

Notre Dame QuarkNet Center 2012 Activity Report

The Notre Dame QuarkNet Center 2012 has about 15 active high school teachers from the Michiana area. There is one lead teacher, but leadership is very distributed. The mentors are Randy Ruchti and Dan Karmgard, with active assistance from Antonio Delgado, Mitch Wayne, Pat Mooney, and Tom Loughran. The group is unusual in that it maintains extensive student and teacher participation in summer research from a variety of funding sources and that the teachers have weekly 1-2 hour meetings during the academic year.



Summer research students 2012..

Masterclass 2012

The Notre Dame center held several masterclass events. Students from Winamac High School participated in masterclass in late February 2012, having attending a masterclass preparation workshop associated with the NDeRC “Collaborating for Education and Research Forum V” a few days previous. Students from the nearby Robinson Community Learning Center prepared for the masterclass in a series of weekly meetings at the ND QuarkNet Center. These students also spent a day in March at Fermilab during which they had two additional masterclass video conferences. Masterclass was held at St. Joseph’s High School in May 2012 for the benefit of the physics classes there. Finally, and significantly, faculty member Arielle Phillips, staff member Ken Cecire, several

graduate students, and QuarkNet teachers Caroline Fletcher, Dan Walsh, Helene Dauerty, and Aaron McNeely put together and facilitated a new astrophysics masterclass.

Workshops

The Notre Dame center held weekly meetings throughout the 2011-2012 school year. Each meeting had a majority of the active teachers. These were not workshops but they did, over time, engage teachers in enriching activities that one might find in a workshop, such as CMS updates and preparation for future activities (see Broader Impacts). The summer workshop (referred to at Notre Dame as “QuarkNet Week”) was held from July 30 to August 3, 2012. It included a mini-workshop on the astrophysics masterclass and a report from teacher Jeremy Wegner on his trip to European science sites made possible by a grant from Eli Lilly. QuarkNet staff and faculty helped Jeremy arrange interesting visits with real scientists at several European locations, including CERN.

Summer Research

The summer research program is the cornerstone of the Notre Dame QuarkNet program. In summer 2012, 15 teachers and 18 students engaged in mentor-led research in diverse fields from experimental particle physics to biocomplexity. The QuarkNet Center lab and office area were full of activity throughout the summer but research was conducted at additional sites both on and off campus.

Cosmic Ray Detectors

The Notre Dame Center uses its detectors primarily in the summer, but teachers borrow these during the academic year to work with students. Teacher interest in taking detectors directly into the classroom has grown and at least one detector went to a school for an extended period of time.

Broader Impacts

The Notre Dame QuarkNet teachers are very active in supporting physics education and outreach activities at Notre Dame and throughout the Michiana area. Thus, the teachers planned, prepared and operated particle physics-related exhibits at “Science Alive” at the Saint Joseph County Public Library in February 2012. They also participated in and exhibited at the NDeRC Forum at Notre Dame in February 2012, and several members were part of “Celebrate Science Indiana” in October 2012.