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Dynamical heating in Dwarf Spheroidal Galaxies in spin-s Ultra-light Dark Matter models

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Ultralight dark matter (ULDM), characterized by particles with masses log(m/eV) ~ -22 and de Broglie wavelengths on kiloparsec scales, behaves as a coherent quantum field at galactic scales. This wave-like nature drives time-dependent gravitational potential fluctuations that can dynamically heat stellar systems. In this talk, I will present the results of a numerical study of ULDM fluctuation-induced dynamical heating in dwarf spheroidal galaxies. We will analyze how this effect affects stellar velocity dispersion and the long-term stability of cold substructures. Our simulations explore a range of ULDM particle masses and initial stellar configurations, and we discuss the implications for current observational constraints. In particular, we investigate how the nature of the ULDM assuming spin-0 (scalar), spin-1 (vector), and spin-2 (tensor) configurations modifies the characteristics of the induced fluctuations and how these differences affect the heating rates of stellar systems.

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