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Dark Matter searches with Fermi LAT in direction of dwarf spheroidals

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The dwarf spheroidal satellite galaxies of the Milky Way are some of the most dark-matter-dominated objects known. Due to their proximity, high dark matter content, and lack of astrophysical backgrounds, dwarf spheroidal galaxies are widely considered to be among the most promising targets for the indirect detection of dark matter via gamma rays. Here we report on gamma-ray observations of Milky Way dwarf spheroidal satellite galaxies based on 6 years of *Fermi* Large Area Telescope data processed with the new Pass 8 reconstruction and event-level analysis. None of the dwarf galaxies are significantly detected in gamma rays, and we present upper limits on the dark matter annihilation cross section from a combined analysis of the 15 most promising dwarf galaxies. The constraints derived are the tightest to date using gamma rays and lie below the canonical thermal relic cross section for WIMPs of mass < 100 GeV annihilating via the $b\bar{b}$ and $\tau\tau$ channels.

Collaboration

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