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Particle Theory Seminar of LPT Orsay

Jeudi 12 Octobre 2017, 16 :00
LPT, 114
Domaines : hep-ph

Titre : *Z2 SIMP Dark Matter*

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Résumé : *Dark matter with strong self-interactions provides a compelling solution to several small-scale structure puzzles. Under the assumption that the coupling between dark matter and the Standard Model particles is suppressed, such strongly interacting massive particles (SIMPs) allow for a successful thermal freeze-out through N-to-n processes, where N dark matter particles annihilate to n of them. In the most common scenarios, where dark matter stability is guaranteed by a Z2 symmetry, the seemingly leading annihilating channel, i.e. 3-to-2 process, is forbidden, so the 4-to-2 one dominate the production of the dark matter relic density. Moreover, cosmological observations require that the dark matter sector is colder than the thermal bath of Standard Model particles, a condition that can be dynamically generated via a small portal between dark matter and Standard Model particles, a la freeze-in. This scenario is exemplified in the context of the Singlet Scalar dark matter model.*