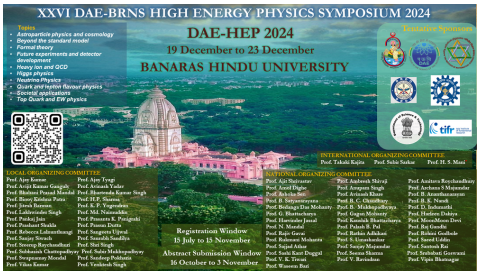

Contribution ID: **279** Type: **Oral**

Indirect detection of dark matter annihilating into long-lived mediators from dwarf spheroidal galaxies

Several astrophysical and cosmological observations suggest the existence of dark matter (DM) through its gravitational effects, yet its nature remains elusive. Despite the lack of DM signals from direct detection experiments, efforts continue to focus on the indirect detection of DM from massive astrophysical objects. Dwarf spheroidal galaxies (dSphs) are among the most promising targets for these searches. In this work, we aim to investigate the expected DM capture rate from 10 nearby DM-rich dSphs, assuming that the accumulated DM eventually annihilates into light, long-lived mediators which decay into gamma rays outside the dSphs. We analyze nearly 16 years of Fermi-LAT data to probe these gamma rays and, from the observed stacked flux upper limit, set limits on the DM-nucleon scattering cross-section. Additionally, we incorporate the Sommerfeld effect into the DM annihilation process, obtaining bounds on the DM-nucleon scattering cross-section of $\sim 10^{-36}$ cm^2 for DM masses around 100 GeV. This model-independent study allows us to directly compare our results with the bounds reported by direct detection experiments.

Field of contribution

Phenomenology

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