Fermilab Today

Thursday, July 21, 2005

Calendar

Thursday, July 21

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

Speaker: Z. Nagy, Zürich University

Title: Matching Parton Showers to NLO Computations

3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over

THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

Friday, July 22

3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over

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

Speaker: R. Demina, University of Rochester

Title: Top Quark Mass Measurement from DZero

Weather

Chance Thunderstorms **88°/69°**

Extended Forecast

Weather at Fermilab

Current Security Status

Secon Level 3

Wilson Hall Cafe

Now Open for Scientific Research: Open Science Grid

Opening the Open Science Grid (left to right): Abbas Ourmazd, Craig Tull, Frank Wuerthwein, Kevin Thompson, Randy Ruchti.

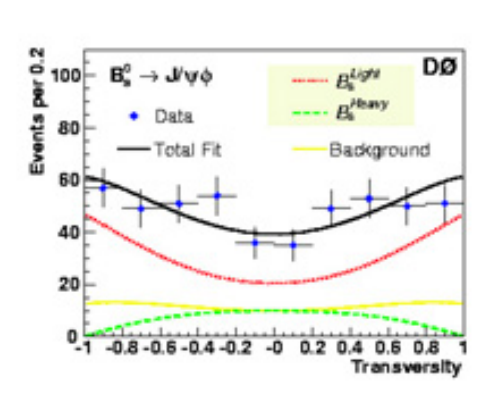
Milwaukee, WI — The Open Science Grid Consortium today (Wednesday, July 20) officially inaugurated the Open Science Grid, a national grid computing infrastructure for large scale science. The OSG is built and operated by teams from U.S. universities and national laboratories, and is open to small and large research groups nationwide from many different scientific disciplines.

The Consortium currently has over 20 member organizations contributing manpower and resources to a common cyberinfrastructure. Research groups that join the Consortium contribute to the use and operation of the OSG and have access to shared resources. The OSG includes over 10,000 CPUs and access to many terabytes of data storage. Initial funding comes from a variety of sources through member organizations.

U.S. participants in experiments at the Large Hadron Collider, currently being built at CERN in Geneva, Switzerland, invest heavily in advancing OSG

Fermilab Result of the Week

The Heavy Twin Appears to Live Longer?



Fit to the "transversity" angular decay variable used to separate the "light" mass state from the "heavy" mass state. The amplitude of the "heavy" curve fit corresponds to 16% of the total B_s mesons at the time of production.

Currently the Tevatron is the only place where B_s mesons (containing an anti-b-quark and a strange quark) can be produced. These mesons are particularly interesting since they are made up of a quantum mechanical entanglement of two physical particles: a "heavy" mass state and a slightly less massive "light" state. In addition to a tiny mass difference between them (also being explored at Fermilab), it is expected that they have slightly different lifetimes. The two states have identical decay products, but a careful analysis of the angular distribution of their decays to J/psi and phi particles allow their separation and a measurement of each of their lifetimes.

A large enough lifetime difference may allow explorations of possible

asymmetries between matter (B_s) and anti-matter ($B_{s(bar)}$) and provide clues to why the universe and the world in which

Thursday, July 21
Santa Fe Black Bean Soup
Sloppy Joe $4.85
Stuffed Peppers $3.75
Sauteed Liver & Onions $3.75
Baked Ham & Swiss on a Ciabatta Roll $4.85
California Pizza $3.00
Crispy Fried Chicken Ranch Salad $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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capabilities and development schedule. Other projects in physics, astrophysics, gravitational-wave science and biology contribute to the grid and benefit from advances in grid technologies. The services provided by the OSG will be further enriched as new projects and scientific communities join the Consortium.

read more

-Katie Yurkewicz

ILC This Week

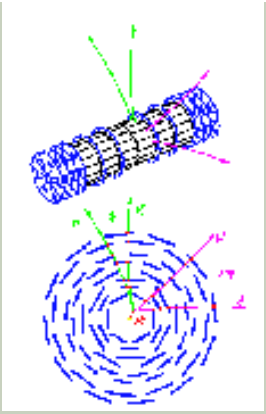
From the GDE Director's Corner, July 20

The 12th International Workshop on RF Superconductivity was held at Cornell University from July 10-15.

....Superconducting RF has emerged over the past several decades as a key technology for particle accelerators. Last week, many of the leaders of that field participated in the "12th International Workshop on RF Superconductivity," held at Cornell University from July 10-15.

