Fermilab Today

Wednesday, July 19, 2006

Calendar

Wednesday, July 19
THERE WILL BE NO FERMILAB ILC R&D MEETING THIS WEEK
3:30 p.m. DIRECTOR'S COFFEE BREAK 2nd Flr X-Over
4:00 p.m. Fermilab Colloquium - Curia II (note location)
Speaker: G. Westfall, Michigan State University Title: Recent Results from RHIC - The Perfect Liquid

Thursday, July 20
2:30 p.m. Theoretical Physics Seminar - Curia II
Speaker: Y. Shamir, Tel Aviv University
Title: Renormalization-Group Analysis of the Validity of Staggered-Fermion QCD with the Fourth-Root Recipe
3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
4:00 p.m. Accelerator Physics and Technology Seminar - Curia II
Speaker: R. Palmer, Brookhaven National Laboratory
Title: Muon Collider Parameters and Cooling Schemes

Click here for a full calendar with links to additional information.

Weather

Partly Cloudy **89º/71º**

Extended Forecast

Weather at Fermilab

Current Security Status

What's in a name? Peter Higgs and his particle

Like a hand meeting resistance as it moves through a swimming pool, a particle somehow interacts with the Higgs field to gain mass. (Click image for larger version.)

When DZero physicist Boaz Klima first bumped into Peter Higgs 26 years ago, it was at the Scottish Summer School in Physics Program in St. Andrews, Scotland. "During one of the coffee breaks," Klima recalled, "somebody pointed at an older man standing alone by the door and said, 'Hey, that's Peter Higgs.'" At that time, scientists were already searching for the particle Higgs had proposed in 1964, known as the Higgs boson--a particle which could explain the phenomenon of mass and restructure the Standard Model of fundamental particles and forces.

In the Standard Model, gluons carry the strong force, binding subatomic particles to make protons and other hadrons, as well as binding protons and neutrons to form atomic nuclei; photons carry the electromagnetic force, providing us with the light that illuminates our surroundings and microwave radiation for cooking food; W and Z bosons carry weak force interactions, governing some types of

From the Particle Physics Division

Bright people, bright ideas

Every Wednesday, Fermilab Today *alternates letters from the eight division and section heads. In today's issue, Particle Physics Division head Jim Strait outlines contributions to new experiments and R&D efforts.*

I really enjoy the opportunity to hear about the bright ideas people have for new experiments and experimental techniques, and I enjoy it even more when I am able to help them move these ideas forward.

Some ideas have led to new experiments, which are moving through the approval process and into construction. SciBooNE and MINERvA will make precision neutrino scattering measurement in the Booster and NuMI neutrino beams. NOvA will greatly extend our reach in neutrino oscillation measurements. The Dark Energy Survey

Secon Level 3

Wilson Hall Cafe

Wednesday, July 20
-Vegetable Beef
-Fish & Chips
-Salmon w/Lemon Pepper
-Country Fried Steak w/Pepper Gravy
-Beef & Cheddar Panini w/Sauteed Onions
-Assorted Slice Pizza
-Cavatappi Pasta w/Italian Sausage & Tomato Ragu

The Wilson Hall Cafe accepts Visa, Master Card, Discover and American Express.

Wilson Hall Cafe Menu

Chez Leon

Wednesday, July 19
Lunch
-Marinated Flank Steak w/Mushrooms and Pea Pods
-Jasmine Rice
-Lemon Cheesecake

Thursday, July 20
Dinner
-Layered Mozzarella and Tomato
-Grilled Swordfish w/Chipotle Butter
-Roasted Corn w/Potatoes and Bacon
-Banana Spring Rolls w/Caramel Rum Sauce
Chez Leon Menu
Call x4598 to make your reservation.

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Info

radioactive decays and helping stars to shine. The origin of mass remains a mystery.

Physicists have created countless analogies for other forces, but describing the Higgs is a challenge. Klima compared the Higgs effect to an invisible swimming pool. Much as a person struggles to walk through water in a swimming pool, particles meet resistance from the Higgs field as they move through the universe. This resistance creates mass. "Right now physicists are trying to understand the 'swimming pool' and how the particle creates it," Klima said.

Higgs first published the theory but continues to shy away from credit, much as he shied away from contact in Scotland. Klima says Higgs remains almost as elusive as his namesake particle because other physicists simultaneously proposed the boson and the theoretical framework to describe it. "He was sort of dragged into center stage and I'm not sure he feels so comfortable with that," Klima said. "But he was the first to describe the mechanism in a convincing and straightforward way."
--Dave Mosher

Photo of the Day

aims at understanding the dark energy that is driving the accelerating expansion of the universe. An upgrade to the Cryogenic Dark Matter Search, currently operating in the Soudan Mine, will substantially expand its sensitivity for direct detection of dark matter.

R&D on new technologies holds promise to provide new tools for discoveries and precision measurements beyond our current capabilities. Fermilab engineers and physicists are leading in the development of "3-D" pixel detectors for the ILC, which should result in much thinner devices than the current generation of pixels. A growing collaboration, involving Fermilab and several universities, is carrying out R&D at a massive liquid Argon Time Projection Chamber for the next generation of neutrino experiments. Led by one of our Wilson Fellows, Fermilab and the University of Chicago are collaborating on the development of a meta-stable, continuously-active, room-temperature bubble chamber that holds the promise of being a cost-effective route to a very massive, and therefore very sensitive dark-matter detector.

These new initiatives illustrate the cleverness and drive of our scientific and technical staff, and they are helping to lay the groundwork for a continued vital and diverse scientific program in the years to come.

Announcements

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AD's Daren Plant took this picture from the 15th floor of Wilson Hall during Tuesday's midnight storm. (Click on image for larger version.)

In the News

CBS News, July 18, 2006:

New Proton Therapy Center Opens in Houston

Knees bent and hands above his head, Francis Maloy lay on his back on a narrow, metallic table inside a white chamber, waiting for a giant wheel-like device to bombard the tumor in his chest with protons.

"I had never heard of proton therapy. The last time I heard about protons I was in college taking physics," said Maloy, a 68-year-old retired Army colonel from Stuart, Fla., just before the procedure.

Maloy, who has advanced lung cancer, is one of the first patients being treated at the University of Texas M.D. Anderson Cancer Center's new $125 million Proton Therapy Center.

Read More

East entrance to close July 29

On Saturday, July 29, the Batavia Road east entrance to will close for road seal coating and striping. The entrance will be reopened Sunday morning, July 30, at 6:00 a.m. The bicycle path will remain open during this period.

Fermilab Barnstormers today

Fermilab Barnstormers will have trainer airplanes available to fly today at noon on the Model Airplane field across from the Pioneer Cemetery (rain date on Thursday). Come out to try your hand at flying models and learn what our hobby can offer. For more information, please contact Jim Zagel, x4076, or Rick Mahlum, x4316.

Professional Development Schedule:

July 18: Introduction to LabVIEW
August 7 & 8: Verilog Introduction
August 9 - 11: Advanced 2001 Verilog Coding Styles
Sept. 11 - 15: Java: Introduction
Sept. 20 - 22: Advanced Perl Programming
Oct. 17 & 18: Advanced Python Programming
More information

Upcoming Activities