

Constraints on neutrino decay scenarios with electron anti-neutrino disappearance experiments.

Neutrino decay provides for a very interesting case for the “beyond PMNS” neutrino physics. It has been shown that this phenomenon can also explain some of the anomalies seen in neutrino experiments. We study the constraints that $\bar{\nu}_e$ disappearance experiments like JUNO and KamLAND can put on neutrino decay scenarios. In particular, we consider a model where a heavier neutrino can decay giving active daughter neutrinos which can then be detected in these experiments. We find that the experiments JUNO and KamLAND can together constrain $\tau_3/m_3 \geq 10^{-10}$ s/eV for the normal hierarchy and $\tau_2/m_2 \geq 10^{-9}$ s/eV for the inverted hierarchy. We discuss an interesting physics case because of which the bounds are better for the inverted hierarchy. Unlike ν_e appearance experiments, the $\bar{\nu}_e$ disappearance events do not change much depending on whether the decay products are visible or not. This is due to the smallness of $|U_{e3}|$.

Session and Location

Monday Session, Poster Wall #203 (Ballroom)

Poster included in proceedings:

yes

Primary author: Dr PRAKASH, Suprabh (Instituto de Fisica “Gleb Wataghin” - Unicamp)

Co-authors: Dr NUNOKAWA, Hiroshi (PUC, Rio de Janeiro); Dr MINAKATA, Hisakazu (IFT, UAM); Dr PERES, Orlando L. G. (Instituto de Fisica “Gleb Wataghin”); Mr PORTO SILVA, Yago P. (Instituto de Fisica “Gleb Wataghin”)

Presenter: Dr PRAKASH, Suprabh (Instituto de Fisica “Gleb Wataghin” - Unicamp)

Track Classification: Poster (participating in poster prize competition)