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Photon-ALP oscillations at CTA energies

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Axions and axion-like-particles (ALPs) are well motivated beyond the standard model particles that can explain a variety of unsolved problems in physics, such as the strong CP problem and the nature of dark matter. These particles are characterised by their two-photon coupling, which leads to so-called photon-ALP oscillation as photons propagate through an external magnetic field. Such oscillations will lead to, for instance, characteristic signatures in the energy spectrum of high-energy photons from astrophysical sources, allowing us to probe the existence of ALPs and possibly dark matter. In this talk, we review the signatures ALPs imprint on high energy photon spectra, and we discuss an improved statistical test that searches for the energy-dependence of the oscillations. The focus is on photons at TeV-energies relevant for the upcoming Cherenkov Telescope Array (CTA).

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