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Implications of Dark Matter bound states

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In models where the Dark Matter arises as a thermal relic of an early annihilation stage we can use the cosmological DM abundance to derive information on the DM mass. Thus it is crucial to compute thermal freeze-out abundance accurately. The importance of non-relativistic effects, like Sommerfeld enhancement, in the annihilation of DM particles has been recognized long time ago. In this talk I will discuss another kind of non-relativistic effect that can give sizable contribution to the DM phenomenology: formation and subsequent decay of DM bound states. In particular I will illustrate the impact of DM bound states on the relic density computations as well as some interesting features, which could be observed in indirect detection experiments.

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