

Some manifestations of two-component Dark Matter structure in vectorlike hypercolor model

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A minimal vectorlike extension of the Standard Model (SM) having two types of stable neutral particles is considered. In this scenario hyper-quark sector is added to the SM and new fermion fields can be rewritten so that to enforce their vectorial interaction with the SM particles. As a consequence of the SU(4) symmetry breaking, in the model it occurs a set of pseudo-Nambu-Goldstone states containing a stable neutral hyper-pion and one more (di-hyper-quark) state, B0, which is also stable. Both of these states can be interpreted as the Dark Matter (DM) carriers. We analyze the mass splitting between these particles, formation of the DM relic abundance and consider possible regions of allowed values of the scenario parameters. As one of applications of the model, we study some annihilation channels for these DM particles which can be a significant source of gamma emission and also electron-positron pairs and neutrino.

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