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Report of QuarkNet Activities at UIC and CSU during 2011-2012

The QuarkNet Program at the University of Illinois at Chicago and Chicago State University provides mentoring, organization and collaborative structure to students and teachers at ten Chicagoland high schools. Detectors built by students form the Chicago Large Air Shower Array (CLASA). The cosmic ray detectors, which are located at high schools, UIC and CSU, form a Chicago-wide cosmic ray detector. UIC supports students and teachers with mentoring, provides detectors and develops analysis software for students so they can carry out physics experiments based on detecting cosmic ray muons. UIC hosts yearly summer workshops during which new students are recruited and trained. We also loaned two detectors to a student group at the University of Quito in Ecuador, and provided some long-distance guidance for their effort to measure cosmic ray rates as a function of altitude.



Attendees of the 2012 summer workshop included 4 high school teachers (Proviso East, Proviso West, Proviso Math and Science Academy, and Glenbrook North), 18 students, as well as CSU and UIC faculty mentors. It was held July 9 to July 12 Glenbrook South High School Fermi National Lab. The workshop was run by Glenbrook North teacher Nate Unterman with Edmundo Garcia from Chicago State. Activities included an introduction to the High Energy Physics (HEP), a talk about the experiments at CERN, lecture-training on to cosmic ray detectors, and eLab analysis. Students operated detectors and carried out calibrations and experiments measuring the rates of muons, their absorption in materials and the cosmic ray flow analysis for different detector configurations. The students used the e-Lab for the data analysis and to prepare their posters. They presented their results to each other during the third day of the workshop. In the last day of the workshop, the participants visited Fermilab (guided by Prof. Cecilia Gerber

from UIC) participating in discussions on HEP, planning next year's activities and touring the D0 detector in the Tevatron. Stipends are provided for summer workshop participants.

During the next grant period, UIC and CSU will continue to visit high school sites to assist students operate their cosmic ray detectors, will mentor students on their choice of experimental activities and will host a week-long summer workshop at UIC for intense experimental training for students, as well as sponsor a fall Saturday mini-workshop at one of the participating high schools in Nov. 2012. Two new detectors are being designed: one to measure the muon lifetime and a second to fly on a balloon to measure rates as a function of altitude.

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