

What is this contribution about?

Probing extragalactic background light, intergalactic magnetic fields, axion-like particles and Lorentz invariance violation with the next-generation Cherenkov Telescope Array (CTA) observatory.

Why is it relevant / interesting?

Though these entities/effects are some of the key elements of the modern physics and cosmology, they are difficult to probe otherwise than with gamma-ray observations — and CTA will be one of the most sensitive gamma-ray telescopes ever built.

What have we done?

We've estimated CTA potential to detect manifestations of these phenomena in emission of distant active galactic nuclei, demonstrating the improvements over the existing measurements and limits.

What is the result?

CTA will offer an unprecedented sensitivity to the studied phenomena, which may be even further improved via synergies between CTA and other upcoming multi-wavelength / -messenger facilities.