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Constraints on Dark Matter Microphysics from Dwarf Galaxies

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As luminous tracers of the smallest halos, dwarf galaxies offer a unique window into the physics of dark matter (DM). The (lack of) a cutoff in the abundance of low-mass halos informs a variety of DM properties, which is crucial given the breadth of theoretical models that have gained popularity following the search for canonical WIMPs. In this talk, we describe recent advances in measuring and modeling small-scale structure tracers, focusing on the population of Milky Way (MW) satellite galaxies. In particular, we combine a state-of-the-art census of the MW satellite population with a rigorous model of the galaxy–halo connection in order to place the strongest astrophysical constraints to date on warm, interacting, and fuzzy DM. We discuss the implications of these constraints for specific DM candidates, including sterile neutrinos and ultra-light axions.

Summary

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