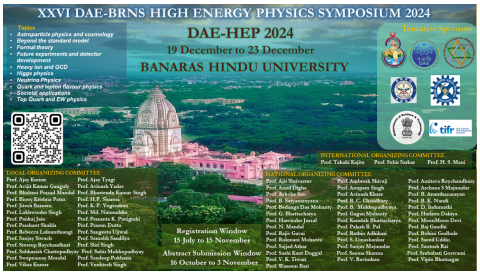

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Nova-T2k tension in the light of non-isotropic LIV

This study addresses the tension observed between the NOvA and T2K long-baseline accelerator experiments in determining the standard CP phase, exhibiting more than 90% confidence level with two degrees of freedom. We explore the potential for new physics beyond the standard model, specifically focusing on non-isotropic Lorentz Invariance Violation (LIV) as a means to resolve this discrepancy. Our analysis examines the effects of LIV on both appearance and disappearance channels individually, as well as in combination. We focus on specific LIV parameters, \(a^X \) and \(c^{XY}\). Additionally, we demonstrate that the sidereal effect and the differing orientations of T2K and NOvA can help reduce this tension. Furthermore, we investigate a hypothetical scenario involving a 3% variation in the number of protons on target (POT) for both experiments, highlighting its role in causing discrepancies. This work emphasizes the significance of sidereal studies and their impact on standard three-flavor fits.

Field of contribution

Phenomenology

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