Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Cosmic Radiation Detection and Observations[1] JUAN RAMIREZ CHAVEZ, MARIA TRONCOSO, Hartnell Comm Coll — Cosmic rays consist of high-energy particles accelerated from remote supernova remnant explosions and travel vast distances throughout the universe. Upon arriving at earth, the majority of these particles ionize gases in the upper atmosphere, while others interact with gas molecules in the troposphere and producing secondary cosmic rays, which are the main focus of this research. To observe these secondary cosmic rays, a detector telescope was designed and equipped with two silicon photomultipliers (SiPMs). Each SiPM is coupled to a bundle of 4 wavelength shifting optical fibers that are embedded inside a plastic scintillator sheet. The SiPM signals were amplified using a fast preamplifier with coincidence between detectors established using a binary logic gate. The coincidence events were recorded with two devices; a digital counter and an Arduino micro-controller. For detailed analysis of the SiPM waveforms, a DRS4 sensory digitizer captured the waveforms for offline analysis with the CERN software package Physics Analysis Workstation in a Linux environment. Results from our experiments would be presented.

[1]Hartnell College STEM Internship Program

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Date submitted: 11 Nov 2016 Electronic form version 1.4