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On the sensitivity of direct detection experiments to multi-component dark matter.

Tuesday 5 November 2019 16:15 (15 minutes)

The Weakly Interacting Massive Particle or "WIMP" has been a widely studied solution to the dark matter problem. A plausible scenario is that DM is not made up of a single WIMP species, but that it has a multi-component nature. In this talk I give an overview of recently published work in which we studied direct detection signals in the presence of multi-component WIMP-like DM. I will give an overview of the "smoking gun" signature of two-component dark matter, as well as give a detailed explanation of the statistical methods used to forecast a signal in future generations of direct detection detectors. The two main avenues for forecasting that I will present involve a) discriminating between the one and two-component hypothesis and b) parameter reconstruction. I will also present an example of a minimal extension to the general model independent two-component phase space by introducing constraints from thermal freeze out.

Consider for promotion

No

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