

## Calendar

### [Have a safe day!](#)

Thursday, April 15  
2 p.m.

#### [Computing Techniques Seminar](#) - FCC1

Speakers: Marcos Turqueti and Ryan Rivera, Fermilab  
Title: An Overview of the CAPTAN Network Based Pixel Telescope Readout Architecture and Data Processing Software  
2:30 p.m.

#### [Theoretical Physics Seminar](#) - Curia II

Speaker: Frank Petriello, University of Wisconsin, Madison  
Title: Differential Distributions in Soft-Collinear Effective Theory  
3:30 p.m.

#### [DIRECTOR'S COFFEE BREAK](#) - 2nd Flr X-Over 4 p.m.

#### [Accelerator Physics and Technology Seminar](#) - One West

Speaker: Chris Polly, Fermilab  
Title: Precision Precession: How the History of  $g-2$  Wound its Way to Fermilab

Friday, April 16  
8 a.m. - 5 p.m.

#### [International Design Study for the Neutrino Factory meeting](#) - Curia II

3:30 p.m.  
[DIRECTOR'S COFFEE BREAK](#) - 2nd Flr X-Over  
4 p.m.

#### [Joint Experimental-Theoretical Physics Seminar](#)

Speaker: Kathryn Shaffer, University of Chicago  
Title: Results on Secondary Anisotropies from the South Pole Telescope

Click here for [NALCAL](#),

## Feature

### STEM career expo at Fermilab attracts hundreds of students



Local high school students speak to a career professional at the April 8 STEM Career Expo, held at Fermilab.

Hundreds of students from Kane and DuPage counties flocked to Fermilab on April 8 for the third annual Science, Technology, Engineering and Mathematics (STEM) Career Expo.

Organized by the Fermilab Education Office and career specialists from Kane and DuPage county schools, the event offered students a chance to learn about potential directions for their future. The third annual event attracted between 600 and 700 high school students, up from 500 last year.

"We find it encouraging that we see more students wanting to come to this opportunity," said Fermilab Education Office's Susan Dahl, who helped to organize the event. "Some came with ideas of a few different careers. This helped them take some of those ideas off and put many more on."

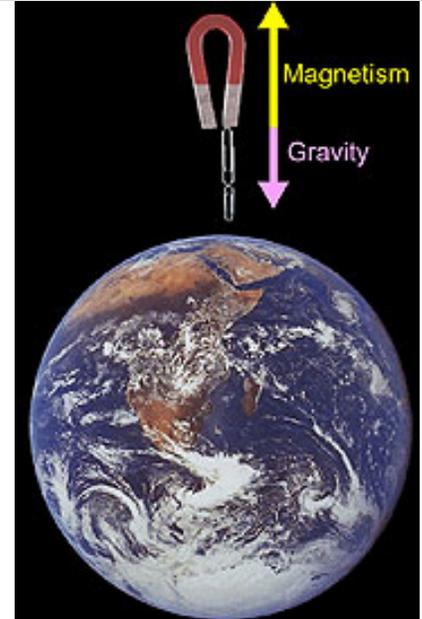
The event helped broaden the possible career options for Tim Nickels, a senior at St. Charles North High School.

Bartlett High School academy sophomores Purva Khare, Charisma Dalvi and Marianne Palczewski, attended the expo to explore future career options. The school has a job-shadowing requirement for the students their junior year and the girls were considering shadowing scientists. The girls spoke with a handful of scientists and professionals, including Fermilab physicist Doug Glenzinski.

They were among a few dozen students Glenzinski spoke with that night. He

## Result of the Week

### Gravity and extra dimensions



While familiar, gravity is by far the weakest of all the forces. A small magnet can easily overcome the gravitational force created by the entire Earth.

DZero scientists have been looking for gravitons, hypothetical particles that may shed light on gravity's mysteries.

Gravity is an incredibly weak force. As we stare glumly at our bathroom scales after a long and confining winter, this is perhaps not at all obvious, but it's true. We can contrast gravity with the electromagnetic force that sticks your socks to your sweater as you pull them out of the dryer. The electromagnetic force is ten thousand, billion, billion, billion, billion times stronger than gravity. In comparison, the other two known subatomic forces, the strong and weak nuclear forces, are closer in strength to the electromagnetic force.

Just why gravity should be so much weaker than the other three known forces is a perplexing mystery of particle physics called the hierarchy problem. While physicists have proposed many possible solutions to this conundrum, today we focus on extra dimensions.

