

Abstract Submitted  
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**Study of indirect detection of Axion-Like-Particles with the Fermi-LAT instrument and Imaging Atmospheric Cherenkov Telescopes**<sup>1</sup> DAVID PANEQUE, KIPAC-SLAC, Stanford University, ELLIOTT BLOOM, KIPAC-SLAC, Stanford University, Representing the Fermi-LAT Collaboration, MIGUEL SANCHEZ-CONDE, Instituto de Astrofísica de Andalucía — Axion like Particles (ALPs) are predicted to couple with photons in the presence of magnetic fields. This effect may lead to a significant change in the observed spectra of VHE sources such as AGNs. We performed a study that considers both the photon/axion mixing that takes place in the gamma-ray source and the mixing expected to occur via the intergalactic magnetic fields between the source and the Earth. An efficient photon/axion mixing in the source always means attenuation in the photon flux, whereas the mixing in the intergalactic medium may result in a decrement and/or enhancement of the photon flux, depending on the distance of the source and the energy considered. We also predict an attenuation in the intensity spectrum of distant sources, which occurs at an energy that only depends on the properties of the ALPs and the intensity of the intergalactic magnetic field, and thus is independent of the AGN source being observed. In the presentation we will provide a prescription for the indirect detection of ALPs with gamma-ray instruments and will present preliminary results derived from AGN spectra using published IACT and Fermi-LAT data.

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Elliott Bloom  
KIPAC-SLAC, Stanford University

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