Fermilab Today

Thursday, June 19, 2008

Layoff Information

New information on Fermilab layoffs, including an up-to-date Q&A section, appears on the layoff Web pages.

Furlough Information

Information on the furloughs at Fermilab, which stopped May 31, 2008, is available on the furlough Web pages.

Calendar

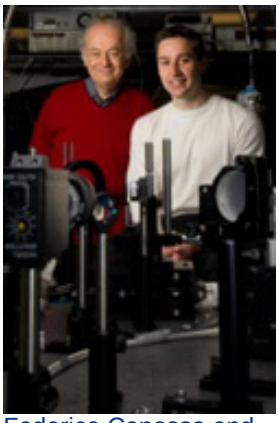
Thursday, June 19
THERE WILL BE NO PHYSICS AND DETECTOR SEMINAR THIS WEEK
2:30 p.m.
Theoretical Physics Seminar - Curia II
Speaker: S. Nandi, Oklahoma State University
Title: A New Two Higgs Doublet Model
3:30 p.m.
DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
4 p.m.
Accelerator Physics and Technology Seminar - One West
Speaker: A. Hahn, Fermilab
Title: Statistical Data Analysis (Part II)

Friday, June 20
3:30 p.m.
DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
4 p.m.
Joint Experimental-Theoretical Physics Seminar - One West
Speaker: H. Wenzel, Fermilab
Title: Recent Results in Rare Heavy Flavor Decays at CDF

Click here for NALCAL, a weekly calendar with links to additional information.

Feature

Former summer intern helps boost nanotechnology



Federico Capasso and Mariano Zimmler of the Harvard School of Engineering and Applied Sciences. *Image courtesy of Eliza Grinnell, Harvard School of Engineering and Applied Sciences.*

The newest approach in applying nanowires to computer microprocessor circuits got a boost from Fermilab's internship program.

Harvard graduate student Mariano Zimmler, a former Fermilab intern, with his Harvard colleague Federico Capasso, recently published a paper on how to speed up the process of turning nanowires into circuits, enabling industrialization of the process. The pair also is working on adapting the process for optical circuits, which carry data even faster. *The Economist.com* highlighted the research in its May issue.

Zimmler, who is a year away from his Ph.D. in solid-state physics, said his time working on computers in support of DZero in 2002 and later on Grid software in 2004 helped fuel his interest in computer technology.

"My time at Fermilab was absolutely critical to develop my computer skills, which I have applied in many areas of my research throughout the years," he said.

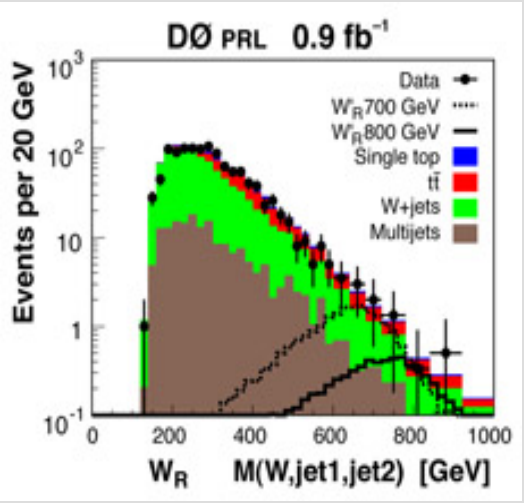
Zimmler started out in the Summer Internships in Science and Technology program. Faculty nominate students from their institutions, who spend 12 weeks helping out on experiments, working on the operation of the particle accelerator or developing support systems, such as computing.

"I would certainly recommend the program to others as a way to learn by tackling real-world problems," Zimmler said.

The SIST program, one of the oldest at DOE laboratories, started in 1971 and has

Fermilab Result of the Week

Upstaging the W boson



This figure illustrates the invariant mass signature of a hypothetical W-prime boson with right-handed couplings decaying to a top quark and bottom quark. The expected background processes and the observed data events are also shown in the figure.

The Tevatron's stage has a well-known actor: the W boson. This electroweak boson, which is partly responsible for transmitting the weak force, gets cast in a multitude of important roles. At the Tevatron, the W boson takes on a supporting role keeping the spotlight on top quark measurements and Higgs boson searches. At other times, starring roles, such as W boson precision measurements, showcase the particles' importance.

Theorists suggest that this much-acclaimed boson also may have to share the spotlight with a new, more versatile version of itself, called the W-prime. If scientists find this theory-based casting call successful, they may have to re-evaluate many results to determine the potential co-star status of the W-prime.

Physicists have searched for the W-prime in the past, for example in leptonic decays, but DZero talent scouts believe this proposed particle may be more multifaceted than they previously expected. Theories suggest that the W boson can only interact with fermions with the property of left-handedness (related to the relative directions of spin and momentum). But a W-prime could potentially couple to right-handed particles, providing information on massive right-handed neutrinos. Plus, a W-

Weather

Sunny
80°/59°

Extended Forecast
Weather at Fermilab

Current Security Status

Secon Level 3

Wilson Hall Cafe

Thursday, June 19
- Santa Fe black bean
- Sloppy Joe
- Chicken cordon blue
- Smart cuisine: spinach enchiladas
- Baked ham & Swiss on a Ciabatta roll
- Assorted slice pizza
- Crispy fried chicken ranch salad

**Carb restricted alternative*

Wilson Hall Cafe menu

Chez Leon

Thursday, June 19
Dinner
- Melon & prosciutto
- Grilled duck breast w/ Zinfandel fig sauce
- Wild rice w/ pecans and currants
- Sautéed green beans
- Lemon Napoleons

Wednesday, June 25
Lunch
- Closed

Chez Leon menu
Call x4598 to make your reservation.

