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Unstable Neutrinos: Addressing Oscillation and Decay

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The neutrino has a lifetime that is significantly longer than the Age of the Universe, as it can only decay radiatively via loops involving gauge bosons. However, the presence of physics Beyond the Standard Model could induce 'visible' neutrino decay between neutrino mass eigenstates. This decay process could be identified in laboratory experiments as well as from astrophysical or cosmological observations. To study neutrino systems that involve both oscillation and decay, two main formalisms have been developed—a density matrix approach and a phenomenological approach. In this work, we present an analysis of both, highlighting the physical effects captured by each framework.

Poster prize

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