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The mass spectroscopy of dark matter in $SU(3)$ hidden color

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We consider the mass spectroscopy of dark matter in the dark hadron model. In this model [1], the dynamical chiral symmetry breaking in the $SU(3)$ hidden color gauge sector, there exist Nambu-Goldstone (NG) bosons which are massive, because the hidden sector fermions break explicitly chiral symmetry. Therefore, these bosons are dark matter candidates. We study $SU(3)$ hidden color interaction and $SU(3)$ hidden flavor symmetry which can be broken into $SU(2) \times U(1)$. We present the mass spectroscopy of dark matter by lattice QCD simulations with a truncated overlap fermion formalism based on domain wall fermions. Truncated overlap fermions satisfy lattice chiral symmetry instead of chiral symmetry in continuum field theory.

[1] Ametani Y, Aoki M, Goto H, and Kubo J 2015 Phys. Rev. D 91 115007.

Submitted on behalf of a Collaboration?

No

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