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Gravothermal collapse in self-interacting dark matter halos

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The Cold Dark Matter model is highly successful at explaining observations of the large-scale structure of the Universe. However, it has challenges in matching observations on small scales, in the regime of dwarf galaxies. Observationally, these challenges have been established more convincingly for dwarf galaxies in the Local Group, and particularly within the Milky Way. Simulations with velocity-dependent self-interacting dark matter (SIDM) model showed that cross-sections $\gtrsim \text{cm}^2/\text{g}$ at velocities $\lesssim \text{km/s}$ predict both cuspy, high velocity dispersion subhalos consistent with the ultra-faint dwarf spheroidals and cored, low velocity dispersion subhalos consistent with brighter low-density satellites.

In this talk, I will talk about the velocity-dependent SIDM model presented in Refs. [Zavala2019](#), [Turner](#) and follow the gravothermal fluid formalism to explore the consequences of gravothermal collapse for the formation of Intermediate Mass Black Holes in the MW satellite population.

Presenter: MESHVELIANI, Tamari (University of Iceland)

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