

# Constraining Lorentz Invariance Violation using the muon content of extensive air showers measured at the Pierre Auger Observatory

## Executive Summary



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### What is this contribution about?

In this contribution, the Lorentz Invariance Violation (LIV) was constrained using the muon content distribution of extensive air showers.

### Why is it relevant/interesting?

For the first time, LIV effects were studied considering the muon fluctuation of extensive air showers measured at the Pierre Auger Observatory.

### What has been done?

After having introduced LIV as a perturbation term in the single-particle dispersion relation, a library of simulated showers was produced. In the presence of LIV, an increase in the average number of muons at ground and a decrease in the relative fluctuations were observed.

### What is the result?

Considering the dependence of the decrease of the relative fluctuations on the different violation strengths, a new bound for the LIV parameter was obtained.

