

Light Fermionic WIMP Dark Matter with Light Scalar Mediator

Wednesday, 27 February 2019 10:00 (1 hour)

A light fermionic weakly interacting massive particle (WIMP) dark matter is investigated by studying its minimal renormalizable model, where it requires a scalar mediator to have an interaction between the WIMP and standard model particles. We perform a comprehensive likelihood analysis of the model involving all robust constraints obtained so far and that will be obtained in the near future with paying particular attention to properly take the kinematically equilibrium condition into account. It is shown that near-future experiments and observations such as low-mass direct dark matter detections, flavor experiments and CMB observations play important roles to test the model; however, wide parameter region will still remain survived even if no WIMP and mediator signals are detected there. We also show that precise Higgs boson measurements at future lepton colliders will play a significant role to test this remaining region.

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