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EWSB and CDM from strongly interacting hidden sector

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We present a scale invariant extension of the standard model with new QCD-like strong interaction in the hidden sector. A scale ΛH is dynamically generated in the hidden sector by dimensional transmutation, and chiral symmetry breaking occurs in the hidden sector. This scale is transmitted to the SM sector by a real singlet scalar messenger S, and can trigger electroweak symmetry breaking (EWSB). Thus all the mass scales in this model arises from the hidden sector scale ΛH which has quantum mechanical origin. Furthermore the lightest hadrons in the hidden sector is stable by the flavor conservation of the hidden sector strong interaction, could be the cold dark matter (CDM). We study collider phenomenology, and relic density and direct detection rates of the CDM of this model.

Summary

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