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Halo-independent tests of dark matter direct detection signals

Tuesday 29 November 2016 15:20 (20 minutes)

I will discuss halo-independent tests of direct detection signals that we have derived in recent works. In the first part [1502.03342 (elastic scattering) and 1512.03317 (inelastic)], I will discuss a halo-independent lower bound on the DM capture rate in the Sun from a direct detection signal, with which one can set limits on the branching ratios into different channels from the absence of a high-energy neutrino flux in neutrino telescopes. In the second part [based on 1505.05710], I will discuss a lower bound one can set on the product of the DM-nucleon cross section and the energy density from a direct detection signal that is independent of the velocity distribution, and how this bound can be combined with limits from local density measurements, the LHC and the relic abundance in order to constraint DM models.

Summary

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