

# Minimal models for decaying Dark Matter and the LHC

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We introduce minimal models of decaying Dark Matter, characterized by the fact that DM interacts with SM particles through one renormalizable coupling with an additional heavier SM charged state. Such interaction allows to produce a substantial abundance of DM in the early Universe via the decay of the charged heavy state, either in- or out-of-equilibrium. Moreover additional couplings of the charged particle open up decay channels for the DM, which can nevertheless be sufficiently long-lived to be a good DM candidate and within reach of future Indirect Detection observations. We discuss possible signals at the LHC in the cosmologically favored parameter region and comment on the possibility to obtain in such models the recently observed 3.55 keV X-ray line.

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