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Warm dark matter searches from the Galactic halo

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Warm dark matter (WDM) could explain some small-scale structure observations that have challenged the cold dark matter (CDM) model, as warm particles suppress structure formation due to free streaming effects. Observing small-scale structure thus provides a valuable way to distinguish between CDM and WDM. In this talk, I will present a semi-analytical model of the dark matter substructure evolution, with which we estimated the number of satellite galaxies in the Milky Way. I will discuss stringent constraints on WDM models based on the observed number of satellites in the Milky Way.

Moreover, warm particles such as sterile neutrinos and axion-like particles can decay into photons, which are consequently detectable by X-ray telescopes. eROSITA will perform an all-sky X-ray survey, of which I will present its sensitivity to identify dark matter decay with narrow X-ray line emission.

Collaboration name

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