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A minimal dark matter model with vector like fermions

Tuesday 13 December 2022 14:00 (1 hour)

We study a simplest viable dark matter model with a real singlet scalar, vector-like singlet and a doublet lepton. We find a considerable enhancement in the allowed region of the scalar dark matter parameter spaces under the influence of the new Yukawa coupling. The Yukawa coupling associate with the fermion sector heavily dominant the dark matter parameter spaces satisfying the current relic density of the Universe. This model could also accommodate tiny neutrino masses and mixing at one loop-level through the radiative see-saw mechanism. Dilepton+Missing Transverse Energy signature arising from the new fermionic sector can observe at Large Hadron Collider (LHC), satisfying relic density, including other theoretical and experimental bounds. We perform such analysis for a benchmark point in the context of 14 TeV LHC experiments with a future integrated luminosity of 3000 fb^{-1}.

Session

Beyond the Standard Model

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