Enhancing dark-matter self interaction by a Higgs resonance

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Summary

A possibility of enhancing the dark-matter self-interaction cross-section (σ_{self}) by a Higgs boson resonance is discussed within a model of Abelian vector dark matter. The model assumes extra $U(1)$ symmetry group factor and an additional complex Higgs field needed to generate a mass for the dark vector boson via the Higgs mechanism. The scalar sector contains an extra neutral Higgs boson h_2. If $2M_{DM} \approx M_{h_2}$ then σ_{self} could be amplified by s-channel resonance and the observed dark matter abundance could be properly reproduced. Consequences of such a scenario will be discussed.

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