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Fermi-LAT constraints on diffuse Dark Matter annihilation from the Galactic Halo

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Our Galaxy resides in the center of a vast "Halo" of Dark Matter (DM). This concentration produces, in many viable particle physics models, an indirect Weakly Interacting Massive Particle (WIMP) annihilation signal that peaks in the Fermi-LAT's energy range. Our knowledge of the diffuse background is essential to placing reasonable limits on the DM mass and cross-section. We incorporate a systematic variation of the GALPROP galactic diffuse background model, constrained by current cosmic-ray measurements, into a profile likelihood analysis and present upper limits on the DM annihilation cross-section using the Fermi-LAT data.

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