

Calendar

Thursday, June 8

2:30 p.m. Theoretical Physics Seminar - Theory Conf Rm

Speaker: L. Dixon, SLAC WH-3NE

Title: Bootstrapping One-Loop QCD Scattering Amplitudes

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

4:00 p.m. Accelerator Physics and

Technology Seminar - Auditorium (note location)

Speaker: D. McGinnis, Fermilab

Title: Introduction to Radio Frequency Fundamentals for Particle Accelerators – Part I

Friday, June 9

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

4:00 p.m. Joint Experimental Theoretical Physics Seminar - Auditorium (note location)

Speaker: P. Verdier, IPN Lyon

Title: Recent SUSY Results from DZero

Saturday, June 10

8:00 p.m. Fermilab Arts Series: Le Vent du Nord – Traditional Music of Quebec – Auditorium

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

Weather



Mostly Sunny 85°/55°

[Extended Forecast](#)

[Weather at Fermilab](#)

Oddone agrees with Alvy, Universe is our business



Pier Oddone strings together modern particle physics concepts for summer students and interns. (Click on image for larger version.)

Alvy Singer: *Well, the universe is everything, and if it's expanding someday it will break apart, and that will be the end of everything.*

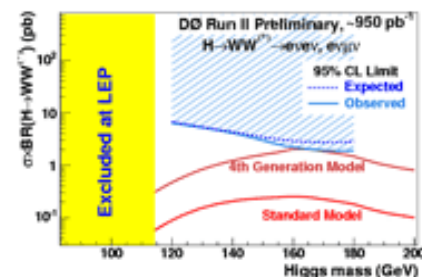
Alvy's mother: *Why is that your business?*

This conversation between Alvy Singer and his mother, from the movie *Annie Hall*, greeted summer students and interns as Fermilab Director Pier Oddone kicked off Tuesday's lunch time lecture. Alvy may be a neurotic kid, but at Fermilab the universe really is our business.

Oddone continued with a summary of what particle physics has learned to date: the six quarks and six leptons, their anti-particle counterparts, and the existence of the elusive entities, dark matter and energy. He described the mysteries that loom at the horizon, including Supersymmetry and the super partners it predicts. Oddone also explained some of the ongoing and future efforts, including the Tevatron, LHC, ILC, MINOS and CDMS, which may answer some of these

Fermilab Result of the Week

DZero homes in on the Higgs



The cross section times branching ratio, $\sigma \times BR(H \rightarrow WW^*)$, excluded by DZero at 95 percent confidence level as a function of Higgs mass compared with expectations from Standard Model Higgs boson production at the Tevatron. Collection of more collisions with the DZero detector will push the blue curve further down, homing in on the Standard Model Higgs Boson.

Throughout the years, particle physicists have developed a theoretical framework describing our understanding of the fundamental particles and forces of nature, called the Standard Model (SM). One of the ingredients in the SM is a hypothetical particle, the Higgs boson, which through quantum interactions with all other particles explains particle mass. The Higgs remains unobserved, but experimental and theoretical arguments point to a Higgs mass in the range of 114 GeV/c² to approximately 200 GeV/c² (the proton's mass is roughly 1 GeV/c²), hence it could be found at the Tevatron.

If the Higgs mass is in the range 135-200 GeV/c², the SM predicts it will most frequently decay to two W bosons. Recently, the DZero experiment has used one inverse femtobarn of Tevatron Run II data to search for a Higgs boson in this decay mode. To distinguish this experimental signature from the many background processes, only leptonic

Current Security Status[Secon Level 3](#)**Wilson Hall Cafe****Thursday, June 8**

- Tomato Florentine
- Grilled Chicken Cordon Bleu Sandwich
- Chimichangas
- Chicken Marsala
- Smoked Turkey Melt
- Assorted Pizza
- SW Chicken Salad with Roasted Corn Salsa

[Wilson Hall Cafe Menu](#)**Chez Leon****Thursday, June 8****Dinner**

- Nectarine Procuitto and Arugula Bundles
- Veal Saltimbocca
- Sautéed Spinach with Garlic
- Bowtie Pasta w/Pine Nuts and Parmesan
- Peach Melba

Wednesday, June 14**Lunch**

- Wild Mushroom and Three Cheese Calzone
- Chopped Fennel, Olive and Romaine Salad
- Cherry Almond Cake

[Chez Leon Menu](#)

Call x4598 to make your reservation.

Search**Search the Fermilab Today Archive****Info**

questions. "We are always battling the unknown," he said. "We are always on the edge of what we know and what we don't."

The director explained that through time scientists have often found simple explanations for complex phenomena, noting that all the elements in the periodic table can be explained by just a few elementary particles and force carriers. The myriad of elements and forces that come together almost miraculously in the universe may have even simpler explanations as scientists venture farther up the energy scale.

