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

Center Spotlight: Purdue University - http://www.physics.purdue.edu/outreach/quarknet/
Ask David Sederberg <dsederbe@purdue.edu> for tips on reinvigorating an existing QuarkNet center.
Matthew Jones <jones105@purdue.edu>

QuarkNet at Purdue University began in 2003. As a part of the CMS collaboration, teachers and students were able to build CMS detector components. Recently, they have focused on investigations with the cosmic ray detectors. The close proximity of Fermilab makes it easy to travel to the Lab for tours, talks and workshops. Purdue University hosted nine teachers from Central Indiana this summer, about half of whom had never participated in QuarkNet. The increased interest is largely attributed to the efforts of David Sederberg, the new outreach coordinator for the Department of Physics. David actively solicited applications to reinvigorate the center.

The format of the summer workshop accommodated the new teachers by providing introductory material and activities on particle physics, cosmic rays and activities using the cosmic ray detector. A significant element showcased a software interface developed by Frank Roetker, a Jefferson High School student and Matthew Jones as an outreach component of an NSF award. This software provides a simple interface with which to perform many experiments with the cosmic ray detector hardware, including plateauing counters, measuring cosmic ray flux over long time periods, measuring the muon lifetime, the speed of muons, and searching for extensive air showers. Recently, a student from McCutcheon High School used this software to measure the flux of cosmic rays at altitudes up to 9,000 ft. in an airplane as preparation for a possible balloon flight.

In addition to particle physics presentations and hands-on experiments with the cosmic ray detector, talks included Dr. Glenn Sembroski on the Pierre Auger Cosmic Ray Observatory; Prof. Marc Caffee on the use of cosmic rays as a production source of radionuclides used in dating sedimentary rocks; and Prof. Jones on the physics of the recent observation of the Higgs boson at the Large Hadron Collider. The teachers also toured Fermilab, including the CDF Collision Hall, and the Tandem Van de Graaff accelerator in the PRIME Lab at Purdue. Materials prepared for the summer workshop, including the software interface for the cosmic ray detector, are available on the public web page.

Resource of the Week:
A Simplified Version of a Cosmic Ray Detector
http://blogs.scientificamerican.com/critical-opalescence/2012/10/15/how-to-build-the-worlds-simplest-particle-detector/
Learn how to build a very small version of a detector using items easily found around the house or school.

Masterclasses 2013 - Register by November 4! http://tinyurl.com/mc2013reg
QuarkNet masterclass dates: March 9-23, 2013. Join institutions worldwide when

high school students are physicists for a day.
Learn more about international masterclasses: http://physicsmasterclasses.org. Questions? Need full URL? Ask Ken, kcecire@nd.edu

Physics Experiment Roundup:
How Cosmic Ray Muons Could Reveal Hidden Nuclear Waste
http://www.technologyreview.com/view/429607/how-cosmic-ray-muons-could-reveal-hidden-nuclear/
You may have heard observations from your students saying that cosmic rays are "cool" but really aren't useful for anything. This article discusses a new method of detecting hazardous wastes within their repositories using CRDs.

Just for Fun:
Comics and Learning - http://amanda.uci.edu/~daniel/comic.html
Students can learn about some of the more abstract concepts in particle physics through the use of comics and videos.

Higgs Boson Talk from Melbourne, Australia -
http://www.abc.net.au/tv/bigideas/stories/2012/07/30/3555194.htm

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