Contribution ID: **32** Type: **not specified**

Wino dark matter searches with dwarf spheroidal galaxies

Monday, 23 August 2021 14:50 (20 minutes)

We study observable signals from dark matter that self-annihilates via Sommerfeld effect in dwarf spheroidal galaxies (dSphs). Since the effect of the Sommerfeld enhancement depends on the velocity of dark matter, it is crucial to determine the profile of dSphs to compute the J-factor, i.e., the line-of-sight integral of density squared. In our study we use the prior distributions of the parameters for satellite density profiles in order to determine the J-factor, making most out of the recent developments in the N-body simulations and semi-analytical modeling for the structure formation. As concrete model, we analyze fermionic dark matter that annihilates via a light scalar and Wino dark matter in supersymmetric models. We find that, with the more realistic prior distributions that we adopt in this study, the J-factor of the most promising dwarf galaxies is decreased by a factor of a few, compared with earlier estimates based on non-informative priors. Nevertheless, the Cherenkov Telescope Array should be able to detect thermal Wino dark matter by pointing it toward best classical or ultrafaint dwarf galaxies for 500 hours.

Primary authors: ISHIWATA, Koji (Kanazawa University); ANDO, Shin'ichiro (University of Amsterdam)

Presenter: ISHIWATA, Koji (Kanazawa University)

Session Classification: Dark Matter and Astroparticle Physics

Track Classification: Dark Matter and Astroparticle Physics