

Calendar

Thursday, July 15

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

Speaker: G. Mahlon, Pennsylvania State University

Title: Understanding Angular Correlations in Associated Higgs Production

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

Friday, July 16

3:30 p.m. DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

4:00 p.m. Joint Experimental Theoretical Physics Seminar - 1 West

Speaker: C. Gay, Yale University

Title: Time-Dependent Amplitude Analysis of $B_d \rightarrow J/\psi K^*$ and $B_s \rightarrow J/\psi \phi$ and a Lifetime Difference in the B_s System

Wilson Hall Cafe

Thursday, July 15

Southwestern Chicken Tortilla soup

Philly Style Cheese Steak \$4.75

Baked Fish w/ Roasted Leeks and Peppers \$3.75

Tomato Basil Chicken Parmesan \$3.75

Classic Cuban Panini \$4.75

Four-Cheese Pizza \$2.75

[Wilson Hall Cafe Menu](#)

[Chez Leon](#)

Weather

High School Teachers Collaborate on BTeV



BTeV physicist Harry Cheung (top right) works with high school teachers (from left) John Eggebrecht, Brenda Marr and Carolyn Degraff. (Click on image for larger version.)

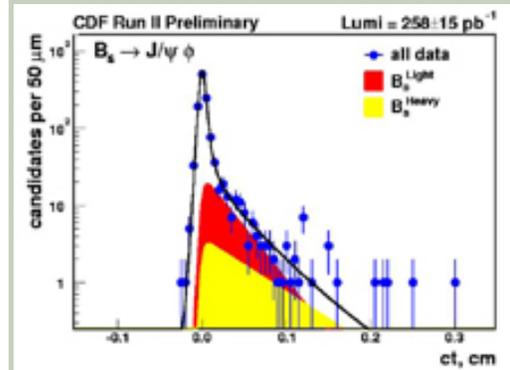
Three area high school physics and chemistry teachers are working with the BTeV collaboration this summer through the Teachers Research Associates Program at Fermilab, the lab's summer research program for secondary-school teachers.

The teachers' summer research is funded by the outreach portion of the \$5 million BTeV Real Time Embedded Systems grant from the National Science Foundation. The grant funds a collaboration of Fermilab computer scientists and physicists to develop BTeV's data acquisition and trigger systems. "We're all working on different parts of the RTES project," said Brenda Marr from Glenbard West High School. "Each year the RTES group sets up a mini computer farm to demonstrate where they are in the research. We're getting the next demo ready for this fall."

Marr and Carolyn Degraff from Elgin High

Fermilab Result of the Week

A Tale of Two Lifetimes



The data and results of the analysis as a projection in terms of lifetime. The contributions from the long-lived (Heavy) and short-lived (Light) B_s state are shown in yellow and red, respectively. (Click on image for larger version.)

The study of elementary particles through their disintegration could be described by updating an adage from the early days of cosmic ray physics: One event determines the mass, two events determine the lifetime and three events determine the angular momentum properties.

Experimentalists at CDF have analyzed about 200 neutral B_s mesons (which consist of a strange and an anti-bottom quark) and their antiparticles in terms of their decays to $J/\psi \phi$. With this number of events, one can determine the angular momentum properties of the decays as a function of the particle's lifetime through the observed pattern of emission of the final state particles (2 muons and 2 charged kaons).

The quantum oscillations occurring between the particle and anti-particle states of B_s mesons are so rapid, it is useful to consider the system in terms of



Mostly Sunny 82°/64°

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School are also working on a Web site to communicate the RTES project to students. "I came onboard knowing how to turn on a computer--that's about it," said Degraff. "I've already learned Linux and Flash, and now I'm learning Dreamweaver."

John Eggebrecht's work on software for BTeV will support part of his job at the Illinois Math and Science Academy--maintaining the computer systems. "This is nice, because I get to work on one problem all day long," said Eggebrecht. "That's what really distinguishes it from teaching."

