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Particle Physics at LPTHE

Mardi 24 Octobre 2017, 14 :00
LPTHE, Library
Domaines : hep-ph

Titre : *Simply split SIMPs*

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Résumé : *Abstract : Dark Matter which interacts strongly with itself, but only feebly with the Standard Model is a possibility that has been entertained to solve apparent small-scale structure problems that are pertinent to the non-interacting cold Dark Matter paradigm. We study the simple case in which the self-scattering rate today is regulated by kinematics and/or the abundance ratio, through the mass-splitting of nearly degenerate pseudo-Dirac fermions or real scalars. We calculate the relic density of these states in a scenario where self- scattering proceeds through off-diagonal couplings with a vector particle V (Dark Photon) and where the abundance is set through number-depleting 4-to-2 reactions in the hidden sector, or, alternatively, via freeze-in. We study the implications of the considered models and their prospect of solving astrophysical small-scale structure problems. We also show how the introduction of the (meta-)stable heavier state may be probed in future dark matter searches.*