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Muon Energy reconstruction and neutrino astronomy with the DUNE far detector.

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DUNE (Deep Underground Neutrino Experiment) is a proposed long-baseline neutrino oscillation experiment located in the United States. The main physics objectives of DUNE are to characterize neutrino oscillations, search for nucleon decay, and observe supernova neutrino bursts. The DUNE far detector will be located 4850' underground at the Sanford Underground Research Facility in Lead, South Dakota. It will house the world's largest liquid-argon time projection chamber. The DUNE far detector can detect high-energy muons that arise from interactions of cosmogenic neutrinos and search for neutrinos originating in the decay of Weakly Interacting Massive Particles (WIMPs). Selecting upward-going muons reduces the background from cosmic-ray muons. The muon energy is estimated from the electromagnetic showers accompanying the muon, a technique that allows energy reconstruction up to a few hundred TeV. This work discusses the DUNE far detector's potential for neutrino astronomy.

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