

Sommerfeld Enhancement in the light of Halo gamma-ray excess

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We examine Sommerfeld enhancement in dark matter annihilation as a potential origin of the halo-like gamma-ray excess near $E \sim 20$ GeV reported by Totani. A minimal model with a light CP-even scalar mediator naturally produces a velocity-dependent annihilation cross section consistent with thermal freeze-out, the Milky Way excess, and limits from dwarf spheroidal galaxies. We discuss future prospects on this issue with other Galactic gamma-ray and cosmic ray excess.

Presenter: JHO, Yongsoo

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