

Friday Flyer – November 16, 2012

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

CENTER SPOTLIGHT: University of Minnesota -

<http://www.physics.umn.edu/outreach/quarknet/>

Contact Ken Heller (heller@physics.umn.edu) and Daniel Cronin-Hennessy (hennessy@physics.umn.edu) to learn how to build field trips into your QuarkNet workshop. Jon Anderson (jpanderson@isd12.org) and Shane Wood (shane.wood@moundsviewschools.org) are also excellent resources.

The University of Minnesota QuarkNet Center began in 2002. Stories about the shutdown of Fermilab's Tevatron, neutrinos potentially traveling faster than the speed of light, the possible discovery of the Higgs boson, MINOS and NOvA in Minnesota, and numerous articles about CERN have all been reported during this academic year. UM has tried to address many of the big research questions in its teacher workshops. The close proximity of the Soudan Underground Laboratory has given Minnesota teachers and students a window to the study of neutrino oscillations. (Soudan Underground Laboratory description can be found in this week's Physics Experiment Roundup.)

Minnesota often has a mix of new and veteran QuarkNet teachers at the workshops. They have addressed the difference in experience by holding an introductory day for new teachers. In addition to lead teachers Jon Anderson and Shane Wood, 15 teachers participated in the workshop with 13 teachers attending for the first time. Jon and Shane prepared an active agenda. The workshop was held at the University of Minnesota's physics building, and Dan Cronin-Hennessy and Jody Kaplan hosted for the university. The agenda covered a number of areas from current hot research areas to pedagogical approaches in the classroom. Activities for the group in 2012 included an introduction to the masterclass program. After working to identify LHC event displays, the Minnesota teachers met with teachers at Purdue in a videoconference to discuss and compare results of their analyses. A new element was introduced this year that Jon and Shane referred to as "group synthesis/whiteboard." The teachers would periodically gather in groups to prepare questions and comments on what they had seen. Teachers visited the NOvA Module Factory where they are fabricating the basic detector components for a 12-kton neutrino detector and attended the annual physics demo show. The group also made a field trip to Fermilab this year to tour the MINOS "Near Detector" and other facilities on the premises.

Resource of the Week: Boseon-Particle Physics Card Game

<http://portal.discoverthecosmos.eu/en/node/187704>

Jay Dornfeld (Minnesota) and other teachers in his group from different countries developed this game, a combination of Go Fish and Pokémon, at the CERN High School Teacher workshop.

Physics Experiment Roundup: Soudan Underground Laboratory

<http://www.physics.umn.edu/outreach/soudan/tour/>

The Soudan Underground Laboratory is a general-purpose science facility, located almost a half-mile underground which provides the deep underground environment required by a variety of sensitive experiments.

Event of the Week: LHCb: Rare dimuons set a new Standard for the Model

http://uslhcb.org/Teachers_and_Students

This LHCb event accompanies an announcement this week that after two years of collecting data, physicists found a rare dimuon event that further supports the Standard Model.

Just for Fun: Minute Physics - Open Letter to the President

<http://www.brainpickings.org/index.php/2012/11/13/minutephysics-open-letter-to-obama/>

Now that the dust has settled from the recent election, it is time to get back to work on improving high school physics curricula by including the physics discovered since 1865.

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