Accelerator Update

July 12 - July 14

- During this 48 hour period Operations established one store that, added to an existing store, provided the experiments with approximately 31 hours and 32 minutes of luminosity.
- Meson had LCW troubles
- Switchyard had FSEPV problems
- E1 cryo wet engine bearings replaced
- Recycler stashed antiprotons

[View the current accelerator update](#)

[View the Tevatron Luminosity Charts](#)

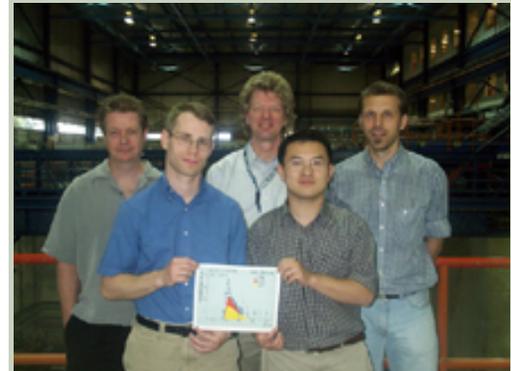
In the News

From *U.S. Newswire*, July 13, 2004

U.S. ITER Project Office will be Located at Princeton Plasma Physics Laboratory

WASHINGTON, DC – The U.S. Department of Energy announced today that the U.S. project office for ITER, a major international fusion experiment, will be located at Princeton Plasma Physics Laboratory (PPPL). PPPL is located on

Heavy and Light states. Each state decays with distinct angular distributions and different lifetimes. This analysis finds that about a quarter of the events are from the Heavy state and that this state lives about twice as long as the Light state. This implies that B_s mesons can readily be used to study matter-antimatter asymmetry. The sizeable lifetime difference may also present a challenge to the Standard Model.



The authors of this paper are (left to right): Colin Gay (Yale), Konstantin Anikeev (MIT), Michael Schmidt (Yale), Ke Li (Yale) and Christoph Paus (MIT). Anikeev and Li are graduate students who will write their dissertations on this analysis. (Click on image for larger version.)

[Result of the Week Archive](#)

Announcements

Dave Herzog's Marionette Show

The Fermilab Recreational Office presents the Dave Herzog Marionette Show, which will be held in the upper level of Kuhn Barn on July 16 at noon. This event is open to all Fermilab employees, visitors and on-site contractors and their children. This event is free. All we ask is that you do not arrive late. If your spouse is coming from off-site you must notify security.

Midsummer Theatre Troupe Shakespeare on Clark

Looking for something to do this weekend? Why not brush up on your Shakespeare and watch Bruce Worthel of

Princeton University's James Forrestal Campus in Plainsboro, NJ, and is charged with developing the scientific understanding and key innovations that will lead to an attractive fusion energy source.

[read more](#)

From *Nature Magazine*, July 15, 2004

Britain spends to secure scientific growth

[LONDON] UK researchers will find more money in the coffers of those funding them over the next three years, thanks to spending plans announced by the government on 12 July.

The plans call for the country's two main science-funding streams, which cater for basic research grants and university running costs, to be boosted by 5.8% a year in real terms between 2004–05 and 2007–08.

[read more](#)

the Accelerator Division up on stage? The Midsummer Theatre Troupe will perform "The Merry Wives of Windsor" at 7:00 p.m. every Saturday from July 17-31 on Clark Island in downtown Batavia. The performances are free and performed outside. Bring your own picnic basket and lawn chairs.

[more information](#)

Main Site Domestic Water Flushing This Week

Main site domestic water flushing will begin this Wednesday, July 14, 2004 at approximately 6:00 a.m. and will continue through the end of the work day on Friday, July 16, 2004. You may notice a slight discoloration in the water during this activity. If you have questions or concerns please contact Steve at x3363, cell phone (640) 951-5300 or long range page (630) 266-8627. Thank you for your patience during this maintenance operation.