

## Calendar

### Thurs., December 14

**12:00 p.m.** Special Particle Astrophysics Seminar - The Dark Side (WH-6W) (NOTE DATE, TIME, LOCATION)

Speaker: D. Stojkovic, Case Western Reserve University  
Title: Black Hole Formation, Evaporation and the Information Loss Paradox

**1:00 p.m.** ALCPG ILC Physics and Detector Seminar - Hornets Nest (WH-8XO)  
Speaker: R. Raja, Fermilab  
Title: The MIPP Experiment Upgrade and Hadronic Shower Simulations

**2:30 p.m.** Theoretical Physics Seminar - Curia II

Speaker: G. Kozlov, JINR, Dubna

Title: Lepton-Flavor Violation, Extra Gauge Bosons and New Physics Scale

**3:30 p.m.** Director's Coffee Break - 2nd Floor Crossover

**4:00 p.m.** Accelerator Physics and Technology Seminar - 1 West

Speaker: P. Adamson, University College, London/Fermilab

Title: Main Injector Digital Dampers

**6:00 p.m.** UTeV Seminar - 1 West

Speaker: R. Field, University of Florida

Title: Toward an Understanding of Hadron-Hadron Collisions: From Feynman-Field to the Tevatron

### Fri., December 15

**11:00 a.m.** Computing Techniques Seminar - FCC 1

Speaker: V. Welch, University of Illinois, Urbana-Champaign  
Title: A Roadmap to Federated Identity for Grids

**2:30 p.m.** Special Particle Astrophysics Seminar (NOTE

## Feature Story

### The new kid is moving fast



Hideyuki Takei helped to install the scintillator in SciBar last week.

Fermilab's wily little experiment SciBooNE passed a major milestone last week. One of its three components--the part of the detector known as "SciBar"--had its scintillator installed without any hitches and ahead of schedule. "It was supposed to take about twelve days," said team member Hideyuki Takei. "We finished in about nine."

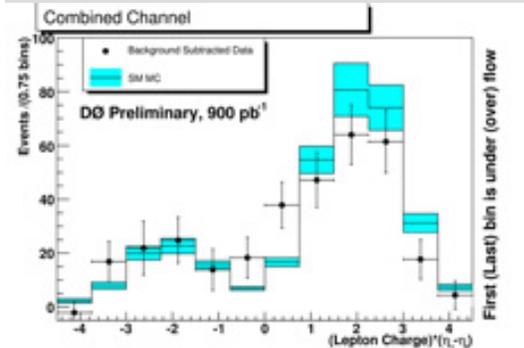
SciBooNE is a neutrino detector that will inhabit a 23-by-16-foot pit about 300-feet downstream of the neutrino beam source, powered by the booster accelerator. The detector will have three parts:

**SciBar:** A plaid of horizontal and vertical scintillator strips, SciBar determines the location in which a neutrino hits the detector. When SciBar interacts with an incoming neutrino, it turns the neutrino into a muon (the electron's heavy-set cousin) and a proton.

The proton gets caught in SciBar, but the muon makes it to the next step, the **Electron Catcher**. The EC measures photons and

## Fermilab Result of the Week

### From ancient Greece to the Tevatron



The difference in angular distributions of photons and lepton from W boson decays.\*

A common thread has been connecting theories of nature for nearly 2500 years. Ancient Greeks believed all matter could be broken down into four "roots": water, earth, air and fire. These roots were bound by the forces of love and hate, together creating unity and division. In this rather romantic theory, all features of nature are determined by the mixing of these basic elements by the two forces. Today, physicists embrace a theory called the Standard Model, which forms a description of the universe with matter particles (quarks and leptons) bound or repelled by the efforts of force-carriers (photons, gluons, W/Z bosons). Although it is the more modern of the two theories, the Standard Model is not entirely devoid of the passionate relationships envisioned by the Greeks.

The Standard Model predicts a relationship between two force-carriers, the photon and the W boson, that exhibits both harmony and discord. When produced together, the angular distribution of the photon should present regions of both enhancement and attenuation due to quantum interference with the W boson. Referred to as the "Radiation Amplitude Zero," this conflicting behavior is very precisely predicted by the Standard Model, and any deviations from this prediction would challenge the foundations of the theory - a possible indication of new physics. Until recently, this phenomena was not observable at the Tevatron due to the rarity of simultaneous production of W bosons and photons.

