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## Measuring the dark matter mass - in spite of astrophysical uncertainties

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The interpretation of future dark matter (DM) direct detection data is fraught with uncertainties. In particular, measurements of the WIMP mass and cross section can be biased by poor assumptions about the WIMP speed distribution. I will present a new technique, based on parametrizing the logarithm of the WIMP speed distribution, which allows the dark matter mass and the speed distribution itself to be reconstructed simultaneously and without bias [1]. The limited energy range of direct detection experiments, however, still leads to an unavoidable degeneracy in the DM interaction cross section. I will present ongoing work towards breaking this degeneracy by incorporating information from low speed WIMPs from neutrino telescope experiments, such as IceCube. With these complementary experiments, we can reconstruct the WIMP mass and interaction cross sections without bias, as well as accurately reconstructing the speed distribution over the full range of interest - allowing us to extract fundamental information about both particle physics and astrophysics from these upcoming experiments.

[1] B. J. Kavanagh and A. M. Green, Phys. Rev. Lett. 111, 031302 (2013)

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