

Correlating Direct and Indirect Detection

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Recent developments have suggested that the dark sector may be much more complex than previously imagined. As a result, models such as Dynamical Dark Matter — in which there are multiple dark-matter components which are only semi-stable but nevertheless contribute non-trivially to Ω_{CDM} — merit further study. One interesting potential signal which arises in such contexts stems from the possibility of the inelastic scattering of heavier states into lighter states at direct-detection experiments. The operators which allow such behavior also permit heavier dark-matter states to decay to lighter dark-matter states plus visible matter. Thus, these models offer the intriguing possibility of actually correlating the bounds from direct detection (scattering) and indirect detection (decay). In this talk I will describe the results of a model-independent analysis of the constraints on decaying dark matter within the region of parameter space relevant for inelastic scattering.

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