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The Dark Matter distribution of the Milky Way: its uncertainties and their effects on the determination of new physics

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I will illustrate the current status of the determination of the Dark Matter content and distribution within our own Galaxy -the Milky Way- achieved by making use of improved methods and enhanced databases. After this, I will show how the current uncertainties arising from such state-of-the-art astrophysical methods and observations affect the determination of Dark Matter properties, offering a first quantitative estimate of such effects in specific extensions of the Standard Model. This is aimed at addressing the impact of astrophysical uncertainties on the determination of new physics -in the very parameter space of actual particle physics model- thus quantifying in specific cases the unavoidable intertwinement between astro and particle physics, one more step along synergic development.

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