

Name: Rodrigo Vicente

Affiliation: IFAE, Barcelona

Title: Dynamical friction of black holes in ultralight dark matter

Abstract: Cold dark matter (CDM) describes excellently the observed physics at large (cosmological) scales; however, it seems to be in tension with several smaller (galactic) scale observations. Ultralight dark matter, an alternative to CDM that is especially well motivated by several Standard Model extensions, may provide the solution to these small-scale problems, while keeping the excellent large-scale predictions of CDM. In this talk I will discuss how we can obtain simple analytical expressions, from first principles, for the dynamical friction acting on spinning black holes moving through an ultralight dark matter environment. I will also discuss applications of these results to problems like the evolution of black hole binaries in dark matter solitons (e.g., oscillons or boson stars) that may exist at the center of haloes.