

Warm Surprises from Cold Duets: N-Body Simulations with Two-Component Dark Matter

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We explore extensive N-body simulations with two-component cold dark-matter candidates. We delve into the temperature evolution, power spectrum, density perturbation, and maximum circular velocity functions. We find that the substantial mass difference between the two species and the annihilation of the heavier components to the lighter ones effectively endow the latter with warm dark-matter-like behavior, taking advantage of all distinct features that warm dark-matter candidates offer, without observational bounds on the warm dark-matter mass. Moreover, we demonstrate that the two-component dark-matter model aligns well with observational data, providing valuable insights into where and how to search for the elusive dark-matter candidates in terrestrial experiments.

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