Oddone drew the following analogy to explain the apparent contradiction between complexity and simplicity, "If you look at snow flakes they have an enormous richness and variety. [But] at some temperature, that enormous richness...is actually a simple water molecule."

--Ben Berger

Photo of the Day

Wilson Hall's eleventh floor hummed with activity yesterday as graduate students and postdocs learned to use new CMS software. (Click image for larger version.)

Science Grid This Week

decays of the W bosons are selected ($WW \rightarrow e\bar{\nu}e\nu, e\nu\mu\nu$).

Currently, this search has found no evidence of the Higgs boson. This null result allows DZero to set new exclusion limits on the SM Higgs boson production cross section times branching ratio, $\sigma \times BR(H \rightarrow WW^*)$, using the combination of the $e\bar{\nu}e\nu$ and $e\nu\mu\nu$ final states. The sensitivity of the result is within a factor of 6-7 of the SM cross section at masses near $160 \text{ GeV}/c^2$. This result demonstrates that the Tevatron is on track to probe SM Higgs models and is beginning to exclude particle models which assume the existence of a fourth family of quarks. This limit will be further improved as Run II continues, and if the SM Higgs mass is about twice the W boson mass ($160 \text{ GeV}/c^2$), we could see evidence of it with the full expected luminosity in Run II.



Above: Maxim Titov and Volker Buescher contributed to this analysis. **Below:** Daniel Wicke, Reiner Hauser, and Mike Diesburg (not pictured) contributed to the large effort needed to process D0 data, making it usable for physics analysis.

[Result of the Week Archive](#)**Accelerator Update**

Fermilab Today is online at: <http://www.fnal.gov/today/>

Send comments and suggestions to today@fnal.gov

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[Hurricane Relief Page](#)

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[Fermilab Result of the Week archive](#)

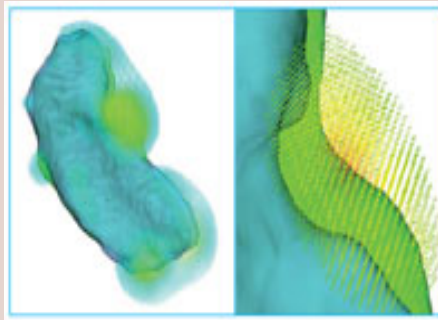
[Fermilab Safety Tip of the Week archive](#)

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Biomedical Research Feels the BIRN



Shape analysis in Alzheimer's disease from the Morphometry BIRN test bed. Image courtesy of The John Hopkins University, Center for Imaging Science.

The Biomedical Informatics Research Network is pioneering the use of advanced cyberinfrastructure for biomedical research, starting with the mysteries of the human and animal brain.

The BIRN's main goal is to get biomedical scientists collaborating like never before. Starting with four projects, or test beds, the BIRN is discovering which information technologies are wanted and needed by—and useful for—the biomedical community. The technologies help researchers share ideas, software and data; access high-performance computing resources; and deal with the explosion of data from new research techniques.

[Read More](#)

In the News

MSNBC online, June 5, 2006:

Physicists probe the fifth dimension

SEATTLE - The cosmos would make perfect sense ... if it turns out we're living in a 10- or 11-dimensional realm where gravity is bubbling off a different plane entirely. At least that's what's emerging as the hottest concept on the frontier of physics.

June 6 - 7

- TeV loads 12x0 study store
- Pbar stacks antiprotons
- D0 begins two shift access
- Recycler stashed antiprotons
- Klystron Debuncher trips
- Machine Reports

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

Announcements

DASTOW set for June 22

Save the date: Thursday, June 22 will be the annual Daughters and Sons to Work Day at Fermilab. DASTOW'06 will offer many of the always-popular events, such as the Mr. Freeze Cryo Show, along with some new additions. Watch Fermilab Today for more details in the coming weeks.

One West closed for remodeling

The Wilson Hall One West conference room is closed for remodeling through the end of July. The work will include new auditorium-style seating in which each seat will have its own outlet to power a laptop. Meetings normally scheduled for this room have been relocated for this closure. If you have any questions, please contact Elaine McCluskey, mcccluskey@fnal.gov.

Federal Citizen Information Center

Looking for information about Social Security, getting a passport, or renewing a driver's license? The federal government now offers a one-stop Web page that provides official information on all government services you can use: FirstGov.gov. Or call 1-800-FED-INFO to receive the information you need.

Though these sound like virtually unverifiable claims, physicists are trying to come up with ways to gather evidence to back up or disprove the extradimensional theories currently in vogue. But it'll take several years to get that evidence, if it can be gotten at all.

[Read More](#)

Professional Development

New classes are always being added to the professional development schedule. For the most up-to-date course offerings, go to [the web page](#).

[Upcoming Activities](#)