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Constraining Active and Sterile Neutrino Masses and Mixing from Mass Observables

We assume that in the near future, the positive results of three mass observables, namely, non-zero value of sum of neutrino masses from cosmological data, efective masses from neutrinoless double beta decay, and tritium beta decay experiments, will be obtained. We further assume that these results are in conflict with the standard three flavor neutrino framework which implies the presence of sterile neutrino. Then we study to which extent one can constrain sterile neutrino mass and mixing as well as the absolute mass scale of active neutrinos only from these three mass observables without using oscillation data.

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