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A novel approach to derive halo-independent limits on dark matter properties

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We propose a new method that allows to place an upper limit on the dark matter elastic scattering cross section with nucleons which is independent of the velocity distribution. Our approach combines null results from direct detection experiments with indirect searches at neutrino telescopes, and goes beyond previous attempts to remove astrophysical uncertainties in that it directly constrains the particle physics properties of the dark matter. In addition, we discuss how this method can be used to derive a halo-independent lower limit on the scattering cross section of dark matter, in case of a positive signal at a future direct detection experiment.

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