

A framework for Sommerfeld effect and bound state formation of colored mediators in dark matter studies

Simplified t-channel dark matter models serve as a versatile and well-motivated framework for rich dark sectors that are widely studied by ongoing experimental and theoretical efforts. In this work, we investigate the impact of non-perturbative effects on the dark matter relic abundance for two representative models of this kind of models, focusing on regions of parameter space where coannihilations of colored mediators are important.

In such scenarios, it is well known that the Sommerfeld enhancement and bound state formation processes can significantly alter the predictions for the model parameters of the dark matter candidate.

Besides including the effects stated above, we take into account the effects of excited states beyond the ground state. We will present constraints on models with fermionic and scalar mediators, highlighting the differences and common features of these two.

Moreover, we introduce code that seamlessly integrates with micrOMEGAs 6.0, which can be easily adapted by the user for different models.

Title of the Poster/Talk

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