Large Lepton EDM from Heavy Right Handed (Majorana) Neutrinos

SAIFUDDIN RAYYAN, Virginia Tech — CP violation in the leptonic sector has not been observed yet. Very strong constraints come from the current limits on the electric dipole moment (EDM) of the electron (and muon). In the recent model proposed by Takeuchi and others to explain the NuTeV anomaly, TeV Heavy Right Handed Neutrinos (HRHN’s) mix heavily with the standard model neutrinos in a specific sea-saw like texture. Among the phenomenological consequences of this model is the possibility of a large CP violation in the leptonic sector. The Majorana nature of the (HRHN) results in new (two loop) diagrams leading to non-zero CP violation. The large mixing of the HRHN’s can result in a huge enhancement to the value of CP violation and lepton EDM produced by these diagrams. The result of the calculation of the diagrams will be presented. The value of the predicted EDM will be discussed for different ranges of parameters and the most recent limits on the electron and muon EDM will be used to constrain the model.