

Calendar

Friday, June 3

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

4:00 p.m. Joint Experimental

Theoretical Physics Seminar - 1 West

Speaker: Y. Kamyshev, University of Tennessee

Title: Baryon Number Violating Processes and the Proton Driver

Monday, June 6

THERE WILL BE NO PARTICLE ASTROPHYSICS SEMINAR THIS WEEK

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

4:00 p.m. All Experimenters' Meeting - Curia II

Special Topic: PBar Source Diagnostics

Weather



Partly Cloudy 74°/61°

[Extended Forecast](#)

[Weather at Fermilab](#)

Current Security Status

[Secou Level 3](#)

Wilson Hall Cafe

Day Care Marks 25 Years Nurturing Lab Community

Patti Hedrick and Mary Simmons

remember that 25 years ago, the idea of many women in physics, or of on-site day care, were just ideas. "I think we were the only lab, or business in the area, with anything like this program," said Simmons. "On-site day care was very new." On June 1, the Children's Center day care facility celebrated its

25th anniversary with a reunion of parents, children and supporters.

"One can actually talk about a Fermilab community, in part as a result of the Day Care Center," said Director Michael Witherell.

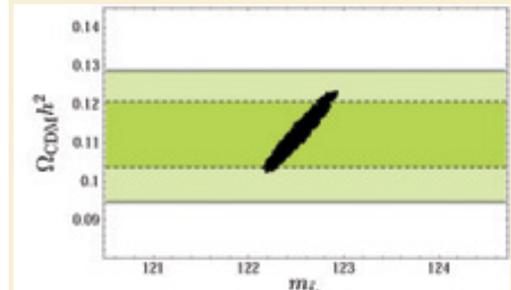
"Today, it is impossible to imagine Fermilab without the Children's Center." Michael and Beth Witherell's daughter Lily has attended the Children's Center, and Witherell spoke of the "magic of having all [our] children in our laboratory." His quote of former Director Leon Lederman emphasized that the lab's work means the most to future generations. Simmons recalled Lederman's enthusiasm and early support of the Children's Center, saying "he made it



Director Mike Witherell and his daughter Lily cut the cake at the 25th anniversary celebration for Fermilab's Day Care Center. (Click on image for larger version.)

ILC This Week

Theory Meets Experiment



The WMAP experiment has set limits on the relic density of the universe attributed to dark matter (horizontal lines). In a simulated ILC measurement (black ellipse), scientists were able to identify the mass and other properties of the stop quark, and to calculate the corresponding relic density.

The future experiments conducted at the International Linear Collider are expected to lead to important discoveries, providing deep insight into the basic ingredients of our universe: energy, matter, space and time. But how does one test whether an experiment will be able to live up to its expectations?

Scientists working on the design of the ILC detector are beginning to establish a table of subatomic benchmark processes that the detector should be able to identify among gazillions of uninteresting background processes. From particles observed in past experiments to hypothetical processes predicted by theoretical models, the ideal detector would be able to identify them all. But in the real world, experimenters have to make compromises as they construct the detector. Theorists and experimenters work together and carry out computer simulations to test the capabilities of

Friday, June 3

Beef Pepper Pot

Buffalo chicken wings \$4.85

Cajun Breaded Catfish \$3.75

Sweet & Sour Pork Over Rice \$3.75

Honey Mustard Ham & Swiss Panini
\$4.85

Double Stuffed Pizza \$3.50

Carved Turkey \$4.85

The Wilson Hall Cafe now accepts
Visa, Master Card, Discover and
American Express at Cash Register #1.

[Wilson Hall Cafe Menu](#)

[Chez Leon](#) is now open. Call x4512 to
make your reservation.

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important" when such a program was
new and unsure of its place in the lab.

Hedrick and Simmons pointed out that
the program is now in its second
generation of teachers and students,
with former Director Linda Braddy's
daughter on staff and her
granddaughter enrolled in the Infant
room. The response from past families
has been gratifying. "We had one
mother call us," said Hedrick, "saying
that she would definitely be coming
by, but her daughter was starting her
first day as a lawyer and wouldn't be
able to make it." Hedrick also spoke
about two former students who
maintained a friendship through
college, even though they lived in
different towns and never went to the
same school. "They've built a
relationship," Hedrick said. "Locating
these former students and hearing
these stories is great. That's where the
rewards come from."

--Amelia Greene



Too much cake! Babies lined up at the Day
Care Center, ready to go home after the
celebration. (Click on image for larger
version.)

**Oddone Adds New Look At
New Perspectives, June 9-11**

various detector designs.

