Contribution ID: **129** Type: **Oral**

Lorentz Invariance Violation searches: modeling intrinsic time-lags in flaring blazars

Monday 2 December 2019 17:10 (20 minutes)

Some Quantum Gravity (QG) theories, aiming at unifying general relativity and quantum mechanics, predict an energy-dependent modified dispersion relation for photons in vacuum leading to a Violation of Lorentz Invariance (LIV). QG effects are expected to become sensible at a characteristic energy scale E_{QG} of the order of the Planck Energy. One way of testing these theories is to monitor TeV photons time-of-flight emitted by distant, highly energetic and highly variable astrophysical sources such as flaring Active Galactic Nuclei. Only one time-lag detection was reported so far. We have recently shown however that significant intrinsic time-lags should arise from in situ blazar emission processes.
In this contribution we will present a time-dependent modeling of blazar emissions which is developped to trace back the origins of intrinsic delays and provides predictions on their contributions with different emission scenarii. Our final aim is to disentangle intrinsic effects from extrinsic ones in order to highlight LIV effects. This distinction is becoming increasingly crucial considering the upcoming light from the future Cherenkov Telescope Array (CTA) Observatory which will constitute a vast step-up in sensitivity needed for time-lag searches.

Author: Ms LEVY, Christelle (LPNHE/LUTH)

Co-authors: Dr PERENNES, Cédric; Dr SOL, Hélène; Dr BOLMONT, Julien

Presenter: Ms LEVY, Christelle (LPNHE/LUTH)

Session Classification: Parallel

Track Classification: Extragalactic sources