Fermilab Today

Wednesday, September 7, 2005

Calendar

Wednesday, September 7
11:00 a.m. Fermilab ILC R&D Meeting - 1 West
Speaker: S. Mishra, Fermilab
Title: Summary of the Snowmass Accelerator Workshop
3:30 p.m. Director's Coffee Break - 2nd Flr X-Over
4:00 p.m. Fermilab Colloquium - 1 West
Speaker: T. Newman, University of California, San Francisco
Title: The Power of Stories Over Statistics: Illustrations from Neonatal Jaundice and Infant Airplane Safety

Thursday, September 8
11:00 a.m.-2:00 p.m. Health Fair
2:30 p.m. Theoretical Physics Seminar - Curia II
Speaker: D. Forde, Saclay
Title: All-n Amplitudes in QCD
3:30 p.m. Director's Coffee Break - 2nd Flr X-Over
6:00 p.m. UEC Career Night
Note: There will be no Accelerator Physics and Technology Seminar today

Weather

Chance Tstms 84º/61º

Extended Forecast

Weather at Fermilab

Current Security Status

Secon Level 3

Wilson Hall Cafe

Much More than Paper Cranes: Origami Art Comes to Fermilab

Artist Lane Allen. (Click on image for larger version.)

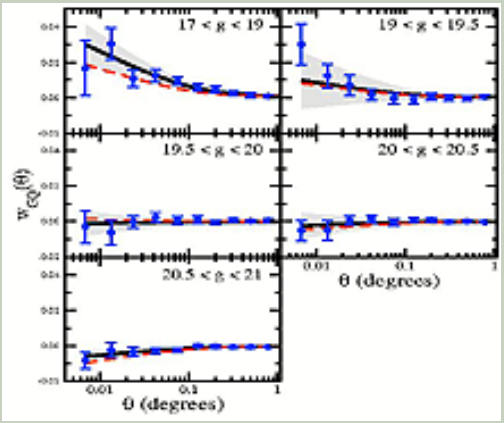
Check out the new art exhibit on the second floor of Wilson Hall, and you'll be in for a treat. From smiling metal Yodas to strolling paper hermit crabs, Fermilab's new origami art installation, which will be on display until November 4, is anything but ordinary.

Artists Chris Palmer, Lane Allen and Robert Lang have folded intricate mesh and paper sculptures from flat sheets that, in some cases, started out over nine feet long. The artists use the same method many of us used to make cranes and party-hats in elementary school—with a series of precise folds. But these designs are not kid's stuff. The display includes a three-foot-tall folded-mesh dragon crouching over his young, for example, and an origami owl with detailed talons that appears to swoop down to catch her prey.

"The first thing you learn in art school is that sculpture is either additive or subtractive [like construction vs. woodcarving]," explained artist Lane Allen, "but origami is unique in that it is

Astrophysics Result

SDSS Measures Cosmic Magnification



The angular cross-correlation function between galaxies and quasars as function of quasar magnitude g (larger g means fainter quasars). The measurements are shown as blue points and error bars, with a theoretical model fit indicated by the black line and the grey shaded region (1-sigma tolerance). The red dashed line is the model prediction. The effect of the cosmic magnification is for bright quasars to have an overdensity at small separations, while faint quasars have an underdensity compared to the average quasar density. (Click on image for larger version.)

Albert Einstein became world famous in 1919, when Sir Arthur Eddington's observing campaign during a solar eclipse confirmed Einstein's prediction that gravity affects the path taken by light rays, i.e., that mass can act as gravitational lens. Today, astronomers routinely use gravitational lensing as a tool to determine how much mass there is in the universe, and how it is distributed. A team of astronomers led by U of C and Fermilab alumnus Ryan Scranton, now at the University of Pittsburgh, has analyzed the gravitational lensing of distant quasars by foreground galaxies in the SDSS. The experiment is basically a simple one: count how many quasars there are around galaxies, as function of

Wednesday, September 7
- Portabello Harvest Grain
- Santa Fe Chicken Quesadilla
- Garlic Herb Roasted Pork
- Beef Stroganoff
- Maryland Crab Salad
- Meatlover's Pizza
- Pesto Shrimp and Linguini with Leeks and Tomatoes

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

Wilson Hall Cafe Menu

Chez Leon

Wednesday, September 7
Lunch
- Salmon w/Ginger Scallion Mayo
- Snow Peas & Carrot Salad
- Poached Pears w/Vanilla Ice Cream & Chocolate Sauce

Thursday, September 8
Dinner
- Vol-au-Vents w/Mushroom Duxelles
- Swordfish Kabobs
- Onion Risotto w/Corn & Bacon
- Banana-Walnut Spring Rolls w/Caramel Rum Sauce

Chez Leon Menu
Call x4512 to make your reservation.

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neither of these. Instead, it is metamorphic."

Unlike the other two artists in the exhibit (and the most of the origami world), Allen does not use paper as his medium. A self-declared "metal man," he folds copper and silver mesh into mythical creatures. And while his paper-based colleagues use water to make their sculptures more life-like, Alan uses chemicals that are a little stronger. His Yoda sculpture, for example, has been washed in a sulfate, so Yoda's copper body has an oxidized head that is green, while the rest of his body shimmers a brassy purple.

