

## Axion-like particle impact in high-energy astrophysics

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Axion-like particles (ALPs) are neutral, spin zero bosons primarily interacting with photons, are predicted by String Theory and are among the best candidates for dark matter. Due to their low coupling with photons, ALPs are difficult to detect in laboratory experiments, but they produce observable effects in the astrophysical environment, which represents the best opportunity to study ALP physics. In particular, in the presence of external magnetic fields, photon-ALP oscillations arise which produce consequences on spectra and polarization of astrophysical sources, such as blazars and gamma-ray bursts. We discuss ALP-induced effects on astrophysical spectra, which can be detected by observatories, such as ASTRI, CTAO and LHAASO. Therefore, we show that future observational data will provide us with additional information by confirming current indications at ALP existence or further constraining the ALP parameter space (ALP mass, photon-ALP coupling).

**Primary author:** GALANTI, Giorgio (Istituto Nazionale di Astrofisica (INAF))

**Presenter:** GALANTI, Giorgio (Istituto Nazionale di Astrofisica (INAF))

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