

Phenomenology 2022 Symposium: From Virtual to Real



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Non-perturbative effects in a simplified t-channel dark matter model

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The existence of a dark matter model with a rich dark sector could be the reason why WIMP dark matter has evaded its detection so far. For example, colored co-annihilation naturally leads to the prediction of heavier dark matter masses. Importantly, in such a scenario the Sommerfeld effect and bound state formation must be considered in order to accurately predict relic abundance. We use the widely studied t-channel simplified model with a colored mediator to demonstrate the importance of considering these non-perturbative effects and discuss its impact on constraints on the parameter space of the model from the LHC and direct detection experiments.

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