

Sub-GeV Fermion Dark Matter with Scalar Mediator

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Sub-GeV dark matter has gained significant attention due to its experimental accessibility for both direct detection searches and neutrino studies. In this work, we present a theoretical model introducing two new bosonic particles beyond the Standard Model: a vector boson and a scalar boson. The model establishes two distinct interaction portals connecting these mediator particles with fermionic dark matter and the Standard Model sector, thereby expanding the range of possible coupling mechanisms. As a key result, we have identified a phenomenologically interesting region in the sub-GeV mass range whose features could be probed by high energy physics experiments.

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