

## Virginia QuarkNet Center 2017 Activity Report

November 5, 2017

The Virginia QuarkNet Center currently has 10 active high school teachers from Richmond and northern Virginia. Josh Erlich from William and Mary, Phil Rubin from George Mason University, and Vassilis Vassilikopoulos from Hampton University are the mentors. Several teachers share leadership responsibilities, with Deborah Roudebush acting as the lead teacher. QuarkNet Fellow Mike Fetsko also assumes a large share of the organizational responsibilities. Hank Horn is active as a QuarkNet Leadership Fellow.

### Masterclass 2017

The Virginia center scheduled two Masterclasses in March 2016. One was focused on CMS data and was held at George Mason University in northern Virginia on March 18, 2017. Phil Rubin acted as the mentor, and lead teacher Deborah Roudebush was the main organizer.

Another CMS masterclass took place at William and Mary on March 25, 2016, with Josh Erlich mentoring and lead teacher Mike Fetsko organizing. In addition to the analysis of CMS data and videoconference, the students heard presentations by mentor Josh Erlich about mass and the Higgs boson, and by W&M Professor Eugeniy Mikhailov about the LIGO experiment; and they toured a polarized helium laboratory for a JLab experiment, and a cold atom lab.

### Workshops

The Virginia center generally has a 2-3 day summer workshop and two or three Saturday workshops. Over the past year, they met at Oakton High School in Northern Virginia on November 19, 2016, and at the Bryan Innovation Lab of The Steward School near Richmond on February 11, 2017.

The workshop at Oakton High School included talk by Phil Rubin about the diphoton signal from the LHC, a discussion of statistics and data analysis, a penny lab, and Arduino microcontrollers.

The workshop at The Steward School included a videoconference with Ken Cecire, a presentation by Josh Erlich about a small-satellite program for high schools, and preparation for the CMS Masterclass.

The summer 2017 workshop took place August 7-9, 2017 at William & Mary and included a talk by Josh Erlich about models of emergent gravity; readings and discussion regarding how to present the human side of scientists to students; and a two-day LIGO e-Lab workshop led by Ken Cecire, including a videoconference with LIGO Hanford.

### Additional Teacher Activities

Deborah Roudebush has been working to update the Data Portfolio.