

Abstract Submitted
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Cosmic Ray Composition and Energy Spectrum from PeV to EeV using IceCube and IceTop¹ MATTHIAS PLUM, KAREN ANDEEN, Marquette Univ, THE ICECUBE COLLABORATION — The IceCube Neutrino Observatory at the South Pole is a multi-component detector capable of measuring the cosmic ray energy spectrum and composition from PeV to EeV, the energy region typically thought to cover the transition from galactic to extragalactic sources of cosmic rays. The IceTop array at the surface is sensitive to the electromagnetic part of the air shower while the deep in-ice array detects the high-energy (TeV) muonic component of air showers. IceTop's reconstructed shower size parameter, S_{125} , is unfolded into a high statistics all-particle energy spectrum. Furthermore, for air showers that pass through both arrays, the in-ice reconstructed muon energy loss information is combined with S_{125} in a machine learning algorithm to simultaneously extract both the all-particle energy spectrum and individual spectra for elemental groups. The all-particle spectra as well as spectra for individual elemental groups will be presented, as well as plans for future analyses.

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