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New constraints on Lorentz invariance violations from H.E.S.S. observations of the blazar PKS 2155-304 flaring period of July 2006

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Lorentz invariance is a cornerstone of modern physics. However, certain quantum gravity models suggest potential violations of Lorentz symmetry (LIV) at high energy scales. Blazars, such as PKS 2155-304, are powerful, variable sources of very high-energy gamma rays and provide an ideal setting for testing such phenomena. We analyze the temporal and spectral properties of the July 29, 2006 PKS 2155-304 flare recorded by the H.E.S.S. experiment. A likelihood technique is used to measure energy-dependent time delays in the arrival times of gamma-ray photons that could indicate LIV effects. No significant LIV effect is observed and a stringent constraint on the energy scale of the tested model E_{QG} is set.

Working Group

WG2 - High Energy QG Experiment

Author: PENSEC, Ugo

Co-author: Dr BOLMONT, Julien (LPNHE - SU/CNRS-IN2P3)

Presenter: PENSEC, Ugo

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