This year's workshop was very capably organized by Hasan Padamsee (chair of the organizing committee) and his colleagues. The meeting covered many of the latest advances in the science, technology and applications of RF superconductivity to particle accelerators. It included reviews of the status of a large range of applications currently underway, as well as many ideas and proposals for applications. Not surprisingly, at this

we live are dominated by matter rather than anti-matter. A lifetime difference smaller than that predicted by our "Standard Model" may indicate the exciting possible effects of new physics.



Schematic of how position of "hits" in the DZero Silicon Microvertex Tracker from candidate tracks of the decay products of a B_s meson can be used to determine where (and hence when) the particle decays. (Click on image for larger version.)

Previously the DZero Collaboration measured a single effective lifetime of the B_s meson via this decay (see 28 Oct. 2004 Result of the Week). DZero has now extended this work to find that the B_s meson is produced in the "heavy" mass state roughly 16% of the time. This state then subsequently lives slightly longer than the "light" mass state (in contrast to the usual situation of "heavier" brothers having shorter lifetimes!). Details and results of this analysis have been submitted to Physical Review Letters.

(Left to Right) Daria Zieminska, of Indiana University, Avdhesh Chandra and Shashi Dugad (not shown),both of Tata Institute of Fundamental Research, India, have all contributed to this analysis.

year's meeting, there was much emphasis on the linear collider. There were talks on new developments of various types that could improve the performance of ILC cavities, there was a special session with industry, and the final "ILC fest" featured talks by Maury Tigner, Gerry Dugan and me.

Read more

Linear Collider News Archive

Accelerator Update

July 18 - July 20

- During this 48 hour period Operations established two stores that combined with an existing store provided the experiments with approximately 27 hours and 46 minutes of luminosity
- MI suffers from RF and damper problems
- RF trip causes TeV store abort

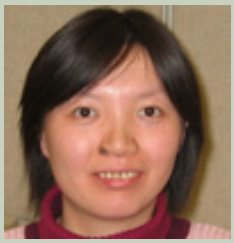
Read the Current Accelerator Update
Read the Early Bird Report
View the Tevatron Luminosity Charts

In the News

From *PhysicsWeb*, July 20, 2005

New Light on the Weak Force

An international collaboration of particle physicists has made new measurements that shed more light on the weak force, which is responsible for radioactive beta-decay. The results, which agree with the Standard Model, show that the strength of the weak force acting on two electrons lessens when the electrons are far apart (hep-ex/0504049). "Physicists have long expected that the weak-force interactions would be weaker at longer distances, but proving it wasn't easy," says experiment co-spokesman Krishna Kumar, who is at




(Left to Right) Shaohua Fu, of Fermilab, and Alex Melnitchouk, of U. Mississippi, have been responsible for maintenance of the reconstruction code for the silicon tracker and for incoporating information from the new "Layer-0" silicon tracker into the code.

Result of the Week Archive

Correction

- Our apologies regarding yesterday's incorrect link for the *New York Times* article, "Between Series, an Actress Became a Superstar (in Math)." Click on this link to read the complete story.

- On Tuesday, the Director's Corner misspelled Budker's first name. The correct spelling of his first name is Gersh.

Announcements

Drug Sniffing Dogs Perform at Fermilab

On Friday, July 22, the CDF band Drug Sniffing Dogs will be playing in the Users' Center at 7:30 p.m. These "rendition rockers" have about 35 songs spanning the last 40 years of rock 'n' roll ready for Friday. Vocalist Ben Kilminster recommends that audience members "bring your dancing shoes and your new tattoos," and says the band will play particle physics-themed interpretations of certain songs by request.

New Classifieds on Fermilab Today

New classified ads have been posted on Fermilab Today.

Third Thursday Lunchtime Cleanup on July 21

the University of Massachusetts-Amherst.

In the E158 experiment at the Stanford Linear Accelerator Center (SLAC), a high-energy beam of electrons is fired at a liquid hydrogen target. The beam is polarized with the spins of the electrons either pointing in the same direction as the beam (so-called right-handed polarization) or in the opposite direction (left-handed polarization). The vast majority of electrons scatter off electrons in the target by exchanging a photon, but very occasionally an electron does so by exchanging a Z boson instead.

Read more

There will be a Third Thursday Lunchtime Cleanup on July 21 from 11:45 a.m. to 1:30 p.m. Meet at the east ground floor entrance of Wilson Hall for transportation to the cleanup site. Cleanup gear will be provided. Hot dogs and refreshments will be served.

more information

Upcoming Activities