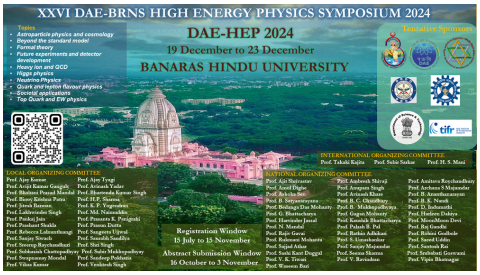

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Study of Lorentz invarianece violation through Sideral effect in Long-baseline experiment

Lorentz Invariance Violation (LIV) presents a fascinating opportunity to explore fundamental symmetries, with neutrinos serving as particularly effective probes of this phenomenon. Long-baseline neutrino experiments, such as the Deep Underground Neutrino Experiment (DUNE), are particularly well-suited for investigating non-isotropic LIV, especially through the detection of sidereal effects. This study provides a comprehensive analysis of the full parameter space for non-isotropic, non-diagonal LIV parameters that exhibit sidereal dependence, focusing on two specific flux scenarios: low-energy flux and tau-optimized flux. Our findings yield more stringent constraints on LIV parameters, suggesting that DUNE could achieve greater sensitivity for certain LIV parameters, surpassing all previously established limits and representing a significant advancement in LIV research.

Field of contribution

Phenomenology

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