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Identifying the dark matter nature from new observations of nearby faint galaxies

The well-known small-scale discrepancies between the observed satellite abundance in the Local Group and predictions from Cosmological simulations in CDM seems to point to missing physics in our models. This new physics may be a different dark matter nature beyond the standard WIMP candidate. In my talk I will discuss how the internal structure and increasing discoveries of fainter galaxies nearby can provide a way to distinguish among dark matter candidates, including the ultra-light and Self-interacting dark matter models. Upcoming astronomical surveys focusing in detecting the smallest galaxies in the universe will provide new clues to identify the most viable dark matter candidate.

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