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The All Particle Cosmic-Ray Energy Spectrum Measured with HAWC ZIGFRIED HAMPEL-ARIAS, Univ of Wisconsin, Madison, HAWC COLLABORATION — We present results of a measurement of the all-particle cosmic-ray energy spectrum above 10 TeV with the High-Altitude Water Cherenkov (HAWC) Observatory. HAWC is a ground based air shower array deployed on the slopes of Volcán Sierra Negra in the state of Puebla, México. It comprises 300 large light-tight water tanks covering an area of 20,000 square meters. Each tank is instrumented with four photomultipliers to detect particles from extensive air showers produced by gamma rays and cosmic rays upon entering the Earth's atmosphere. HAWC is optimized for the detection of gamma-ray induced air showers, yet the background flux of hadronic air showers is four orders of magnitude greater, allowing for a detailed study of the cosmic-ray flux in the TeV energy range. The primary cosmic-ray energy is determined with a maximum likelihood approach using the particle density as a function of distance to the shower core. Introducing quality cuts to isolate events with shower cores landing on the array, the reconstructed energy distribution is unfolded iteratively. We will report on the energy resolution of the technique and the results of the unfolding.

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