DATE ) - Curia II  
 Speaker: P. Wu, National Taiwan University  
 Title: First Results from MAXIPOL and Status of AMiBA  
**3:30 p.m.** Director's Coffee Break - 2nd floor crossover  
**4:00** Joint Experimental Theoretical Physics Seminar - 1 West  
 Speaker: A. Gritsan, Johns Hopkins University  
 Title: Measurement of Alpha: Taming the Mischievous Penguin

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

**Weather**

 **Partly Cloudy 51°/31°**

[Extended Forecast](#)

[Weather at Fermilab](#)

**Current Security Status**

[Secon Level 3](#)

**Wilson Hall Cafe**

**Thursday, December 14**

- Minnesota Wild Rice with Chicken
- Tuna Melt on Nine Grain
- BBQ Ribs
- Chicken Casserole
- Buffalo Chicken Wrap
- Assorted Slice Pizza
- Toasted Pecan Chicken Salad

[Wilson Hall Cafe Menu](#)

**Chez Leon**

**Thursday, December 14 Dinner**

- Coquille St. Jacques
- Medallions of Pork Tenderloin with Port Mushroom Sauce
- Corn Risotto
- Vegetable of the Season
- Chocolate Fondue with Assortment of Fruit

**Wednesday, December 20 Lunch**

- Salmon and Spinach Wellington
- Mixed Greens with Radishes

electrons that may have been produced with the proton and the muon. Like a bowling ball rolling through a pile of ping-pong balls, the muon easily filters through the electrons and photons that get knocked into the EC.

The **Muon Range Detector** is the next stop for the muon. Layers of steel slow it down, and scintillator in between detect its presence. Knowing how many layers of steel the muon has traversed reveals how much energy the muon started with. Adding the muon's energy to the proton's energy gives the energy of the original neutrino that slammed into SciBar.

The SciBooNE experiment may be up and running as soon as April. Just a year ago, the team was dismantling SciBar at KEK in Japan to be shipped over to Fermilab for re-use. Now they are arranging the detector inside a white masking-tape outline set to the dimensions of SciBooNE's tiny, final resting place. "Installation in the SciBooNE enclosure will be like a 3-D version of Tetris," said SciBooNE Project Head Rick Tesarek.

--Siri Steiner

**More about SciBOONE:**

- ['Acqua alle Funi' is operative phrase for SciBooNE team](#)
- [Small building, big goals for SciBooNE construction](#)
- [SciBooNE's SciBar detector zipping along at light speed](#)
- Watch [live footage](#) of SciBooNE assembly at CDF.

**Readers Write**

**Comma economy?**

Dear FT:

I can't help but to notice the missing commas in the last two issues of *Fermilab Today*. Two were omitted yesterday, and one was omitted today. I understand that with the federal budget process on hold, many cutbacks have to be made. Fortunately, however, I happen to have some commas retrieved from some recycled BTeV design reports and have included them for your future use.

, , , , , , , , , ,  
 Cheers,  
 Dave Pushka  
 PPD, Mechanical Engineering

**Editor Responds:**

Members of the DZero collaboration have measured this process using purified samples of events containing a photon and a W boson decaying to a lepton (electron or muon) and a neutrino. By looking at the angular relationship of the lepton and photon, DZero physicists have been able to observe a behavior consistent with the Standard Model at 90 percent confidence level. This measurement not only fortifies the foundations of the Standard Model, but allows the ancient Greeks' romantic theory to continue weaving itself into our modern view of the world.



From left: Adam Lyon, Fermilab; Greg Pawloski, Rice University; and Andrew Askew, Florida State University, are studying this process at the DZero experiment.



The photon identification group at DZero provides robust support for all analyses that need to select photons. The members include Oleksiy Atramentov, Dan Duggan, Yuri Gershtein (Florida State University), Dmitry Bandurin, Alexei Ferapontov and Yurii Maravin (Kansas State University). Greg Pawloski and Andrew Askew (top picture) are also members of the photon ID group.

\***Graphic at top:** The black points are the observed data and the histograms represent the prediction of the Standard Model. The radiation amplitude zero can be seen near the value of zero in the figure.

**Accelerator Update**

and Raspberry Vinaigrette  
Chocolate Cake with  
Raspberry Sauce

### [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 Today is online at:  
[www.fnal.gov/today/](http://www.fnal.gov/today/)

Send comments and  
suggestions to:  
[today@fnal.gov](mailto:today@fnal.gov)

Thanks for the extra commas, Dave. They can  
be slippery little buggers.

