

QCC QuarkNet Center 2018-2019 Annual Progress Report Queensborough Community College, CUNY

Cardozo High School physics teacher

Assembled a cosmic ray muon tracking telescope with an undergraduate student from Schenectady County Community College; wrapped scintillators and mounted them in the telescope frame, mated pmts to the scintillators, and aligned the telescope with geographic north.

Schenectady County Community College physics student

Participated in research activities at the QCC Center via the QCC physics REU program; assembled a cosmic ray muon tracking telescope including wrapping scintillators and mounting them in the telescope frame; mated pmts to scintillators; aligned the telescope with geographic north; connected the EA4TX ARS-USB tracking rotator-controller to the Yaesu G-5500 Az-El rotator; installed NOVA for Windows tracking software on a PC; tracked astronomical objects.

Suffolk County Community College physics student

Participated in research activities at the QCC Center via the QCC physics REU program: designed the electronics assembly for a data acquisition circuit (DAQ) consisting of a power supply, terminal blocks, DC-DC converter, DAQ front end amplifier/discriminator circuit, Arduino microcontroller, raspberry Pi computer board; GPS receiver, sensors, and LCD counter; characterized the performance of an LM317 variable voltage regulator to provide power to photomultiplier tubes.

Suffolk County Community College electrical engineering student

Characterized the performance of XP EMCO G30 Low-to-high DC-DC converters to power photomultiplier tubes; measured output voltage as a function of input voltage for various load resistances, and output current and power. Assembled a temperature sensor detector using a BMP temperature sensor and an Arduino UNO board to monitor the temperatures of a XP EMCO G30 Dc-Dc converter while in operation.

Queensborough Community College computer science student

Wrote C code for an Arduino microcontroller for a cosmic ray detector DAQ circuit; determined through measuring that the Arduino ADC input takes 22 microsec to convert an analog input signal into a digital output; figured out that removal of a WHILE loop condition statement reduces the ADC processing time to 7 microsec; determined that the way in which the Arduino interrupt command is used incorrectly reads an interrupt signal as multiple interrupts; learned how to communicate between the Arduino and Raspberry Pi via jumper wires, and to power them via their wire inputs.

York College CUNY physics undergraduate student

Setup an XBee wireless transmitter board to a GPS antenna-receiver and an XBee receiver board to an Arduino Mega board; figured out how to wirelessly transfer GPS data (UTC time, data, geographic coordinates etc.).

Suffolk County Community College electrical engineering student

Learned how to use Altium printed circuit board designer software: laid out a cosmic ray DAQ front end board, drew the electrical schematic and created the PCB Gerber files.

Bayside High school student

Learned how to setup a Raspberry Pi SBP computer to automatically upload data, at regular intervals, from an Arduino Mega board and send it to the internet DropBox.