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Energy Spectrum of Ultra High Energy Cosmic Ray Showers Using Hybrid Analysis from Telescope Array MONICA ALLEN[1], TAREQ ABUZAYYAD, BENJAMIN STOKES, University of Utah, TELESCOPE ARRAY COLLABORATION — The Telescope Array studies ultra high energy cosmic rays using a hybrid detector. Fluorescence telescopes measure the longitudinal development of the extensive air shower generated by a primary cosmic ray particle, while scintillator detectors measure the lateral distribution of secondary particles that hit the ground. The Middle Drum (MD) fluorescence telescope consists of 14 refurbished telescopes from the High Resolution Fly's Eye experiment (HiRes), providing a direct link back to the HiRes experiment and data. Using the scintillator detector data in conjunction with the MD data improves the geometrical reconstruction of the showers significantly, and hence, provides a more accurate reconstruction of the energy of the primary particle. The method for determining the spectrum will be described. The event selection and reconstruction process, along with the Monte Carlo simulation used for calculating the detector aperture and exposure will also be discussed. Detector resolutions and comparisons between Monte Carlo and data distributions of key variables that contribute to the aperture will be shown to validate the simulation. Finally, the resulting hybrid spectrum obtained from the Middle Drum fluorescence detector will be presented.

[1]on behalf of the Telescope Array Collaboration

Monica Allen
University of Utah

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