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Closing in on the velocity distribution of Dark Matter with direct detection and neutrino telescopes

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The next generation of direct detection experiments not only will allow the reconstruction of the Particle Physics properties of Dark Matter (i.e. its mass and scattering cross section), but also the determination of its local velocity distribution. However, this measurement is hinder by the fact that direct detection experiments, being sensitive only above some energy threshold, do not probe down to very low velocities. I am going to show you how this problem can be solved by including the information provided by a (simulated) detection of neutrinos from the Sun. The complementary nature of such a signal will significantly improve the precision in the simultaneous reconstruction of the Dark Mass mass, cross section and velocity distribution.

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