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The Effects of Majorana Phases in Estimating the Masses of Neutrinos

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Majorana CP violating phases coming from heavy right-handed Majorana mass matrices (MRR) are considered to estimate the masses of neutrinos. The effects of phases on quasi-degenerate neutrinos mass matrix obeying μ - τ symmetry predicts the results consistent with observations for (i) solar mixing angle (θ_{12}) below TBM, (ii) absolute neutrino mass parameters [m_{ee}] in neutrinoless double beta ($0\nu\beta\beta$) decay, and (iii) cosmological upper bound (summation of neutrinos three masses). Analysis is carried out through parameterization of light left-handed Majorana neutrino matrices (mLL) using only two unknown parameters (φ , η) within μ - τ symmetry. We consider the charge lepton and up quark matrices as diagonal form of Dirac neutrino mass matrix (mLR), and mRR are generated using mLL through inversion of Type-I seesaw formula. The analysis shows that the masses of neutrinos are in agreement with the upper bound from cosmology and neutrinoless double beta decay. The results presented in this article will have important implications in discriminating the neutrinos mass models.

Presenter: NGOUNIBA KI , Francis (Tezpur University, India)

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