

# A framework for testing leptonic unitarity by neutrino oscillation experiments

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In this talk, I will discuss leptonic unitarity violation at energy scale much lower than the electroweak scale in neutrino oscillation phenomena. The main features which distinguish it from high scale unitarity violation are preservation of lepton flavor universality and absence of zero-distance neutrino flavor transition. For concreteness, we work in the framework of 3 active plus  $N$  sterile neutrino model and restrict the active-sterile and sterile-sterile neutrino mass squared differences to be in between  $0.1 \text{ eV}^2$  and  $1 \text{ MeV}^2$ . The upper bound is such that the sterile states are kinematically allowed to participate in neutrino oscillation while the lower bound is such that our model becomes insensitive to details of the sterile sectors (mass spectra and mixing) due to partial decoherence effects.

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