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Tight bonds between sterile neutrinos and dark matter

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Despite the astonishing success of standard ΛCDM cosmology, there is mounting evidence for a tension with observations at small and intermediate scales. We introduce a simple model where both, cold dark matter (DM) and sterile neutrinos, are charged under a new U(1)_X gauge interaction. The resulting DM self-interactions resolve the tension with the observed abundances and internal density structures of dwarf galaxies. At the same time, the sterile neutrinos can account for both the small hot DM component favored by cosmological observations and the neutrino anomalies found in short-baseline experiments.

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