

Evolution of Lepton Number for Neutrinos

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We study the evolution of the lepton number for a $SU(2)$ doublet consisting of a massive neutrino and a charged lepton. By choosing a specific initial lepton family for a neutrino we can compute the evolution of all lepton family numbers. Our framework results in additional oscillation phases that are important for non-relativistic neutrinos. We study the phenomenology of relativistic and nonrelativistic neutrino physics under this framework. The nonrelativistic region is of particular interest due to the Cosmic Neutrino Background ($C\nu B$) predicted from big bang models. Furthermore, we include important damping effects on the oscillations for the nonrelativistic region by considering a lepton number density. This is based on the works of arXiv:2101.07751 [hep-ph] and arXiv:2106.02783 [hep-ph].

Attendance type

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