

Dark Matter Searches with the Fermi-LAT

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The era of precision cosmology has revealed that ~80% of the total amount of matter in the universe is dark matter. One promising candidate, motivated by both particle physics and astrophysics, is the Weakly Interacting Massive Particle (WIMP). WIMPs are predicted to produce gamma rays via annihilation or decay which are detectable by the Fermi Large Area Telescope (Fermi-LAT). Indirect searches such as this complement direct and collider (production) searches and are necessary to fully investigate the particle nature of dark matter. For almost nine years, Fermi-LAT has been surveying the sky in the energy range 20 MeV to >300 GeV from low Earth orbit. I present several recent results from the Fermi-LAT Collaboration for a variety of indirect search targets, including neighboring galaxies, and the Galactic center. Since there is no definitive DM detection in the LAT data to date, the Fermi-LAT Collaboration has reported only upper limits, which for some search targets are now challenging the standard expectations for WIMP dark matter. I will also discuss the prospects for future searches with the Fermi-LAT.

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