

Abstract Submitted
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Constraining Proton-Dark Matter Scattering Using Cosmic Ray Measurements¹ CHRISTOPHER CAPIELLO, The Ohio State University, KENNY NG, Weizmann Institute of Science, The Ohio State University, JOHN BEACOM, The Ohio State University — Dark matter scattering cross sections with protons and electrons are largely unconstrained below a dark matter mass of 1 GeV. By considering propagation of cosmic rays through a region with the dark matter density of the Milky Way, we demonstrate that if electrons and protons scatter with dark matter, this interaction adds an energy loss term to the cosmic ray propagation equation. This energy loss term distorts the calculated cosmic ray spectra from the observed spectra. By fitting the calculated spectra to data, we can set limits on the proton and electron scattering cross sections for dark matter.

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