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Looking for New Physics in the Satellites of the Milky Way

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Sitting at the faint end of the galaxy luminosity function, dwarf spheroidal galaxies of the Milky Way are among the most compelling targets for Dark Matter indirect searches, being characterized by large mass-to-light ratios and small baryonic background and foreground. In this talk we review the assumptions at the basis of the estimate of the Dark Matter content in these galaxies as extensively studied in the literature. Then, we present a novel method in order to conservatively assess the impact of the mass-anisotropy degeneracy plaguing the outcome of these indirect Dark Matter searches. This new approach is based on the inversion of the spherical Jeans equation (arXiv:1603.07721). Going beyond the standard Cold Dark Matter paradigm, we eventually comment on the unique opportunity these galaxies offer to us in the quest for the fundamental nature of Dark Matter.

Experimental Collaboration

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