

Calendar

Thursday, Oct. 25

THERE WILL BE NO ILC
ALCPG PHYSICS AND
DETECTOR R&D SEMINAR
TODAY

2 p.m.

[Computing Techniques](#)

[Seminar](#) - FCC1

Speaker: M. Pierce, University
of Indiana

Title: The Open Grid
Computing Environments
Project: Portal Components
and Services for Building
Science Gateways

THERE WILL BE NO
THEORETICAL PHYSICS
SEMINAR THIS WEEK
THERE WILL BE NO
DIRECTOR'S COFFEE
BREAK TODAY

THERE WILL BE NO
ACCELERATOR PHYSICS
AND TECHNOLOGY
SEMINAR TODAY

6 p.m.

[UTeV Seminar](#) - One West

Speaker: W. Schiller,
Northwestern University
Title: US Immigration Issues
for Scientists

Friday, Oct. 19

3:30 p.m.

DIRECTOR'S COFFEE
BREAK - 2nd Flr X-Over
THERE WILL BE NO JOINT
EXPERIMENTAL-
THEORETICAL PHYSICS
SEMINAR THIS WEEK

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

Weather



Partly sunny 58°/46°

[Extended Forecast](#)

[Weather at Fermilab](#)

Fermilab Profiles in Safety



Steven Shirley - Mechanical Supervisor for Operations in FESS

"Safety takes a team effort just like football. If one member of the team is injured, everyone on the team is affected. Before doing a job, just like running a play, everyone should know their part and what their teammates will do. Communication maintains a team focus."

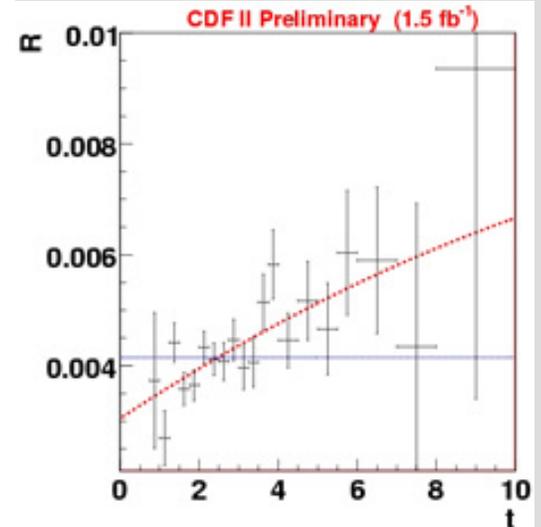
See all Fermilab Profiles in Safety [here](#).

Feature

Music, opinions ring out at Dueling Pianos event

Fermilab Result of the Week

CDF confirms the charming nature of particle oscillations



The ratio of the D^0 rare to favored decays, as a function of proper decay time (in units of the mean D^0 lifetime). The red dashed line is the best fit. The blue dotted line is the best fit assuming the absence of mixing.

This past spring, both Belle and BaBar surprised the physics community by presenting evidence for charm mixing, each in a different channel. The evidence was intriguing and the scientific community was eagerly awaiting confirmation from another experiment. The CDF collaboration was already busy examining data collected at the Tevatron to see if they could find this elusive charm mixing.

Charm mixing describes the D^0 meson (a short lived particle made of a charm quark and an anti-down quark) oscillating into, a scientific word for "changing into", its own anti-particle, or vice versa. Charm mesons oscillate much much slower than strange and bottom mesons, making such an effect harder to observe. Moreover, theoretical calculations of the mixing frequency are extremely difficult and therefore imprecise. It is hard to know where to look for these oscillations.

D^0 mesons decay to mesons made of lighter quarks. The decay to $K\pi^+$ mesons, the favoured decay, happens about 250 times more often than the decay to the rarer mode K

Current Security Status[Secon Level 3](#)**Wilson Hall Cafe****Thursday, Oct. 25**

- Tomato florentine
- *Grilled chicken cordon bleu sandwich
- Chimichangas
- Smart Cuisine: Chicken marsala
- Smoked turkey melt
- Assorted slice pizza
- SW chicken salad w/roasted corn salsa

Carb restricted alternative**[Wilson Hall Cafe menu](#)**Chez Leon*Thursday, Oct. 25****Dinner**

Closed

Wednesday, Oct. 31**Lunch**

- Skeleton's bones
- Monster's eyes
- Vampire's wishes
- Ghost delight

[Chez Leon menu](#)

Call x4598 to make your reservation.

Archives[Fermilab Today](#)[Result of the Week](#)[Safety Tip of the Week](#)[ILC NewsLine](#)**Info**

Fermilab physicist Marcel Demarteau plays "The Storm" by composer Johann Friedrich Burgmüller as part of the dueling pianos workshop Tuesday night.

Fermilab tried a new tack this week to provide people a relaxed atmosphere to discuss the future of the ILC.

The name of the Tuesday session left many people wondering just what "Dueling Pianos" entailed: a musical revue, a panel discussion or a debate.

The event did not fit squarely into any one of these categories but contained elements of each. It included an address from Director of the Global Design Effort Barry Barish, a piano piece played by Fermilab physicist Marcel Demarteau and questions about future physics projects.

