

Future prospects for measuring the extragalactic background light and probing for axion signatures

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At TeV photon energies the universe has a high optical depth due to the presence of extragalactic background light (EBL) photons from stars and star-formation which provide a target for pair production. Measuring the amount of absorption in the gamma-ray spectrum from a relatively distant object such as an active galactic nucleus (AGN) reveals information about the level of the EBL, which in turn provides information about star formation history. We examine how sensitive next generation ground-based gamma-ray telescopes such as the Cherenkov Telescope Array (CTA) will be to different EBL models which have been proposed. We also consider the prospects of such telescopes detecting axion signatures- a decrease in the level of absorption predicted by extensions to the standard model.

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