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Coscatting in micrOMEGAs: a case study for the singlet-triplet dark matter model

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In scenarios with very small dark matter (DM) couplings and small mass splittings between the DM and other dark-sector particles, so-called “coscatting” or “conversion-driven freeze-out” can be the dominant mechanism for DM production. We present the inclusion of this mechanism in micrOMEGAs together with a case study of the phenomenological implications in the singlet-triplet model. For the latter, we focus on the transition between coannihilation and coscatting processes. Indeed, we observe that coscatting is needed to describe the thermal behaviour of the DM for very small couplings, for which coannihilation is not sufficient to obtain a small enough relic density. Including coscatting processes thus opens up a new region in the parameter space of the model. The charged and neutral triplet states are often long-lived in this region; we therefore also discuss collider constraints from long-lived signatures obtained with SModelS.

In-person participation

Yes

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