

Calendar

Friday, April 14

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

4:00 p.m. Joint Experimental Theoretical Physics Seminar - 1 West Speaker: F. Canelli, University of California, Los Angeles

Title: CDF Top Quark Mass Measurements

Monday, April 17

11:00 a.m. Academic Lecture Series - Curia II

Speaker: B. Cabrera, Stanford University/Fermilab

Title: The Search for WIMP Dark Matter Around Our Galaxy, Course 7 (First Lecture)

2:30 p.m. Particle Astrophysics Seminar - Curia II

Speaker: M. Neyrinck, University of Hawaii

Title: The Cosmological Information Content of the Halo-Model Dark-Matter Power Spectrum

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

THERE WILL BE NO ALL EXPERIMENTERS' MEETING THIS WEEK

Weather



Partly Cloudy **81°/51°**

[Extended Forecast](#)

[Weather at Fermilab](#)

Current Security Status

Fermilab educators lead e-Lab outreach in Bangalore

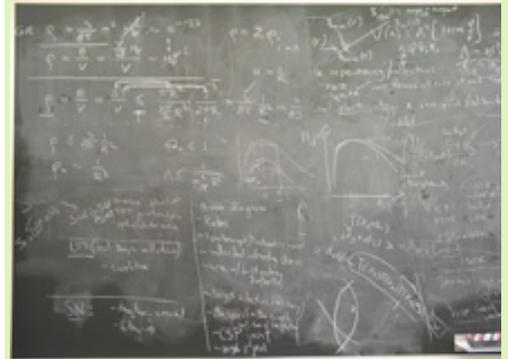


Of the 21 teachers who took part in the two-day workshop, 15 were women. Marge Bardeen, of Fermilab, is in the upper left. [\(Click for larger version.\)](#)

Armed with tin foil, GPS units and sheets of black paper, two Fermilab educators recently headed to Bangalore, India. They went there to help high school and college teachers set up a detector at a local planetarium, so Indian students could join a study of cosmic rays. "The goal is to set up a research community that involves teachers and students," said Marge Bardeen, Fermilab Education Office Director and co-facilitator of the two-day workshop. "We set up the detector, and taught teachers how their students can conduct investigations online." Using a website called an e-Lab, students can upload and analyze cosmic ray data, showcase their research, and communicate with US students doing similar studies.

In the e-Lab, students ask questions about cosmic rays and use the shared, online data to answer their questions. According to co-facilitator Bob Peterson, part of the excitement is in figuring out what to ask. "There isn't one big cosmic ray question that the students are trying

What's on your wall? Snapshot a la chalkboard



They may not look fancy, but the diagrams near the center of this chalkboard describe major cosmological events. [\(Click for larger version.\)](#)

Empty chalkboards are all alike; every overflowing chalkboard is overflowing in its own way. Like much of what happens here at the lab, the chalkboards and whiteboards often reflect the combination of exciting science and routine details that make up a scientist's days here. The chalkboard of astrophysicist Josh Frieman includes everything from a rough budget sketch for a project still in R&D to diagrams that, though they look suspiciously similar, in fact describe two very different, major cosmological phenomena.

The diagram on the left is a plot of supernovae luminosity as a function of time. The plot shows that supernovae that fade more quickly also tend to be intrinsically less bright (bottom curve). Knowing this, astrophysicists use supernovae as "standard candles" to measure cosmic distances. "We want to use those to figure out how fast the universe has been expanding. And then use that to tell us about dark energy, the stuff causing the universe to speed up,"

[Secou Level 3](#)**Wilson Hall Cafe****Friday, April 14**

- Cream of Wild Mushroom
- Blackened Fish Filet Sandwich
- Southern Fried Chicken
- Fish Mediterranean
- Eggplant Parmesan Panini
- Pizza Supreme
- Assorted Sub Sandwich

[Upcoming Menu](#)**Chez Leon****Wednesday, April 19****Lunch**

- Tri-Colored Tortellini w/Gorgonzola Cream
- Sauteed Spinach
- Ginger Pear Crisp

Thursday, April 20**Dinner**

- Coquille St.Jacques
- Pork Tenderloin w/Marsala Sauce
- Steamed Asparagus
- Roasted Yukon Gold Potatoes w/Onion
- Rhubarb Apple Turnovers
- Pear & Almond Strudel

[Chez Leon Menu](#)

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to answer," he said. "One student asked me how snow affects cosmic rays, for example, and wound up creating a research project to find out."

