

**2014 Annual Report for Quarknet program at Syracuse University
(S. Blusk, Sept. 12, 2014)**



The Syracuse High Energy Physics group held a 3-day Quarknet workshop from Jun 30 – July 2 in the physics department. Prof. Blusk and Prof. Soderberg hosted the event. Seven teachers were able to join the event, who are shown in the photo below. The photo shows: (bottom row, left to right) Alexa Perry (Fayetteville-Manlius), Justin Shute (Fayetteville-Manlius), Cynthia Lamphere (Port Byron), Michael Madden (Canindagua); and (top row, left to right) Prof. Mitch Soderberg, Bob Peterson (Quarknet), Ryan Sokol (Liverpool), Randal Bleakley (Weedsport), Prof. Steven Blusk, and Josh Buchman (Fayetteville-Manlius). Bob Peterson was on hand to help facilitate the workshop.

In this year's workshop the focus was to introduce the new suite of tools available in the Cosmic Ray Detector e-Lab. In addition, the teachers learned about the new graphical user interface (GUI) to communicate with the data acquisition. In addition to learning the new features, we set a goal to develop a laboratory or demonstration, which could be used in their classroom this year. In the case of the laboratory, the teachers were to draft the lab writeup for the students, so that it would be (more or less) ready to use in this academic year.

In addition to the summer program, we hosted our first LHCb MasterClass on March 28, 2014. About 30 students from the local high schools came to the physics department to participate. In the morning, the students listened to a pair of lectures by Profs Blusk and Soderberg on the Standard Model and on the phenomena of weak decays. After lunch, each student was given his/her own computer

where they got to analyze real LHCb data on $D^0 \rightarrow K\pi$ decays. In the first part, they got to scan single events one at a time to try and find the D^0 decays. In the second part, they performed a fit to the reconstructed decay time to measure the D^0 lifetime. Several stories were run in the local news or in the SU News, such as these:

http://www.syracuse.com/news/index.ssf/2012/06/physics_teachers_get_a_chance.html, and

http://asnews.syr.edu/newsevents_2012/releases/QuarkNet_story.html, and

http://asnews.syr.edu/newsevents_2014/releases/physics_masterclass.html. Some photos from the event are shown below.