

## Disentangling Lorentz symmetry breaking and deformation in photon absorption

*Tuesday 8 July 2025 11:20 (20 minutes)*

The transparency of the universe to high-energy gamma rays is governed by interactions with low-energy photons from the Cosmic Microwave Background (CMB) and Extragalactic Background Light (EBL) via Breit-Wheeler pair production. New physics models that suppress this process predict increased transparency, offering a testable scenario. This talk explores how such suppression arises within Lorentz invariance violation (LIV) and doubly special relativity (DSR) frameworks. We will compare the computation of the optical depth and the resulting survival probability in both scenarios, showing how potential anomalous transparency measurements could effectively discriminate between these two models beyond Lorentz invariance.

### Working Group

WG1 - High Energy QG Theory

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**Session Classification:** WG1 High Energy QG Theory 2