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Hybrid analysis for the Telescope Array

Content :

The Telescope Array (TA) experiment is the largest Ultra-High Energy Cosmic Ray (UHECR) observatory in the northern hemisphere, and is located in the west desert of Utah. It is a hybrid UHECR experiment using two types of detectors: three stations of Fluorescence Detectors (FDs) and 507 Surface Detectors (SDs). The three FD stations (at Middle Drum (MD), Long Ridge (LR), and Black Rock (BR)) overlook the SD array. The MD station consists of 14 refurbished HiRes-I telescopes. The BR and LR stations are newly constructed for the TA experiment. The events detected by both SD and FD are reconstructed by the hybrid technique, which uses information from both the SD and FD. The resolution reaches < 1 degree for arrival directions and < 10% in energy. Hybrid events are used to compare the FD and SD energy scales, measure the spectrum, and determine the composition of cosmic rays. In this talk we present the performance of the hybrid technique for the BR, LR, and MD stations.

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