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## Exploring the impact of LIV at Deep Underground Neutrino Experiment

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Lorentz Invariance Violation (LIV) is a fundamental violation of space-time symmetry, implying that physical laws vary under Lorentz transformation. The neutrinos are weakly interacting fundamental particles which can act as a probe for understanding the violation of Lorentz invariance symmetry. Here, we consider intrinsic LIV effects that can exist even in a vacuum. We use an effective field theory known as Standard Model Extension (SME) as a framework to treat the LIV as a small perturbation to the standard matter Hamiltonian. The effective Hamiltonian can be implemented to investigate how the presence of LIV parameters modifies the neutrino oscillation probabilities. We particularly study the effect of CPT-Violating LIV terms on the mass-induced neutrino oscillations.

In this work, we explore the impact of LIV on neutrino oscillation probabilities in matter taking DUNE as a case study. We observe a significant effect on neutrino oscillations in the presence of a non-zero LIV parameter. We further investigate the impact of LIV parameters on the CP-measurement sensitivity at DUNE.

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