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Relic density of dark matter revisited

mercredi 14 mars 2018 19:00 (15 minutes)

Kinetic decoupling of dark matter (DM) typically happens much later than chemical freeze-out. In fact, local thermal equilibrium is an important assumption for the usual relic density calculations based on solving the Boltzmann equation [for its 0-th moment] describing the DM number density. But is this assumption always justified? In this talk I will address this question and discuss the consequences of more accurate treatments, one relying on the inclusion of higher moments of the Boltzmann equation and the second on solving the evolution of the phase space distribution function fully numerically. I will show explicit examples where such a more accurate treatment is necessary. One of these is the Scalar Singlet model, often referred to as the simplest WIMP DM possibility from a model-building perspective.

Summary

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