

Calendar

Thursday, June 3

9:00 a.m. [Users' Annual Meeting](#) - Auditorium

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

5:00 p.m. [Graduate Student Association New Perspectives Poster Session](#) - Wilson Hall Atrium

Friday, June 4

9:00 a.m. [GSA – Annual Fermilab Student Conference – New Perspectives 2004](#) - Curia II

3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over

4:00 p.m. Joint Experimental Theoretical Physics Seminar - 1 West
Speaker: E. Blucher, University of Chicago

Title: Recent Results from KTeV

Wilson Hall Cafe

Thursday, June 3

Minnesota Wild Rice Soup with Chicken

Tuna Melt on Nine Grain \$4.75

SW Skillet Steaks \$4.75

Jumbo Stuffed Baked Potatoes \$2.75

BLT Ranch Wrap \$4.75

Cheesy Breadsticks \$1.85

Toasted Pecan Chicken Salad \$4.75

[Wilson Hall Cafe Menu](#)

[Chez Leon](#)

Weather

From DC, Users Hear Call For Vision and Prioritization

Robin Staffin, the Department of Energy's Associate Director of High Energy Physics, told Fermilab Users their



present array of research was assembled at a time when no one realized funding would not keep pace with inflation, and "something's got to give."

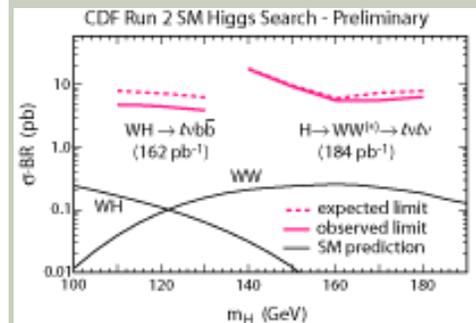
Robin Staffin, DOE Associate Director of High Energy Physics, told Users: "We need a clear and compelling vision."

"There hasn't been a rush to prioritize in this field, because we don't know what's going to pay off," Staffin said Wednesday morning in Ramsey Auditorium, as the Users Annual Meeting began its first day. "But that puts stresses on the financing. DOE and NSF need to make their [budget] requests with prioritization...We need a clear and compelling vision."

Michael Turner, National Science Foundation Assistant Director for Mathematical and Physical Sciences, reinforced the point with his own "view from Washington," listing the challenges faced by particle physics. Among them: a tight budget, a \$500 billion national deficit, higher national priorities, and expensive science with long lead times.

Fermilab Result of the Week

CDF Hunts for the Higgs



The observed 95% CL limit on Higgs production cross section compared to the Standard Model prediction as a function of the Higgs Mass. (Click on image for larger version.)

The Higgs boson (H), considered to be the origin of mass, is the last unobserved particle in the Standard Model of Particle Physics, and is thus the most sought after. Three groups at CDF have produced new results in the quest for the Higgs.

If the Higgs has a mass less than ~140 GeV, as suggested by global fits to precision electroweak data, one of the crucial modes of discovery at the Tevatron is via [WH production](#). With the W boson decaying to leptons and the Higgs decaying to two b quarks, a relatively clean experimental signature is obtained. For a Higgs with mass greater than ~140 GeV, single Higgs production with the [decay \$H \rightarrow WW \rightarrow \text{leptons}\$](#) offers an additional promising signature. Because of the low Higgs production rate, the challenge is to reduce the backgrounds, consisting predominantly of W plus jets, top quarks, and direct WW production.



Mostly Cloudy 61°/46°

[Extended Forecast](#)

[Weather at Fermilab](#)

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[Secur Level 3](#)

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"Things will get more difficult before they get better," Turner warned.

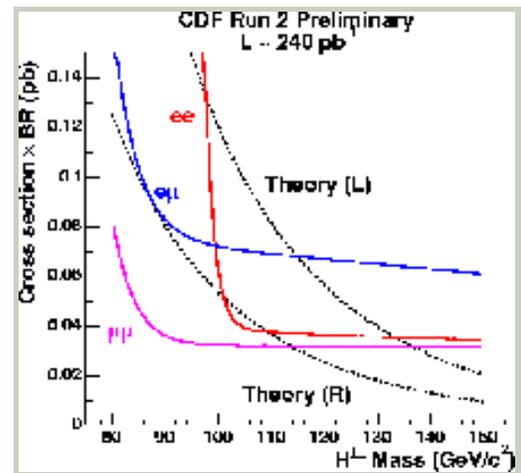
Same message, different topic: Irving Lerch, recently retired after 11 years as American Physical Society Director of International Affairs, described the state of visa delays and backlogs for entering the U.S. as offering "probably no reason for optimism."

Lerch said the impact on the field included research delays, longer times for degree completions, and university classes left without instructors. He noted that in 2003, there were more than 200,000 foreign students in the U.S. in the fields of engineering, math and computing sciences, and the natural sciences. He described the visa situation as especially "choking" the Middle East, which has more than 34,000 students in the U.S.

