

Multi-component secluded WIMP dark matter and Dirac neutrino masse

Scenarios for secluded WIMP dark matter models have been extensively studied in simplified versions. This paper shows a complete UV realization of a secluded WIMP dark matter model with an extra Abelian gauge symmetry that includes two-component dark matter candidates, where the dark-matter conversion process plays a significant role in determining the relic density in the Universe. The model generates a Dirac mass term for neutrinos and can be tested in future direct detection experiments of dark matter. The model is also compatible with cosmological and theoretical constraints, including the branching ratio of SM into invisible, Big Bang nucleosynthesis restrictions, and the number of relativistic degrees of freedom in the early universe, even without kinetic mixing.

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