Demarteau welcomed an audience of between 300 and 400 members of the ILC community to what he termed a family event -- an open discussion like one a family might have at a dinner table. He introduced the dueling piano session by describing the connection between dueling opinions and music. "For creative ideas, I go to art for inspiration," Demarteau said before he began to play. "As in music it is the sum total that shapes the piece. The same is here with the ILC. It is work from all over the world that will shape the ILC."

Following the performance, Barish addressed

$+\pi$. Charm mixing causes this ratio to change. The tricky part is that this change in ratio is so small it tends to hide behind other backgrounds. This problem can only be solved by producing and measuring lots and lots of D^0 mesons. After investigating 3 million favored decays and almost 13 thousand rare decays, CDF physicists were able to present evidence of charm mixing at the 3.8 standard deviation level, a feat that surprised the community as not many people believed such a measurement would be possible at the Tevatron. This is the first confirmation of the mixing result from BaBar.



From left to right: Paul Karchin, Mark Mattson and Nagesh Kulkarni from Wayne State University.

[Result of the Week Archive](#)**In the News****Will muons reveal Maya mysteries?**

From *MSNBC, Cosmic Log, Oct. 22, 2007*

Physicists are closing in on new techniques to put ancient archaeological sites through a cosmic "CT scan" to look for hidden chambers, using showers of subatomic particles known as muons.

The idea was first put to the test in an Egyptian pyramid four decades ago - but researchers saw no surprises in that experiment. Now, scientists are hoping to enlist a new generation of muon detectors to solve long-running mysteries of the Maya.

[Read More](#)**Accelerator Update****Oct. 23-24**

- Complex in access
- D0 completed detector repairs
- Switchyard receives permission to take beam

[Read the Current Accelerator Update](#)[Read the Early Bird Report](#)[View the Tevatron Luminosity Charts](#)**Announcements**

Fermilab Today

is online at:

www.fnal.gov/today/

Send comments and suggestions to:

today@fnal.gov

the audience. He described the ILC as a project that involves as much art as science, including the art of problem solving. After Barish's remarks, Demarteau introduced questions that had been submitted by community members. For each question, two speakers gave answers from different perspectives.

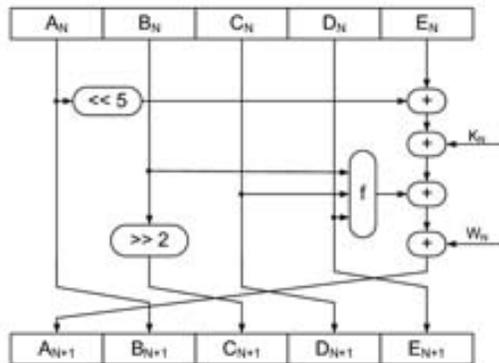
Audience members listened as speakers addressed questions about the positive and negative implications of Fermilab's Project X for the ILC, ways the Global Design Effort should respond to developments in alternative technologies for a linear collider, and what the ILC should do if the LHC indicates that higher energies than the ILC's 500 GeV might be needed.

"Everyone told me afterwards it was a success," Demarteau said. "There was honest and open discussion, which is a step forward."

-- Haley Bridger

From iSGTW

Secure enough? Re-assessment of the world's most-used hash function



SHA-1 (Secure Hashing Algorithm 1) is the most used cryptographic hash function in the world. But is the 80-fold iteration of this transformation enough for its security? *Images courtesy of SHA-1 Collision Search Graz*

Cryptographic hash functions are essential to the security of e-government and other applications requiring electronic signatures.

Such hash functions can be seen as a kind of redundancy code with some special properties. The most important of these is that it should be computationally infeasible to construct collisions—sets of two different inputs for the hash function that result in the same output value.

[Have a safe day!](#)

ILC R&D tours available Thursday

A tour of ILC R&D facilities, including MP9, ICB, ICB1, New Muon Lab and the Meson building, will be available Thursday as part of the ALCPG07 meeting. Tours run from 2:30 to 5 p.m. and are open to Fermilab employees and users. Space is limited. Sign up sheets are located near the ALCPG07 registration desk.

Project X Accelerator Physics and Technology Workshop Nov. 12-13

Fermilab will host a workshop to discuss the accelerator physics and technology issues of Project X. The workshop will also explore possible areas of overlap and interest between various particle accelerator laboratories and universities. For more information or to register, see the Accelerator Physics and Technology Workshop for Project X [Web site](#).

Project X physics workshop Nov. 16-17

Fermilab will host a user's workshop Nov. 16-17 to discuss the physics of Project X. The group will meet at 8:30 a.m. Friday, Nov. 16, in One West. A wine and cheese talk by Michelangelo Mangano runs from 4 to 5:30 p.m. The Saturday session will be partly in One West, but also will include parallel sessions in different rooms. Streaming video of the sessions will be provided. The agenda can be found [here](#). You should register if you plan to attend or watch the streaming video. [Online registration](#) is available.

Update your information by e-mail

Records@fnal.gov is the new e-mail address to use when making changes to your records. Use it to update your address, phone number, mail station and your work location.

[Additional Activities](#)

-- *Florian Mendel, Christian Rechberger and
Vincent Rijmen, SHA-1 Collision Search Graz*

[Read More](#)