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Mass/orbit modeling of spherical systems: from orbits of galaxies in clusters to the nature of dark matter using dwarf spheroidals

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I will present a brief review of techniques to extract the radial profiles of total mass, from which one can infer the dark matter (DM) profile and of velocity anisotropy, related to orbital shapes and formation history of structures. This will allow me to compare the shapes of the anisotropy profiles of elliptical, S0 and spiral galaxies in clusters. I will show how accurate is our knowledge of the inner slope of the DM profile (related to the nature of DM) as inferred from mass/orbit modeling of DM-dominated dwarf spheroidal galaxies, and how much this accuracy can be improved with the advent of accurate proper motion data as is expected with the proposed Theia satellite.

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