

# Phenomenological Impact of Non-Perturbative Effects for Colored Dark Sectors

Wednesday 22 September 2021 15:20 (15 minutes)

We demonstrate the impact of non-perturbative effects on the Dark Matter (DM) production mechanism in simplified t-channel DM models. Specifically, we study the case of a Majorana fermion DM, coupled to the standard model (SM) quarks via a colored scalar.

For DM masses in the GeV-TeV range, direct detection experiments strongly constrain the DM coupling to the SM quarks. From a cosmological point of view, however, a large coupling to the SM is not mandatory if the mass splitting between the colored scalar and the DM candidate is sufficiently small. This region of the parameter space is subject to non-perturbative effects, namely the Sommerfeld effect and bound state formation via gluon emission, which can significantly enhance the effective DM (co)annihilation cross-section. We present the impact of these effects on current and upcoming collider searches as well as on direct detection experiments.

## Do you wish to attend the workshop on-site?

yes

## Summary

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