

Abstract Submitted
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Investigation of Self Triggered Cosmic Ray Detectors using Silicon Photomultiplier¹ ADRIAN KNOX, ROMMEL NIDUAZA, VICTOR HERNANDEZ, DANIEL RUIZ, DANIEL RAMOS, SEWAN FAN, LAURA FATUZZO, Hartnell College, STEFAN RITT, Paul Scherrer Institut — The silicon photomultiplier (SiPM) is a highly sensitive light detector capable of measuring single photons. It costs a fraction of the photomultiplier tube and operates slightly above the breakdown voltage. At this conference we describe our investigation of SiPM, the multipixel photon counters (MPPC) from Hamamatsu as readout detectors for plastic scintillators working for detecting cosmic ray particles. Our setup consists of scintillator sheets embedded with blue to green wavelength shifting fibers optically coupled to MPPCs to detect scintillating light. Four detector assemblies would be constructed and arranged to work in self triggered mode. Using custom matching tee boxes, the amplified MPPC signals are fed to discriminators with threshold set to give a reasonable coincidence count rate. Moreover, the detector waveforms are digitized using a 5 Giga Samples per second waveform digitizer, the DRS4, and triggered with the coincidence logic to capture the MPPC waveforms. Offline analysis of the digitized waveforms is accomplished using the CERN package PAW and results of our experiments and the data analysis would also be discussed.

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