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SO(N) Model as Pion-like SIDM From Effective Range Theory

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Effective range theory, which was originated in Bethe, was developed to study nucleon scattering. We applied this in the context of self-interacting dark matter (SIDM). We studied what kind of combination of parameters fit to the MCMC simulation of dark matter cross section from dwarf scale to cluster scale. As a result, scattering length is longer than our naive expectation. So we investigated Linear sigma model as effective theory of pion like DM. Pion like DM and their bound state may describe the parameter set. We propose this as one scenario in SO(N) gauge theory.

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