

QuarkNet Annual Report, Sept, 2017 – Aug, 2018

Cosmic Ray Workshop Sept 30, 2017

Kamehameha Kapalama School

Participants

1. Island of Oahu
13 students – Kaiser, Stevenson, Iolani, Kamehameha 4 teachers
2. Island of Kauai
1 student - Kapaa High 1 teacher

The flyer for the 2017 Cosmic Ray Day is at

<https://www.phys.hawaii.edu/ams02/outreachnsf/cosmic-ray-days.html>

The agenda is at

<https://quarknet.org/group/university-hawaii-quarknet-center>

The main focus of this event was the 21 Aug. 2017 solar eclipse and whether it affected the cosmic ray flux. UH Prof. Shadia Habbal gave a talk about eclipse observations. Students analyzed e-Lab data from 25 DAQs to look for flux variations during 18 to 24 August. In the afternoon, we had a videoconference with Dave Trapp and some of Peter Grach's students described research they had done during the summer using e-Lab data.

MasterClass March 17, 2018

Punahou School organized by Tiffany Coke, QuarkNet teacher

Participants

1. Island of Oahu
46 students – Punahou, Kaimuki High 4 teachers
2. Island of Kauai
3 students – Kauai High 2 teachers

This MasterClass was organized by QuarkNet teacher Tiffany Coke. Students conducted activities on Rutherford Scattering, Quark Puzzle, and Top Quark Mass. Lectures on dark matter search by Dr. Tripathi plus particle physics and cosmic rays by Veronica Bindi were given. Jason Kumar joined these two for a panel discussion. 93% of the students rated the lunch with physicists as very good/excellent with comments that they wanted to spend more time talking to and learning from the experts. They analyzed muon detector data and compared notes with students from Hong Kong and Indonesia through a videoconference.

Space Exploration and Particle Physics Workshop Jun 1-3, 2018

Molokai High School

Island of Molokai population – 7,000

Molokai High School – 343 students, 76% Pacific Islanders (mostly Native Hawaiian)

All students at this school are part of US Dept of Agriculture free lunch program.

Participants –

11 students – Molokai, homeschooled 10 teachers

This QuarkNet workshop focused upon getting Molokai High School teachers and students basic background in particle physics and cosmic rays. Space and human exploration to Mars were topics used to motivate learning. Some participating students have been enrolled in a Native Hawaiian Total Immersion Program to learn about sustaining their culture. Therefore, we made an attempt to integrate their cultural values of sustainability and stewardship of natural resources to Mars Mission planning. We met with teachers for dinner meeting on Friday nite. Saturday was spent sharing particle physics concepts and doing solar energetic particles activity in the morning and later students shared their Science Fair projects. Since the Native Hawaiians share ideas by “talking story”, we used this familiar mode of communication with the students. They enjoyed “interviewing” our scientists and researchers to learn about them personally. We spent Sunday sharing and learning more about the Hawaiian culture with hikes to a “hei’au” and Kukui grove, ie. to identify native plants and how to integrate their ideas for students to learn science and physics. We were encouraged to return for a follow up workshop.