

Abstract Submitted
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Dark Matter-Nucleon interaction in the Large-N Limit¹

XINCHENG LIN, SON NGUYEN, Duke University, THOMAS RICHARDSON, University of South Carolina — We study the contact interactions between nucleons and spin- $\frac{1}{2}$ or scalar dark-matter (DM) particles in the framework of pionless effective field theory (EFT $_{\pi}$). The relative size of low energy coefficients (LECs) is estimated in the large N_c limit, where N_c is the number of colors in quantum chromodynamics (QCD). We also study deuteron-DM elastic scattering and compute the Helium-3/triton-DM cross section to leading-order (LO) in EFT $_{\pi}$ and next-to-leading-order (NLO) in $1/N_c$. The numerical upper bound is obtained by applying cosmological constraints on LECs.

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