

Abstract Submitted
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Searches for Axionlike Particles with the Fermi Large Area Telescope ANDREA ALBERT, LANL, MANUEL MEYER, MIGUEL SANCHEZ-CONDE, Stockholm University, MATTHEW WOOD, SLAC, LAT COLLABORATION — Axionlike particles (ALPs) are dark-matter candidates that occur in a variety of extensions of the Standard Model. These particles could leave signatures in gamma rays, due to the coupling of ALPs to photons in external electromagnetic fields. To date, observations with Fermi Large Area Telescope (LAT) provide the strongest constraints on the photon-ALP coupling for ALP masses between 0.5 and 20 neV. Here, we summarize these constraints and present the sensitivity to detect an ALP induced gamma-ray burst from a Galactic core-collapse supernova. ALPs would be produced in the stellar medium via the Primakoff effect and convert into gamma rays in the Galactic magnetic field. Fermi LAT observations would be able to probe couplings where ALPs could constitute the entirety of dark matter. Below 1 neV, the Fermi-LAT sensitivity would surpass that of future laboratory experiments by one order of magnitude.

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