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Core-passing atmospheric neutrinos: a unique probe to discriminate between Lorentz violation and non-standard interactions

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Lorentz violation and non-standard interactions are two of the most popular scenarios beyond the Standard Model of particle physics, both of which can affect neutrino oscillations significantly. However, these effects can mimic each other, and it would be difficult to distinguish between them in any fixed-baseline neutrino experiment. We show that atmospheric neutrinos, having access to a wide range of baselines, can break this degeneracy. Observations of core-passing atmospheric neutrinos and antineutrinos would be a potent tool to discriminate between these two new-physics scenarios.

Attendance type

In-person presentation

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