

# Light sterile neutrinos and implications on mass variables

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The results from the short-baseline experiments, such as the LSND and MiniBooNE, hint at the potential existence of an additional neutrino state characterized by a mass-squared difference of approximately  $1 \text{ eV}^2$ . In addition, a sterile neutrino with a mass-squared difference of  $10^{-2} \text{ eV}^2$  has been proposed to improve the tension between the results obtained from the T2K and NOvA experiments. The additional light sterile neutrino state hypothesis introduces four distinct spectra of mass states. We discuss the implications of the above scenarios for the observables that depend on the absolute mass of the neutrinos, namely - the sum of neutrino masses ( $\Sigma$ ) from cosmology, the effective mass of the electron neutrino from beta decay ( $m$ ), and the effective Majorana mass ( $m$ ) from neutrinoless double beta decay. We show that the current constraints of the above variables can disfavor some scenarios.

## Alternate track

1. Beyond the Standard Model

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