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New Directions in Inelastic Dark Matter

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Models of inelastic (or pseudo-Dirac) dark matter commonly assume an accidental symmetry between the left-handed and right-handed mass terms in order to suppress diagonal couplings. Moreover, they often introduce a gauge symmetry spontaneously broken by the introduction of a dark sector version of the Higgs mechanism. Removing the requirement of such an accidental ad-hoc symmetry instead relaxes the relic density constraint and provides a smooth transition between pseudo-Dirac and Majorana dark matter. It also allows for a minimal definition of inelastic dark matter models in which only a real scalar field is required along the pseudo-Dirac particle.

In the talk, I will introduce a simple UV-complete framework realizing the new asymmetric set-up. I discuss the viable regions of parameter space still solving the dark matter problem and comment on how they could be probed with future experiments.

Secondary track

T09 - Beyond the Standard Model

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