



Dark matter in Two-singlet extension of Standard Model

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In the beyond Standard Model (BSM) scenarios, the real singlet extension of the Standard Model (SM) has been extensively studied [1], where the imposed Z_2 -symmetry ensures the stability of the viable Dark Matter (DM) candidate. We revisit the next to minimal approach which is the two real singlet extension of the SM with a $Z_2 \times Z_2$ symmetry [2]. We analyse the entire parameter space using constraints from vacuum stability and collider to put bounds on the couplings [3]. In this model, the destructive interference between the two t-channel scalar mediators alleviates the stringent constraints from the Xenon1T experiment. Due to the Breit-Wigner resonance, an enhancement in the velocity averaged cross section of DM-DM annihilation is obtained and the measured relic abundance can be realized at only the narrow mass regions where the dark matter mass is around half of the mass of either of the two Higgs bosons. This also ensures the scope for explaining the observed gamma-ray excess in the galactic centre.

References:

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