

Abstract Submitted
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Fitting the Cosmic Ray Spectrum and Composition with IceCube

JONATHAN EISCH, University of Wisconsin-Madison, ICECUBE COLLABORATION — The IceCube Neutrino Observatory at the south pole consists of a square-kilometer surface array and a cubic-kilometer underground array. The combined information from cosmic-ray induced air showers that trigger both arrays can be used to measure the energy and mass of the primary particle. The deep IceCube detector, between 1.5 and 2.5 km in the ice, measures the high energy muons, produced early in the shower development, while the surface array, called IceTop, measures the lower energy particles that make up the extensive air shower. These two measurements are used in a likelihood based reconstruction of both energy and mass of the individual primary particle, and through a statistical approach, fitting distributions of reconstructed parameters with simulation. A method for fitting the spectrum and composition will be shown, as well as an optimized approach for breaking degeneracies in the fit.

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