Together with four experimenters from
Fermilab, Lancaster University and
DESY Zeuthen, Fermilab theorists
Marcela Carena and Ayres Freitas are
studying a possible ILC benchmark
process. The six scientists are
investigating whether an ILC detector
could measure the properties of stop
quarks, hypothetical particles
predicted by Supersymmetry.

"Stops are of great theoretical
interest," says Freitas. "If they exist
and if they are light enough, they must
have played an important role in the
formation of matter in the early
universe. They would have an effect on
the total amount of dark matter."

Electron-positron collisions at the ILC
would produce pairs of stop quarks,
which would yield a signal of two
charm quark jets and missing energy.
Detecting these decays and
concluding the existence of stop
quarks is an experimental challenge.

"Anything else that creates two jets
and large missing energy is a severe
background," said Caroline Milstene,
one of the four experimenters working
on the project, during her presentation
of the study at Fermilab in May. "We
have to get rid of background that is a
few orders of magnitude bigger than
the signal."

The team showed that the ILC detector
would be able to determine the mass
of a potential 122.6 GeV stop quark
with a precision of +/- 0.4 GeV.
Combining this analysis with other ILC
precision measurements, they found



(Left to Right) GSA officers David Clark, Katherine Copic, Yannis Katsanos, Jennifer Pursley and Sinjini Sengupta organized the New Perspectives Conference this year. (Click on image for larger version.)

Fermilab's Graduate Students Association and Young Particle Physicists chapter will host the New Perspectives Conference on June 9-11, with an expanded program featuring Harrison Prosper of Florida State University, Steven Kahn of Stanford University, and incoming Fermilab director Pier Oddone as speakers on June 10. "This is the first year we have had speakers from multiple institutions," said GSA officer Jen Pursley. "We wanted to bring something new to the conference."

The wine-and-cheese reception on June 9 will feature posters on display for the annual competition. "It's a great experience for physicists at this level to start presenting their work," said Pursley. "We will be asked to do that a lot in the future." The GSA offers prizes to the three best posters, in memory of George Michail, a graduate student at Fermilab who died in a tragic automobile accident at the age of 28.

New Perspectives also offers the

that the ILC can test whether supersymmetric particles are the source of dark matter. The study will be published later this year.

--Kurt Riesselmann

[Linear Collider News Archive](#)

Announcements

Register for the 2005 Fermilab Users' Meeting

It's not too late to register for the 2005 Fermilab Users' Meeting. Join us for:

- Presentations from representatives of DOE, NSF and OSTP, with Q&A
- Latest results from Fermilab experiments
- An insider's view of the EPP 2010 panel
- Status of future initiatives at the lab and in HEP as a whole
- Free catered dinner at the Users Center...but only if you REGISTER! Registration is free, and can be done online at the [Users' Meeting](#) Web site.

Classifieds Delayed

New classified ads will not be posted until later today. We apologize for the delay and appreciate your patience.

Join Fermilab's Weight Watchers Group

Fermilab's Weight Watchers Group meets on Tuesdays from 11:30 to 12:30 PM on the 15th floor of Wilson Hall in the North West classroom. The cost of the 10 sessions is \$119.00. There are several payment options available. If interested, please contact [Bernie Dugan](#) at x3591 or [Mae Strobel](#) at x6630

Children's Treasure Hunt Party -

chance to see what is going on in the larger community of particle physics. "Oftentimes we get trapped in the specifics of our own research," said Pursley. "Graduate students welcome another perspective-even from someone working on the same experiment."

[more information](#)

--Amelia Greene

In the News

From *New Scientist*, June 2, 2005

Mystery rays could be sign of cosmic strings

The mysterious gamma rays that emanate from the central bulge of our galaxy could arise from a seething tangle of "cosmic strings".

The gamma rays have a distinctive energy of 511 kiloelectronvolts, suggesting they are formed by the mutual annihilation of electrons and their antimatter counterparts, positrons. But where do the positrons come from? "This is the big mystery," says Tanmay Vachaspati, a string theorist at Case Western Reserve University in Cleveland, Ohio.

[Read more](#)

August 5

This two hour event offers an introduction to the safe use of snorkeling gear and the aquatic environment. The Party will be held on August 5 at the Village Pool from 9 AM - 11 AM. The cost for each child is \$20.00. Cost includes an introduction to snorkeling basics, treasure hunt in an artificial reef environment, pirates treasure to keep, use of snorkel gear and a personal snorkel to keep.

Children ages 5 to 12 years of age are accepted. Children must know how to swim and be comfortable in the water. Registration deadline is July 29.

Maximum of 20 children accepted.

Registration can be made in the Recreation Office.

[more information](#)

[Upcoming Activities](#)