

# Neutrino mass ordering obscured by the non-standard interactions

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One of the major open questions in particle physics is the issue of the neutrino mass ordering (NMO). The current data of the two long-baseline experiments NOvA and T2K, interpreted in the standard 3-flavor scenario, provide a  $\sim 2.4\sigma$  indication in favor of the normal neutrino mass ordering. We show that such an indication is completely washed out if one assumes the existence of neutral-current non-standard interactions (NSI) of the flavor changing type involving the  $e - \tau$  flavors. This implies that the claim for a discovery of the NMO will require a careful consideration of the impact of hypothetical NSI. In this context we also show that among the future LBL experiments, DUNE will have the best chances to remove the NMO confusion issue plaguing the present data. Finally, we mention that if no prior on the test value of  $|\epsilon_{e\tau}|$  is assumed, the sensitivity of DUNE to the NMO further deteriorates, never reaching the  $3\sigma$  level.

## Secondary track (number)

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