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Coannihilating Dark Matter at the LHC

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We present a general classification of minimal models where Dark Matter coannihilates with another particle, X. Besides this new particle, such coannihilation processes typically require the existence of a mediator, M. Assuming tree-level and renormalizable interactions we construct all possible Dark Matter, X and M field content which respects gauge and Lorentz invariance. Using our framework one can identify the main categories of LHC signatures associated with coannihilation. We discuss the different aspects of these signatures, mentioning new possible topologies that could be explored at colliders.

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