In 1999, Lisa Randall and Raman Sundrum suggested that the weakness of gravity is an illusion. They postulated that, rather than the familiar three dimensions of space and one of time, space and time actually contain five

a weekly calendar with links to additional information.

[Upcoming conferences](#)

[Campaigns](#)

[Take Five](#)

[Tune IT Up](#)

[H1N1 Flu](#)

For information about H1N1, visit Fermilab's flu information [site](#).

[Weather](#)



Mostly sunny  
81°/55°

[Extended Forecast](#)  
[Weather at Fermilab](#)

[Current Security Status](#)

[Secou Level 3](#)

[Wilson Hall Cafe](#)

Thursday, April 15  
 - Apple sticks  
 - Tomato Florentine  
 - BBQ pork sandwich  
 - Kielbasa & sauerkraut  
 - Chicken Marsala  
 - Smoked turkey melt  
 - Assorted sliced pizza  
 - SW chicken salad w/roasted corn salsa

[Wilson Hall Cafe Menu](#)

[Chez Leon](#)

volunteered to help with the event this year as a way to reach out to the next generation of scientists.

Susan Gloss, a career specialist for the St. Charles High School District, helped to organize the event. "It was successful right from the start," she said. Gloss said that financial constraints almost prevented the event from taking place this year, but she is really glad it did.

"It is fabulous that Fermilab is able to host an event like this in a collaborative environment. In these economic times, schools aren't always able to support exploration like this," Dahl said.

-- *Rhianna Wisniewski*

**Special Announcement**

**Volunteer for National Lab Day with Fermilab**



Fermilab will celebrate National Lab Day May 3-7.

students. This year's celebration of National Lab Day will take place for many schools during the first week of May.

Join Fermilab in supporting National Lab Day by [volunteering](#) for opportunities in our community.

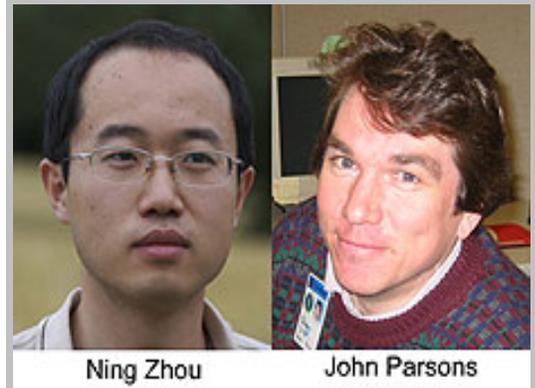
[Learn more](#)

**In Brief**

dimensions. Just as the sides of a cube are two-dimensional surfaces of the three dimensional cube, Randall and Sundrum hypothesized that within the four-dimensional space there are two three-dimensional surfaces. The familiar strong, weak and electromagnetic forces are confined to one surface, while gravity is confined to the other. These two surfaces are separated from each other by a fifth dimension, just like the faces of the cube. Gravitons can leave their surface and bridge the gap; but the probability for them to reach the other surface is tiny. Gravity therefore appears much weaker in our world.

DZero scientists have studied their data, looking for gravitons. Physicists have not yet observed gravitons, but they hypothesize that these particles mediate gravity. In the Randall-Sundrum theory, they would be observable by their decay into pairs of electrons or photons. Using double the data of the most recent previous study, DZero physicists found no evidence for gravitons and set new and strict limits on their existence. A [paper](#) describing this work was submitted last Monday.

- *Don Lincoln*



Ning Zhou and John Parsons of Columbia University, performed this interesting analysis.



Computers are crucial in a modern particle physics experiment but perhaps the most important is the system that these physicists support. These Fermilab scientists ensure that the computers that are responsible for data acquisition are functioning smoothly.

**Accelerator Update**

Thursday, April 15

Dinner

- Spinach & strawberry salad
- Flank steak w/balsamic glaze
- Walnut-crust potato & bleu cheese cakes
- Steamed broccoli
- Chocolate mousse pie

Wednesday, April 21

Lunch

- Thai chicken sauté
- Macaroon shortcake w/ roasted pineapple

[Chez Leon Menu](#)

Call x3524 to make your reservation.