Archives

mentored more than 600 students majoring in physics, electrical engineering, mechanical engineering and computer sciences.

"The SIST Committee strives every year to recruit the best undergraduate talent to Fermilab from a diverse spectrum of universities. It is very gratifying to see former students succeed in their fields and become accomplished professionals," said Dianne Engram, who oversees the program at Fermilab.

--Tona Kunz

In the News

House appropriators release FY2009 Department of Energy funding bill

From *AIP FYI*, June 18, 2008

Yesterday evening the House Energy and Water Development Appropriations Subcommittee approved by a voice vote its version of the FY 2009 funding bill for the Department of Energy. Details about this $33.3 billion bill will not be known until the full House Appropriations Committee considers the bill next Tuesday. As now written, the bill provides $2.4 billion more than this year's budget, and is $2.1 billion above that requested by President Bush.

Subcommittee Chairman Peter Visclosky's (D-IN) opening remarks at the mark up provides aggregate funding levels in this bill, and the subcommittee's rationale for its actions. Excerpts from Chairman Visclosky's remarks follow, with bolding used for emphasis on funding levels (not in the same order as spoken):

SCIENCE:

"The bill recommends over $4.86 billion for science, $140 million above the President's request and an increase of $844 million over the fiscal year 2008 enacted level. Science funds cutting-edge energy research which will be critical for addressing our long-term energy needs. This bill substantially funds the increase in the Science account authorized in the America COMPETES Act. It will provide for 2,600 more research personnel, including graduate students, to address major concerns over the availability of highly educated scientists and engineers whose innovations drive economic growth. The Committee also makes major investments in laboratory

prime with left-handed couplings could cause quite a stir on stage when sharing the spotlight with the W boson. The interference between the two could influence the associated cross sections by more than 30 percent.

To search for this theorized particle, DZero researchers designed an analysis to find W-prime decays to third-generation quarks (top and bottom quarks). Using 0.9 inverse femtobarns of data, the scientists analyzed events consistent with semi-leptonic top quark decays in association with a bottom quark. Their data showed no evidence for W-prime decays and the analysis produced lower limits on W-prime masses that significantly improve previously published results. Though DZero physicists did not find their co-star, this casting call will remain open as the Tevatron continues to deliver record luminosities.

Read more

A team of DZero collaborators made primary contributions to this analysis.

The DZero desktop support team helps users and staff at DZero with operating system and hardware issues, applications support and security issues. The team also ensures that the Windows computers and servers, as well as the printers and computing network, are available to support operations and analysis activities at DZero.

Result of the Week Archive

Accelerator Update

Info

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

Send comments and suggestions to:
today@fnal.gov

infrastructure, embraces proposals to build two dozen Energy Frontier Research Centers focused on addressing critical energy research needs, and provides $539 million, $15 million above the President's request, for climate change research and scientific computing efforts."

Read more

Announcement

Groundbreaking today for NIU proton therapy center

A groundbreaking celebration for the Northern Illinois Proton Treatment and Research Center -the first cancer treatment and research center of its kind in Illinois -- will be held at 2:30 p.m. Thursday, June 19.

The center will open in 2010 at 777 Discovery Drive in the DuPage National Technology Park, adjacent to Fermilab. Thursday's groundbreaking ceremony is open to Fermilab employees.

A dozen people, including Fermilab Director Pier Oddone will speak to an expected crowd of between 250 and 300 people about the technology and new facility.

Fermilab in the mid-1980s assisted in building and assembling the country's first hospital-based proton treatment system for Loma Linda University Medical Center in California.

With Fermilab and Argonne National Laboratory, Illinois has continued to be a world leader in the development of accelerator technologies, and NIU has relied on the expertise of scientists at both laboratories in planning for the new proton center, according to an NIU press release.

June 1-18
- Three stores provided ~32 hours and 42 minutes of luminosity
- Booster GMPS taken off line for repairs
- The MTest T979 experiment completes its run
- Stash lost due to MI interlock trip

Read the Current Accelerator Update
Read the Early Bird Report
View the Tevatron Luminosity Charts

Announcements

Have a safe day!

International Folk Dance cancelled
International Folk Dancing has been cancelled for this week, June 19, so dancers can attend SummerDance in Chicago, where Steve Weintraub will teach Yiddish dance. Dancing will resume next Thursday, June 26, in the Auditorium as usual. More info at (630) 584-0825 or (630) 840-8194 or folkdance@fnal.gov.

Blood drive June 24, 25
Heartland Blood Centers will conduct a Fermilab Blood Drive on June 24 and 25 from 8:30 a.m to 2 p.m. in the Wilson Hall Ground Floor NE Training Room. Schedule appointments online or call Diana at x3771 or Margie at x5680. More information. The last blood drive collected 83 units. Many thanks to all who donated.

Visa Office Closed
The Visa Office will be closed the week of June 23-27. Urgent matters only may be addressed during that week to Borys Jurkiw at visaoffice@fnal.gov or x4363.

Volunteer clean up today
Roads and Grounds crew members will host another volunteer clean up today to pick up trash on the east side of the site. To join, meet at the lower west entrance of Wilson Hall at 11:45 a.m. Lunch will take place near the Kuhn Barn.

Special discount on SciTech summer camps
The SciTech hands-on Children's Museum in Aurora offers all Fermilab employees discounts on its Science Adventure summer camps, honoring the long-standing relationship between the two organizations. The week-long camps begin on June 23 and run from 9 a.m. to 3 p.m. with before and after care available from 8 a.m. to 5 p.m. Fermilab

employees only pay from $174 to $199 and the before and after care is free. Visit the SciTech Web site to register. (Do not use the Web site to sign up for before and after care. SciTech will call you to confirm whether you want this service.) To receive your discount enter the code FERMI2008 on checkout.

Additional Activities