

## Continuum-Mediated Self-Interacting Dark Matter

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Dark matter self-interactions have been proposed as a solution to various astrophysical small-scale structure anomalies. We explore the scenario in which dark matter self-interacts through a continuum of low-mass states. This happens if dark matter couples to a strongly-coupled nearly-conformal hidden sector. This type of theory is holographically described by brane-localized dark matter interacting with bulk fields in a slice of 5D anti-de Sitter space. The long-range potential in this scenario depends on a non-integer power of the spatial separation. We find that continuum mediators introduce novel power-law scalings for the scattering cross section, opening new possibilities for dark matter self-interaction phenomenology.

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