[Archives](#)

[Fermilab Today](#)

[Result of the Week](#)

[Safety Tip of the Week](#)

[CMS Result of the Month](#)

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*Today*

## Now accepting 2010 Alvin Tollestrup Award nominations

At each year's Users' meeting, Fermilab pioneer Alvin Tollestrup presents an outstanding postdoc with his namesake award. Nominations for that award will be accepted until Tuesday, April 20.

All Ph.D. researchers in non-tenure-track or equivalent positions at Fermilab or Universities Research Association-member institutions, or institutions collaborating in Fermilab projects are eligible. Postdocs must be within six years of the receipt of their Ph.D. Qualified work must be in conjunction with a Fermilab experiment or accelerator project or under the auspices of the Fermilab Theory or Astrophysics Groups.

Candidates may nominate themselves for the award. Applications must include: a CV, list of publications and invited talks, a written statement (of no more than five pages) from the candidate describing the research, and no more than two letters of support from scientists familiar with the work.

Award winners receive a certificate of recognition and a check for \$3,500 from URA. Nomination materials should be e-mailed as pdf or plain text documents to [usersoffice@fnal.gov](mailto:usersoffice@fnal.gov) by April 20.

[Learn more](#)

[In the News](#)

## At Issue talks with Fermilab and Argonne directors

From **WBBM Newsradio 780**, April 11, 2010

The directors of Fermilab and Argonne discuss particle and energy research on WBBM's *At Issue*.

[Listen now](#)

[In the News](#)

April 12-14

- Two stores provided ~18.25 hours of luminosity
- Scheduled repair period
- TeV cryogenic recovery problems
- Pbar stacking problems
- MI high Level RF cooling problems

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

[Announcements](#)

### Latest Announcements

[Heartland Blood Center needs blood types A-, B+ and B-. Reserves are very low](#)

[Ask HR - 15th floor comes to Site 38 conference room - Tuesday, April 20](#)

[Barn Dance April 18](#)

[Toastmasters at Fermilab April 15](#)

[National Lab Day 2010](#)

[Weight Watchers open house - April 21](#)

[Free staff appreciation massage - April 16](#)

[Thursday Phillips Park golf league](#)

[Celebrate National Humor Month](#)

[Undergraduate summer interns](#)

[Fermilab blood drive - April 19-20](#)

[The Recipe Exchange potluck lunch - April 16](#)

[AutoCAD Intermediate classes - June 22 - 24](#)

[AutoCAD Fundamentals class - June 6 - 8](#)

[FORE! The 2010 golf season is about to hit you](#)

[SciTech summer camps start June 14](#)

[Butts & Guts class - sign up now](#)

[Blackberry Oaks Monday night golf league](#)

## Giant natural particle accelerator discovered above thunderclouds

From *Physorg.com*, April 14, 2010

A lightning researcher at the University of Bath has discovered that during thunderstorms, giant natural particle accelerators can form 40 km above the surface of the Earth.

Dr Martin Füllekrug from the University's Department of Electronic & Electrical Engineering presented his new work on Wednesday 14 April at the Royal Astronomical Society National Astronomy Meeting (RAS NAM 2010) in Glasgow.

His findings show that when particularly intense lightning discharges in thunderstorms coincide with high-energy particles coming in from space (cosmic rays), nature provides the right conditions to form a giant particle accelerator above the thunderclouds.

The cosmic rays strip off electrons from air molecules and these electrons are accelerated upwards by the electric field of the lightning discharge. The free electrons and the lightning electric field then make up a natural particle accelerator.

The accelerated electrons then develop into a narrow particle beam which can propagate from the lowest level of the atmosphere (the troposphere), through the middle atmosphere and into near-Earth space, where the energetic electrons are trapped in the Earth's radiation belt and can eventually cause problems for orbiting satellites.

[Read more](#)

[Employee discount at Batavia Rosati's](#)

[Country House discount for Fermilab employees](#)

[Harlem Globetrotters special ticket price - today](#)

[Qi Gong, Mindfulness and Tai Chi easy for stress reduction](#)

[Argentine Tango through April 28 - student discount available](#)

[Calling all softball players](#)

[Fermilab Management Practices seminar classes begin in April](#)

[Job Descriptions and Employment class - April 21](#)

[Behavioral Interviewing class - April 28](#)

[ANSYS Mechanical Application classes - in May](#)

[Interaction Management class - May 5, 12, & 19](#)

[Performance Review class - May 26](#)

[Fermilab Functions class - June 2, 8, & 10](#)

[Additional activities](#)

[Submit an announcement](#)