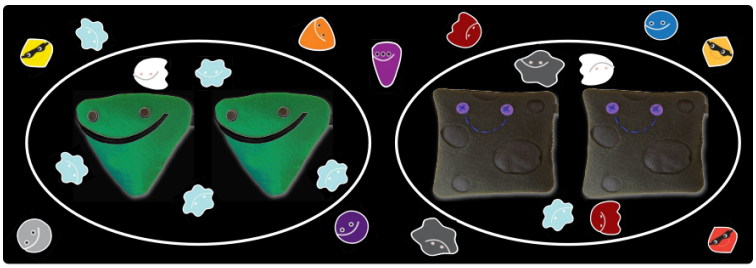

Contribution ID: **4** Type: **not specified**

Dark matter bound states

Tuesday 15 June 2021 20:40 (40 minutes)

The production of dark matter via thermal decoupling from the primordial plasma, and the direct, indirect and collider signals associated with this mechanism, have been the pillars of dark matter phenomenology in the past decades. In sharp contrast to the sub-TeV regime, the interactions of thermal-relic dark matter with multi-TeV or larger mass manifest as long-range. This is supported by unitarity arguments, and shown by explicit calculations in WIMP and other models. The long-range nature of the interactions gives rise to non-perturbative effects, with the most prominent being the existence of bound states. The formation and decay of unstable bound states in the early universe decrease the dark matter density, thereby changing its predicted mass and/or couplings. Stable and unstable bound state formation during CMB or inside galaxies gives rise to novel indirect detection signals.

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