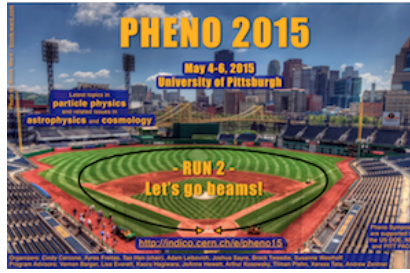


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UltraViolet Freeze-in

Tuesday 5 May 2015 17:15 (15 minutes)

If dark matter is thermally decoupled from the visible sector, the observed relic density can potentially be obtained via freeze-in production of dark matter. Typically in such models it is assumed that the dark matter is connected to the thermal bath through feeble renormalisable interactions. Here, rather, we consider the case in which the hidden and visible sectors are coupled only via non-renormalisable operators. This is arguably a more generic realisation of the dark matter freeze-in scenario, as it does not require the introduction of diminutive renormalisable couplings. We examine general aspects of freeze-in via non-renormalisable operators in a number of toy models and present several motivated implementations in the context of Beyond the Standard Model (BSM) physics. Specifically, we study models related to the Peccei-Quinn mechanism and Z' portals.

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