

Abstract Submitted
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Prospects for Dark Matter Measurements with the Advanced Gamma Ray Imaging System (AGIS) JAMES BUCKLEY, Washington University, AGIS COLLABORATION — AGIS, a concept for a future gamma-ray observatory consisting of an array of 50 atmospheric Cherenkov telescopes, would provide a powerful new tool for determining the nature of dark matter and its role in structure formation in the universe. The advent of more sensitive direct detection experiments, the launch of Fermi and the startup of the LHC make the near future an exciting time for dark matter searches. Indirect measurements of cosmic-ray electrons may already provide a hint of dark matter in our local halo. However, gamma-ray measurements will provide the only means for mapping the dark matter in the halo of our galaxy and other galaxies. In addition, the spectrum of gamma-rays (either direct annihilation to lines or continuum emission from other annihilation channels) will be imprinted with the mass of the dark matter particle, and the particular annihilation channels providing key measurements needed to identify the dark matter particle. While current gamma-ray instruments fall short of the generic sensitivity required to measure the dark matter signal from any sources other than the (confused) region around the Galactic center, we show that the planned AGIS array will have the angular resolution, energy resolution, low threshold energy and large effective area required to detect emission from dark matter annihilation in Galactic substructure or nearby Dwarf spheroidal galaxies.

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