Though cosmic ray detectors are scattered throughout US high schools, and about 170 are hooked up to the e-Lab now, the purpose of this visit was to make the collaboration international. "Our goal for this trip was to enable students in India to join the collaboration with the American students who are already logged in," said Peterson. Peterson says the Bangalore workshop participants were excited about bringing their classrooms online. "They were so smart and knowledgeable in high energy physics, but also so open to new ideas," he said. "They said 'this changes the way we teach,' but they were excited to try it."
--Siri Steiner

Photo of the Day

DZero's Jiri Kvita found this soldier beetle near East Gate Road last September.

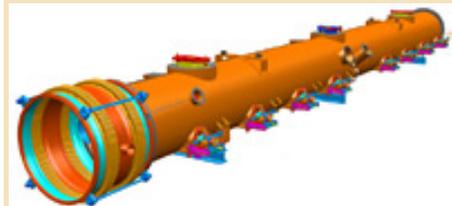
According to Lab Ecologist Rod Walton, soldier beetles feed on pollen, inadvertently cross-pollinating flowers. "They are really common here," said Walton. "If you go out for a walk on the prairie, you're bound to see a ton of them." (Click on image for larger version.)

In the News

says Frieman.

The other diagram shows the number of galaxy clusters as a function of their distance from us. Nearby, there will be a few clusters; at some middle distance, there will be a lot of clusters; and then really far away, again there are fewer clusters. "As you go out in distance, you're also going back in time," says Frieman. "If I look really far away, I expect to see few clusters because they haven't had time to form. How long clusters take to form depends in part on the rate at which the universe grows. That rate in turn depends on the dark energy."

--Dawn Stanton

ILC NewsLine**Designing the Perfect Cryomodule for the ILC**

The current proposal for the 4th generation cryomodule.

Using state-of-the-art technology, cryomodules are vessels that contain superconducting cavities in a linear accelerator. Inside the module, liquid helium cools the cavities to -271°C , only slightly warmer than the coldest possible temperature. The superconducting cavities operate at these super-cool temperatures, pumping more and more energy into the particles that are moving at nearly the speed of light inside the accelerator.

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The Post Chronicle, **April 13, 2006:** **Fermilab Clocks Matter-Antimatter 'Dance'**

BATAVIA, Ill. - April 11, 2006 (UPI) -- Scientists at the Fermi National Accelerator Laboratory in Batavia, Ill., say they've measured the rapid transitions between matter and anti-matter.

The researchers at the U.S. Department of Energy facility said it's been known for 50 years that very special species of subatomic particles can make spontaneous transitions between matter and antimatter. In the new research, physicists measured the rate of those matter-antimatter transitions at 3 trillion times per second.

"Exploration of the anti-world's mysteries is a crucial step towards our understanding of the early universe, and how we came to be," said Raymond Orbach, director of the DOE's Office of Science.

Scientists hope that by assembling a large number of precise measurements involving the exotic behavior of the particles, they can begin to understand why they exist, how they interact with one another and what role they played in the development of the early universe.

[Read More](#)

Fermilab Association of Rocketry

The Fermilab Association of Rocketry (FAR) is having it's first monthly club launch of the new season on April 15, 2006 from 10 a.m. until 3 p.m. We'd also like to thank everyone that came to our booth and signed up during the fair on the April 12. Hope to see you at the e-launch! More details can be found on [our website](#).

NALWO Cooking Demonstration

Get ready for the NALWO Indian cooking demonstration on April 24, from 10:30 a.m. to 2:00 p.m. at Chez Leon. Come learn traditional techniques and recipes as well as modern methods and tricks. Stay for lunch to taste the results! RSVP to SelithaR@hotmail.com or call 630-840-7769.

Power Outage

A major power outage will occur next Saturday, April 15. The outage will be from 7:00 a.m. to 5:00 p.m. and will affect the education center, MINOS and MiniBooNE. Please note that the education center will be closed for that day.

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](#).

New [classified ads](#) have been posted on Fermilab Today.

[Upcoming Activities](#)