

Mergers of galaxy clusters with velocity-dependent SIDM

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Self-interacting dark matter (SIDM) has been proposed to solve small-scale problems in Λ CDM cosmology. Constraints on the self-interaction cross-section of dark matter have been derived assuming that the self-interaction cross-section is independent of velocity. However, a velocity-dependent cross-section is more natural in most theories of SIDM. Using idealized N-body simulations without baryons, we study merging clusters with velocity-dependent SIDM. Simulations have been performed with models that contain either a light mediator (frequent regime) or a heavy mediator (rare regime). The cross-section parameters chosen for simulations respects the most stringent astrophysical constraint on self-interaction cross-section. The results of the simulation will be presented.

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