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Impact of Galactic dark matter on annihilation signals from Sagittarius

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A gamma-ray source has been identified at the center of the Sagittarius (Sgr) dwarf spheroidal. It is unclear whether the observed gamma-ray emission is from a millisecond pulsar population or from dark matter annihilation within the Sgr halo. Probing this ambiguity requires accurate knowledge of the Sgr dark matter distribution. However, since Sgr is in the process of tidal disruption, there may be systematic issues in accurately determining the distribution from equilibrium models. Therefore, it is optimal to turn to hydrodynamical simulations. In this talk, I will discuss the expected annihilation signals from Sgr using analogues from the Auriga cosmological simulations. Additionally, I will show that by taking into consideration the presence of Milky Way dark matter particles passing through Sgr, the annihilation rate for velocity-dependent models can be enhanced by several orders of magnitude. Finally, I will discuss the impact of Milky Way dark matter particles on annihilation signals from other known dwarf galaxies.

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