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Parton Evolution Effects in Cosmic-Ray Boosted Dark Matter

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In this talk, I discuss parton evolution effects in the framework of cosmic-ray boosted dark matter. When dark matter particles are accelerated by high-energy cosmic rays, the large hierarchy between the scattering scale and the dark-sector masses can induce a dark parton shower. At high-threshold detectors, a similar hierarchy in the DM–electron scattering process leads to collinear splittings that can be described by introducing a dark matter parton distribution function (DM PDF). I will show that both types of parton evolution lead to a suppression of the electron recoil rate at neutrino detectors.

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