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Dark matter density spike at the Galactic Center and indirect detection constraints

The cold dark matter (CDM) distribution in the presence of a central black hole in an isothermal halo is predicted to develop a density spike with a power law of r^{-7/4}. Thus, indirect detection constraints on DM annihilations at galactic center from the density spike could be severe. Assuming different density profile of DM spike (e.g time evolution of spike), we derive upper limits on the annihilation cross section for CDM halos using CTA data. Our results indicate that the shallower density or the softened spike can also improve the bounds on CDM annihilation cross-sction.

Session

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Author: SACHDEVA, Divya

Presenter: SACHDEVA, Divya

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