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Measuring the Dark Matter Content of Dwarf Spheroidal Galaxies and Globular Clusters

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Dark matter (DM), a large (˜85%) non-baryonic and non-relativistic component of the matter density of the Universe, likely consists of one or several so-far undetected particles hypothesized in theories beyond the Standard Model (SM). One of the most promising approaches to shed light on the nature of DM particles is to search for signatures of their annihilation or decay into SM particles - among which very-high energy gamma-rays - from regions of the sky believed to be highly DM dominated, such as the Galactic Center, the clusters of galaxies and local compact objects such as the dwarf spheroidal galaxies (dSphs) and some globular clusters around the Milky Way. In this context, the latter two are among the most promising observational targets due to their relative proximity and lack of astrophysical background sources, and are therefore paramount targets to be pointed at with current (e.g., MAGIC) and next-generation (e.g., CTA) Cherenkov telescopes to detect gamma-rays produced by DM interactions or at least constrain the particle DM parameter space. In this contribution, I will present new determinations of the DM amount (i.e. the astrophysical factors for DM annihilation and decay) in dSph and globular cluster halos obtained through the MCMC Jeans analysis of their brightness and kinematic data through the CLUMPY software. I will also discuss the systematic uncertainties affecting the calculation of such quantities.

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