

## FRIDAY FLYER – AUGUST 17, 2012

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

### **CENTER SPOTLIGHT: Black Hills State University** - <http://quarknetbhsu.wikispaces.com/>

Contact Kara Keeter for tips on running a QuarkNet center that is not primarily focused on the LHC.

As one of our newer centers, Black Hills State University has entered the world of particle physics in a joint effort with QuarkNet and the Sanford Underground Research Facility (SURF) (<http://www.dusel.org>) to bring the science of astroparticle physics to the students of South Dakota. The project involves a research team of Black Hills State University faculty, undergraduate students and high school teachers participating in research projects at SURF and delivering inquiry-oriented investigations to teachers and students throughout the state. Over the past four years, the teachers have gone into the Homestake Mine to learn about current and future experiments. The focus of this center is neutrino studies, dark matter and other topics. This summer, the teachers brought cosmic ray detectors into a mine tunnel that extended horizontally 800 ft. They took readings every 15 meters following a procedure used at the Idaho State center earlier this summer. They will be analyzing the data and completing a poster in the e-Lab. Look for it! For a small group of, on average, seven teachers, this center gets a lot done. As Bob Peterson said after delivering a cosmic workshop last summer, the South Dakota teachers “just get it.”

## NEWS FROM QUARKNET CENTRAL

### **Cool, Cool Summer**

Although it may be hot outside where you are, it has been a cool summer for all of the QuarkNet centers. Staff reports show the depth and diversity of the programs in which teachers and students participated. Most workshops are completed now with glowing reports of teacher professionalism and mentor and teacher dedication. We know that you could have spent the week of your workshop doing many other things. The fact that all of the QuarkNet centers continue to thrive is because of the willingness of teachers and physicists to work together to improve science education. Some groups went cosmic ray caving; some took field trips to locations of scientific interest such as LIGO and Fermilab. There were workshops in which teachers did a new “make and take” activity as well as some workshops where teachers worked for a more in-depth understanding of the detectors or other topics. As always, we are glad you enjoy your time with QuarkNet colleagues. Spread the word. Maybe you know a teacher who would like to join your center.

### **PHYSICS EXPERIMENT ROUNDUP: Physicists Mine Cosmic Answers Deep Underground** <http://online.wsj.com/article/SB10000872396390444097904577539080596890896.html>

What takes 11 minutes to reach by elevator; is 30,000 square feet in area; is 4,850 feet underground and is the site of multiple experiments including the study of dark matter and neutrinos? It is SURF, a site where experiments such as Majorana and LUX will answer many questions physicists have about the nature of matter.

## STAFF TEACHERS

Ken Cecire, [kcecire@nd.edu](mailto:kcecire@nd.edu)

Bob Peterson, [rspete@fnal.gov](mailto:rspete@fnal.gov)

Tom Jordan, [jordant@fnal.gov](mailto:jordant@fnal.gov)

Kris Whelan, [kkwhelan@uw.edu](mailto:kkwhelan@uw.edu)