

Abstract Submitted
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On the energy estimation of gamma rays using a ground parameter KELLY MALONE, Pennsylvania State University, HAWC COLLABORATION — The High Altitude Water Cherenkov (HAWC) Gamma-Ray Observatory is a recently completed, second-generation experiment designed to observe TeV gamma rays and cosmic rays from air showers, located at an altitude of 4100m near Sierra Negra, Mexico. It consists of an array of 300 water Cherenkov detectors, each of which contain 4 PMTs. Due to its ~ 2 sr field of view and $>90\%$ duty cycle, it is well suited to observe a variety of transient and extended sources, including diffuse emission from the galactic plane, AGN, gamma-ray bursts, and cosmic ray anisotropy. Measuring the energy spectra of sources from 100 GeV up to ~ 100 TeV is essential to understand the nature of cosmic accelerators. I will present a method to reconstruct the energy of gamma rays on an event-by-event basis by determining the lateral distribution function and measuring the charge density at an optimum distance from the shower axis. This method improves upon the technique that assigns a mean energy value for all events of a given shower size. This is particularly important above 10 TeV where the typical shower size is comparable to the detector area.

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