Although origami is a complex and sometimes frustrating art form, Allen has a good reason for putting up with all the tedious folding: "I use origami to get people in touch with a mythical language that we all have, but we seem to forget in the course of a normal day."

On October 6 and 7, the three Origami artists exhibiting at Fermilab will give presentations at Fermilab.

(Click on image for larger version.)

Accelerator Update

the apparent magnitude of the quasar and of the distance from the galaxy acting as gravitational lens. Previous attempts to measure this galaxy-quasar cross-correlation signal had yielded results that were in conflict both with each other and with the theoretical predictions. Recent advances in the theory implied that the largest uncertainties were now due to observations of insufficient accuracies.

Scranton and his colleagues took full advantage of the major advance of the SDSS over previous large-area surveys: the use of CCDs instead of photometric plates improved the measurement errors on the fluxes of galaxies and quasars from 20-30% to 2-3%. These highly accurate measurements and the use of new statistical techniques in both galaxy and quasar selection made it possible to distinguish between stars in the galaxy, other galaxies and distant quasars using only the CCD imaging, without the need to perform time-consuming spectroscopy. In this way, the researchers created a sample of 13.5 million galaxies (compared to only 500,000 galaxies in the SDSS spectroscopic sample) and 195,000 quasars (compared to only 50,000 from the spectroscopic sample). In magnification, each galaxy acts as a gravitational lens; the effect from each lens is small, so a large number of lenses and sources is needed to measure the signal. Light from background quasars passing near galaxies is amplified, making the quasar brighter and increasing the number of quasars above a given flux threshold. But the light is also deflected, reducing the density of quasars on the sky. The first of these effects tends to positively correlate galaxy and quasar densities while second leads to an anti-correlation. The resulting signal combines

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September 2 - September 5
- During the 72 hour period operations established three stores that combined with an existing store provided the experiments with 41 hours of luminosity
- A bad vacuum card causes the loss of a Tevatron store

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

In the News

From ***The Register-Guard***, September 5, 2005
UO Physicist Works on Collider

Imagine a machine so powerful it can hurl objects into each other at just short of the speed of light, creating tiny explosions that release an amount of energy rarely seen in the universe since shortly after the Big Bang.

Now, imagine a scientist from the University of Oregon helping build it.

That's Jim Brau, a UO physics professor and co-leader of the International Collider Project, a worldwide effort to build the most sophisticated atom smasher ever, one that will allow scientists to peer so far back into the genesis of the universe it's become known as "Einstein's Telescope." If all goes well, work on the multibillion-dollar project could begin by 2010 in a location yet to be selected.

If and when the machine gets built, the collisions of electrons and positrons it creates could begin to answer some of the deepest mysteries of the cosmos, things such as the structure of dark matter, the existence of extra dimensions

these two effects, with the stronger being determined by the slope of the quasar number counts relation (i.e. do we gain enough quasars by going a bit fainter to make up for the quasars we lose from the dilution?). For bright quasars, the number counts relation is very steep, which should yield a positive correlation, while fainter quasars should be negatively correlated, thanks to shallower number counts. The results by Scranton et al. (accepted for publication in the Astrophysical Journal) confirm this prediction, for the first time creating an agreement between models and observations of cosmic magnification.

Result of the Week Archive

Announcements

Ultimate Frisbee
Interested in playing ultimate frisbee? It's a great way to get exercise while having fun at the same time! If you've never played before, don't worry about it, we'll teach you. Join us today at the soccer field in the village. We usually play every Wed. from 5:00 - 7:00 pm. Please bring a bottle of water. See you there!

Building Manager Notice
In an effort to enhance the overall dependability and performance of Wilson Hall elevators, the building manager has scheduled extensive maintenance and repairs affecting all four cars. Every car will be taken out of service for four to five days until completion of the project. Only one car will be affected at any given time during these repairs.

Fermilab Health Fair
The Fermilab Health Fair, complete with demonstrations, screenings, and health

and the long-sought unifying "theory of everything."
Read More

information, will take place on Thursday, September 8 from 11:00 p.m. until 2:00 p.m.

Career Night
The annual Career Night, sponsored by the UEC, GSA, and UTeV, will be held Thursday, September 8, 2005. Pizza and drinks will be served outside the One West conference room in Wilson Hall at 6:00 PM. The talks will begin at 6:30 PM in One West. John Krane, former DZero post doc, will talk on "A Physicist on Wall Street". Benn Tannenbaum, former CDF post, will talk on "Where Government and Science Intersect". Todd Adams, Assistant Professor at Florida State University, currently working on DZero, will talk about "Climbing the HEP Ladder".

Picnic at Users Center for WYOP Volunteers
It's the World Year of Physics and we are making a special effort to visit school children and tell them about the fun of physics. Visiting is fun too! If you would like to help, please join us at a picnic this Friday, 12:00 - 1:00 at the Users Center. You only need to bring your enthusiasm, we will provide the rest. Please tell Nancy Lanning at lanning@fnal.gov by Thursday at 4:00 pm if you can come.

Upcoming Activities