

Abstract Submitted
for the APR14 Meeting of
The American Physical Society

Telescope Array measurement of UHECR composition from stereoscopic fluorescence detection THOMAS STROMAN, DOUGLAS BERGMAN, TAREQ ABU ZAYYAD, Univ of Utah, TELESCOPE ARRAY COLLABORATION — The chemical composition of ultra-high-energy cosmic rays (UHECRs) is an important constraint on models of UHECR production and propagation, and must be determined experimentally. A UHECR-induced extensive air shower’s longitudinal development is dictated by the energy per nucleon of the primary particle. The observed distribution of atmospheric slant depths (X_{\max}) is therefore sensitive to the composition, facilitating measurement of the relative abundances of “light” (proton-like) and “heavy” (iron-like) primary UHECR particles. The Telescope Array (TA) experiment, the northern hemisphere’s largest UHECR detector, includes three fluorescence detector (FD) stations that record the longitudinal development of the extensive air showers produced by UHECR arrivals. “Stereo” observation of individual showers by multiple FDs tightly constrains the trajectory reconstruction, allowing a precise measurement of X_{\max} as well as energy. We will present the stereo TA data from six years of operation and progress toward a measurement of chemical composition.

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Date submitted: 10 Jan 2014

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