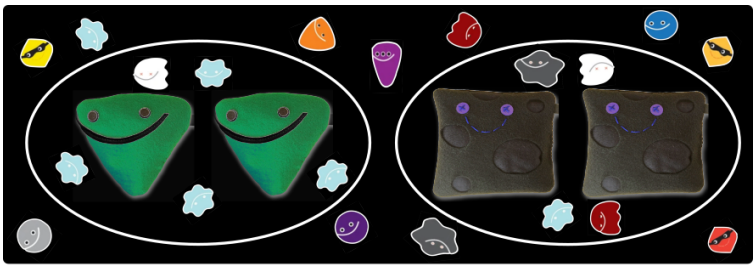

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Bound-state effects in EW and colored co-annihilation and unitarity bound

Thursday 17 June 2021 21:50 (30 minutes)

Dark matter freezeout can be severely affected by non-perturbative effects, such as bound state formation. This is particularly relevant in the regime where the dark matter mass exceeds the mass of the force mediator. Concrete examples are: heavy dark matter, that interacts with the electroweak force, and dark matter that freezes out in a co-annihilation process with a color-charged partner particle. At large dark matter masses the existence of new annihilation channels via bound-state formation also affects the theoretical unitarity bound on the dark matter mass, and cross section. Furthermore, bound-state formation effects in dark matter systems lead to new late time signatures, that will significantly improve the sensitivity of upcoming gamma-ray and neutrino telescopes.

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