The abundance of science on the day's program offered more promising prospects. Presentations includes results at both CDF and DZero in Top, Electroweak, B, QCD and New Physics; the strong upward trend in Tevatron luminosity; and Fermilab efforts to increase Linear Collider research and efforts to host the next generation machine.

Fermilab theorist Chris Hill summarized the view of the future: "In 10 years, the written laws of physics will be different than they are now."

Today's program begins with a report from Universities Research Association, Inc., president Fred Bernthal, followed by the presentation



95% CL limits on Higgs production as a function of doubly-charged Higgs mass. The theoretical cross sections for left-handed and right-handed couplings are also shown. (Click on image for larger version.)

Beyond the Standard Model there are likely to be additional Higgs bosons with varying properties. One possibility is the existence of a [doubly-charged Higgs](#), predicted by a model that also accounts for the small observed neutrino

masses. Such a Higgs would be observable in like-charge dielectron, dimuon, and electron-muon data.



No evidence of the [Weiming Yao, LBNL](#) Higgs boson has been observed in these searches. CDF has thus set 95% CL limits on the Standard Model Higgs production cross section, as well as the existence of the doubly-charged Higgs, both of which will be further improved as Run II continues.

of the URA Thesis Award.

[More information on the schedule, and access to presenters' slides](#)



Alvin Tollestrup (left) presents the 2004 Tollestrup Award for Postdoctoral Research to Nicole Bell, of the Fermilab Theoretical Astrophysics Group. The award is for "determining, with colleagues, the conditions under which the cosmological neutrino abundance can differ from the value usually assumed, and for finding out how an anomalous abundance would change the implications of cosmology for neutrino mass." The award, sponsored by Universities Research Association, Inc. carries a prize of \$3,000. (Click on image for larger version.)

Full House for Alvin: The Symposium



Vladimir Shiltsev (right) crowned Alvin Tollestrup with a laurel wreath in honor of the Greek definition of symposium. (Click on image for larger version.)



Left to right: Chris Hays and Susana Cabrera (Duke U.), Sunny Chuang (U. Wisconsin, Madison), Yoshio Ishizawa (Tsukuba U.). Not pictured: Ashutosh Kotwal and Mark Kruse (Duke U.) (Click on image for larger version.)

[Result of the Week Archive](#)

Accelerator Update

May 31 - June 2

- Operations established one store during this 48 hour period that combined with an existing store provided the experiments with approximately 43 hours and 45 minutes of luminosity.
- An AP1 Lambertson power supply needed daily attention.
- Pbar suffered from clock problem.
- Linac troubled by rectifier with water leak.

[View the current accelerator update](#)

[View the Tevatron Luminosity Charts](#)

In the News

From *Mercury News*, June 1, 2004

Revolution in understanding

By Glenda Chui

As research director at Stanford Linear Accelerator Center, Persis Drell revels in the big questions.

What is the universe made of? How did we get here, and where are we going?

What is the nature of matter and

A standing-room-only crowd packed One West on Tuesday, June 1 for a symposium honoring Alvin Tollestrup. The first speaker, Vladimir Shiltsev, honored the Greek definition of symposium ("a convivial meeting for drinking, music and intellectual discussion") by playing Greek music and providing Tollestrup and the three speakers with togas and Greek wine. After Shiltsev's discussion of the Tevatron and other particle physics accelerators, Giovanni Punzi spoke on the CDF Silicon Vertex Tracker and Jim Annis discussed the proposed Dark Energy Survey.

"It was neat to have talks by people that are really doing important stuff, instead of the standard kind of thing where you look back at what has been accomplished over the years," said Tollestrup. "It was great that so many people came."

Tollestrup, whose 80th birthday was March 22, began his particle physics career in 1946 as a graduate student at Caltech, where he spent the next 25 years. In 1975 he arrived at Fermilab on sabbatical, intending to stay only six months. He began working on superconducting accelerator technology, and the short stay turned into a 29-year career at the laboratory. Over the years, Tollestrup has worked extensively on the Tevatron magnets, served as co-spokesperson for CDF, and has become involved in the creation of an astrophysics center at the laboratory.

energy, space and time?

[read more](#)

Announcements

2003 Top Cited HEP Articles

Michael Peskin's review of the [top cited HEP articles of 2003](#) has now been released. Look for Fermilab-authored papers at numbers 4, 26, 35, 65 and 67.

Fermi Singers Summer Concert

The Fermi Singers will be holding their Summer Concert on Wednesday, July 7, 2004 in the Ramsey Auditorium at Noon. Treats to follow.. more to come as we get closer to the concert.



(Left to Right) Vladimir Shiltsev, Alvin Tollestrup, Giovanni Punzi, and Jim Annis give a toast in their togas. (Click on image for larger version.)