

Recent results on LIV studies using MAGIC telescopes from the observation of GRB 190114C

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On January 14, 2019, the most energetic photons ever observed from a gamma-ray burst were recorded by the Major Atmospheric Gamma Imaging Cherenkov (MAGIC) telescopes, detecting GRB 190114C at TeV energies. We used this unique observation to probe an energy dependence of the speed of light in vacuo for photons, as predicted by several quantum gravity models. From a set of conservative assumptions on the possible intrinsic spectral and temporal evolution, competitive lower limits on the quadratic leading order modification of the speed of light were obtained. We performed the first Lorentz invariance violation test ever performed on a gamma-ray burst signal at TeV energies, which will serve as a stepping stone to future studies.

Keywords

LIV; GRB; gamma rays; MAGIC; Lorentz invariance violation; GRB 190114C

Collaboration

MAGIC

other Collaboration

Subcategory

Experimental Results

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