

## Friday Flyer – October 26, 2012

Something to share—an interesting research project or kudos for a student, teacher or mentor?  
Contact Kris Whelan.

### Center Spotlight: Syracuse University - <http://www.phy.syr.edu/hep/HEPOutreach/QuarkNet/>

Contact Steven Blusk, Mitch Soderberg or Ray Mountain to learn how they kept the teachers excited and invigorated during a three-week workshop.

Syracuse University held their three-week Associate Teacher Institute this past summer. The teachers were busy working on four different projects structured to provide both a deeper theoretical and experimental understanding of particle physics. These four programs were:

- 1) Teach-ins: In order to acquaint teachers with physics concepts in HEP, each morning started with a talk given by SU faculty.
- 2) Laboratory work: Five experiments featured different aspects about particle physics. The experiments were resonance in wires, muon lifetime studies, gamma ray spectroscopy, and analog and digital electronics as related to particle detection and analysis. Teachers worked in groups of two to three and rotated through each experiment.
- 3) Cosmic Ray Workshop: Bob Peterson facilitated a standard detector workshop. Teachers built two functional cosmic ray detectors that will start out at Fayetteville Manlius High School and Weedsport High School. Then they will be shared among the teachers during the school year.
- 4) LHCb Event Display: On the last two days, teachers discussed the LHCb event display developed by the lead teachers during their Year 1 research experience. Teachers discussed what was being displayed and made suggestions for enhancements which were implemented.

The teachers were exposed to several resources during the workshop. First, each was provided with a very good book on quantum and particle physics: *The Quantum World: Quantum Physics for Everyone* by Kenneth Ford. Teachers reflected on which items they thought would be useful to enhance lecture demonstrations or laboratory exercises. The mentors are purchasing some of the components with the \$250 supplement per teacher.

### Resource of the Week - Lenz's Law Ring Shooter

<http://quarknet.fnal.gov/toolkits/ati/ringshooter.html>

Amaze and excite your students by shooting rings use Lenz's Law. Here is an easy and inexpensive do-it-yourself.

### Physics Experiment Roundup

#### Quantum Foam, Virtual Particles and Other Curiosities

<http://www.pbs.org/wgbh/nova/physics/blog/author/dlincoln/>

Physics students are often asked to accept as fact some rather nonsensical ideas by physicists. A cat is alive/dead and particles can act as waves, for example. "But some of the most incredible creatures of the quantum realm get far less attention than Schrödinger's famous cat. They're called virtual particles, and they might be the reason the universe exists in the first place". (from *The Nature of Reality*, Don Lincoln)

### Just for Fun - Minute Physics

The 2012 Nobel Prize in Physics was recently awarded to Serge Haroche and David Wineland.

<http://www.youtube.com/watch?v=2dRr-fnPCwM>

Find out how they captured photons!

**Special Message:** *A Particle Physics at the Intensity Frontier* brochure

<<http://www.intensityfrontier.org/docs/intensitybrochure-080812.pdf>> was mailed to QuarkNet teachers on October 24. For multiple copies, contact Fermilab's Office of Communication at [630-840-3351](tel:630-840-3351). (This is the correct phone number.)

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