

Abstract Submitted
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Development of Hybrid and Composition Analysis at Telescope Array¹ ELLIOTT BARCIKOWSKI, University of Utah, TELESCOPE ARRAY COLLABORATION — The chemical composition of cosmic rays is critically important in understanding cosmic ray sources as well as a cosmic ray's propagation through the galaxy or universe. Composition changes can provide important clues to understanding features in the cosmic ray energy spectrum. In addition, the success of cosmic ray anisotropy studies may depend on the composition of cosmic rays, as nuclei with large atomic number, Z , would be more susceptible to deflection by galactic and extra-galactic magnetic fields. We present a composition study using hybrid analysis in development at Telescope Array, a cosmic ray observatory in Delta, Utah. A hybrid analysis incorporates both nitrogen fluorescence and surface array data, giving good geometrical resolution as well as measuring the longitudinal development of the air shower produced by the cosmic ray as it interacts in the atmosphere. In this talk, we will present hybrid reconstruction methods in use at Telescope Array and discuss the development of Monte Carlo techniques. We will show that in hybrid mode the resolution of reconstructed pointing directions is less than 0.6° and that the resolution in the depth of shower maximum is less than 30 g/cm^2 .

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