

Abstract Submitted
for the FWS15 Meeting of
The American Physical Society

A Compact Cosmic Ray Telescope for use in High Schools and Colleges¹ LUIS CASTRO, DANIEL MOQUIA, Hartnell College, STEFAN RITT, Paul Scherrer Institute — Through 2 very successful outreach projects, the QuarkNet and the LBL Cosmic Ray Project, thousands of high school students and teachers learned about cosmic ray physics. To get students in the Salinas area interested and excited about cosmic ray physics, we constructed compact and cost effective cosmic ray telescope using silicon photomultipliers (SiPM) light detectors. Our apparatus consists of a cosmic ray scintillation detector module, fast preamplifiers, 50 Ohm matching signal splitters and a coincidence logic circuit board. We designed custom circuit boards that form AND logic signals for triggering data acquisition devices. These devices could be, an oscilloscope, a wave form digitizer or an Arduino. To ensure proper routing of the signal traces, the circuit boards were laid out on Eagle and fabricated using an in-house circuit board maker from LDK LASER. We carried out measurements to digitize the SiPM signal waveforms using a fast analog sampler, the DRS4 and controlled by a Raspberry Pi computer. Using the PAW data analysis software from CERN, we analyze the SiPM signal amplitudes and the time at the maximum amplitude. The results from our coincidence experiment, circuit fabrication procedure, and the data analysis work flow would be presented.

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Date submitted: 07 Oct 2015

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