

Abstract Submitted
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Fermi-LAT Sensitivity to Dark Matter Annihilation in Via Lactea II Substructure BRANDON ANDERSON, UC Santa Cruz, MICHAEL KUHLEN, Institute for Advanced Study, Princeton, ROBERT JOHNSON, Santa Cruz Institute for Particle Physics, PIERO MADAU, JUERG DIEMAND, UCO/Lick Observatory, FERMI-LAT COLLABORATION — We present a study of the ability of the Fermi Gamma-ray Space Telescope to detect dark-matter annihilation signals from the Galactic subhalos predicted by the Via Lactea II N-body simulation. We implement an improved formalism for estimating the boost factor needed to account for the effect of dark-matter clumping on scales below the resolution of the simulation, and we incorporate a detailed Monte Carlo simulation of the response of the Fermi-LAT telescope, including a simulation of its all-sky observing mode integrated over a ten year mission. The results are less optimistic than previous estimates that did not fully account for the variations of the LAT effective area and point-spread function. Nevertheless, for WIMP masses up to about $150 \text{ GeV}/c^2$ in standard supersymmetric models a few subhalos could be detectable with > 5 standard deviations significance and would likely deviate significantly from the appearance of a point source.

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