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Uncertainties in the dark matter velocity distribution

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I introduce a new formalism for incorporating uncertainties in the velocity distribution of dark matter in direct detection experiments (1809.02323). The method constructs a prior over upon possible velocity distributions. The prior penalizes departures from our expectation (e.g., a Maxwellian) according to the relative entropy. The uncertainty is subsequently marginalized using an exact result. We apply this formalism to results from XENON1T. Lastly, we discuss problems with this approach and possible ways forward.

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