### International Science Grid This Week

## Bringing arts and humanities into the grid

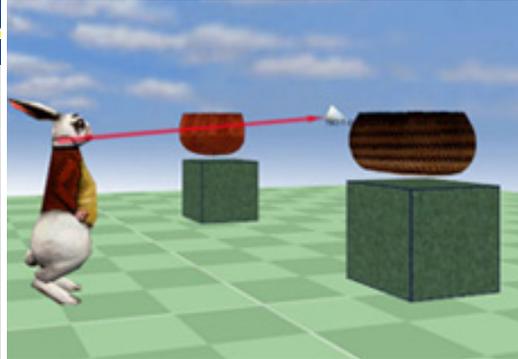


Image from a virtual gallery created with the  
CITRIS Collaborative Gallery Builder, a project  
associated with HASTAC. *Image Courtesy CITRIS/  
University of California*

Since 2003, the HASTAC consortium has  
worked toward the novel objective of  
developing software and hardware solutions  
for the worlds of the arts and humanities.  
HASTAC — which stands for Humanities,  
Arts, Science and Technology Advanced  
Collaboratory — also advocates the inclusion  
of thought on the social, ethical and access  
issues of technology in parallel with its  
creation.

“The idea was for humanities professors to  
look at ways to incorporate technologies like  
grid computing into their research,” says  
HASTAC Project Leader Jonathan Tarr. “They  
needed to save humanities from becoming a  
group of scholars who only work on physical  
text and weren’t going along with the  
technology revolution.”

### [Read More](#)

### In the News

## **Chicago Tribune, December 9, 2006:**

### **Isotope project back on track**

*Argonne gears up to prepare its case*

The federal government is reviving plans to  
build a \$500 million rare isotope accelerator  
that scientists at the University of Chicago and  
Argonne National Laboratory hope to bring to  
Illinois.

A report released Friday by the influential  
National Academies of Science supports the

### **December 11 - 13**

- Three stores provided 39 hours and 30  
minutes of luminosity
- Pbar's target stopped rotating
- Four MI-10 vacuum pumps trip off
- MI kicker problems
- MiniBooNE off due to LCW pump problem

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

### Announcements

### **Real time computing conference**

Mark your calendars! From April 29 to May 4,  
Fermilab will host an interdisciplinary  
conference on the latest real time computing  
applications in plasma physics, nuclear  
physics, astrophysics, space science,  
accelerators, medicine and biology. Find more  
information [here](#).

### **The EAP Office will close for Holidays**

The Employee Assistance Program Onsite  
Office at Fermilab will be closed Friday,  
December 22, and Friday, December 29. As  
always, the EAP is available 24/7 at 800-843-  
1327 or online at [www.vmceap.com](http://www.vmceap.com). To login,  
use the company name "fermilab," or "fnal,"  
password 8008431327.

### **Fermilab Flu shots**

The Fermilab Medical Office is offering free flu  
shots. You are eligible to receive the free flu  
vaccine if you are an active, full-time regular  
employee or term and temporary employee.  
The following groups are not eligible:  
contractors, family members of employees,  
visitors/experimenters, seasonal employees,  
dayworkers and retirees. Please call Medical  
at x3232 to schedule a date and time.

### **Fermilab Folk Club Barn Dance**

There will be a Fermilab Folk Club Barn  
Dance Sunday, Dec. 17 at 2 p.m. with music  
by the 3rd Sunday String Band and calling by  
Tony Scarimbolo. [More information](#).

### **International Folk Dancing**

International Folk Dancing will meet Thursday,  
Dec. 14, at Kuhn Barn. Dancing begins at 7:30  
p.m. with teaching and children's dances  
earlier in the evening and request dancing  
later on. Newcomers are welcome and you do  
not need to come with a partner. Info at 630-  
584-0825 or 630-840-8194 or [folkdance@fnal.gov](mailto:folkdance@fnal.gov). This group will meet without a break  
through the holiday season.

### [Upcoming Activities](#)

notion and a task force organized by the government met in Chicago Friday to discuss how such a project might proceed.

"The real news today is that a project everyone thought was dead is really back on track again," said Michael Turner, Argonne chief scientist. "Argonne will prepare a great case for building the facility here."

[Read More](#)