fiddle". The instrument is used in classical, folk and progressive rock music. Xiaohui's use of the instrument to produce classical masterpieces has won her write up in national newspapers and a recent interview on National Public Radio's Peabody Award-winning program "All Things Considered." She has performed internationally for more than

number for your insurance company is located on the back of your medical insurance card.

You may be covered by CHUBB even if you do not have Fermilab insurance. Users with J-1 visa documents provided by Fermilab are covered for medical evacuation and repatriation.

Foreign travel is a small segment of the benefits covered under CHUBB. Additional details are provided on the Business Travel Accident Insurance section of the Summary Plan Descriptions.

In the News

LHC students face data drought

From *Nature*, July 29, 2009

Computer simulations are the only option when the world's largest particle accelerator isn't working.

Last November, Sara Bolognesi stood before a committee at the University of Turin in Italy and defended her PhD thesis in experimental high-energy physics. The 180-page document is a treatise on finding the Higgs boson, part of the mechanism believed to endow all other matter with mass. The pages are crammed with dozens of figures and tables, but something is missing: real data.

That's because the Large Hadron Collider (LHC), the world's largest particle accelerator at CERN, outside Geneva in Switzerland, is broken. The 4.6-billion Swiss franc (US\$4.3-billion) collider is designed to accelerate protons to near the speed of light and smash them together in four giant detectors spread around its 27-kilometre circumference. Physicists once hoped that the LHC would start its collisions in late 2006, but last September, after a series of delays and soon after the machine was switched on, an electrical short caused extensive damage along a sector of the machine. Repairs have taken longer than expected, and, as of last week, the LHC was not scheduled to restart before mid-November.

[Read more](#)

two decades generating 20 CDs and more than 40 recordings.

In her Fermilab concert, Xiaohui will be accompanied by cello, piano and percussion. The program will include music from the Beijing Olympics as well as the "Crouching Tiger, Hidden Dragon" soundtrack.

Tickets are \$18 for adults and \$9 for those 18 and younger. You may purchase advance tickets by calling (630) 840-2787 or from the Wilson Hall box office weekdays from 9 a.m. – 4 p.m.

-- Tona Kunz

Announcements

Latest Announcements

[What's New in NI LabVIEW 2009? course offered August 27](#)

[Health after 50 seminar](#)

[Osteoarthritis\(degenerative arthritis\) seminar](#)

[URA Visiting Scholars Program now accepting applications](#)

[Summer intern presentations - August 5](#)

[International folk dancing cancelled today, resumes August 6](#)

[Services account password needed for Fermilab Time & Labor reporting](#)

[Time to complete accomplishment reports](#)

[Bristol Renaissance Faire discount tickets](#)

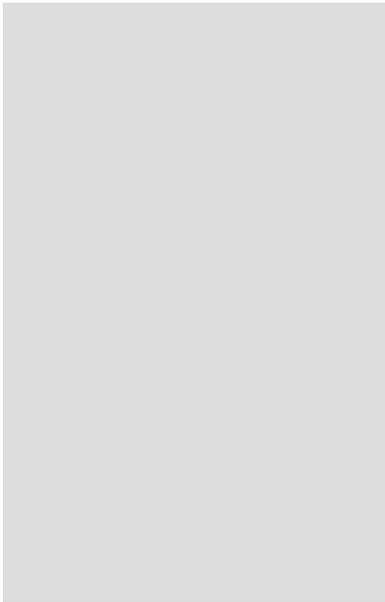
[Six Flags Great America discount tickets](#)

[Pool memberships available in the Recreation Department](#)

[Raging Waves Waterpark online discount ticket program](#)

[Summer safety tips for older adults](#)

[Accelerated C++ Short Course begins](#)



[August 6](#)

[Outlook 2007: New Features class
August 6](#)

[The University of Chicago Tuition
Remission Program August 17
deadline](#)

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

[Additional Activities](#)

[Submit an announcement](#)