Contribution ID: **856** Type: **Poster**

Search for Environmentally-Induced Decoherence Effects on ν-oscillation at Long-baseline Experiments

Friday, 8 July 2022 20:10 (20 minutes)

In a neutrino system, the phenomenon of decoherence refers to the loss of coherence between the three neutrino mass eigenstates. The neutrino system, like any other system, is open to the environment and should be treated as such. Now as we know, the oscillation of neutrinos is caused by the coherent superposition of the neutrino mass eigenstates. But due to the open nature of the system, dissipative interactions between the neutrino sub-system and the environment lead to a loss of coherence with the propagation distance. As a result, the presence of decoherence in the neutrino sub-system alters the probabilities of neutrino oscillation. Herein, we use the Lindblad Master equation to examine the temporal evolution of the neutrinos, with decoherence as an additional term to account for the dissipative interaction with the environment. The effects of such interactions can be seen in the neutrino oscillation probabilities and this has been studied in our present work. We use the general framework developed to compute the modified neutrino oscillation probabilities and analyze the changes. In this study, we investigate how different values of the decoherence parameter affect oscillation probability. We'll present our understanding of the effect of decoherence on the neutrino probabilities in the long-baseline experiments.

In-person participation

No

Primary authors: Mr SARKER, Arnab (Tezpur University, Assam, India); DEVI, Moon Moon (Tezpur University, Assam, India)

Presenter: Mr SARKER, Arnab (Tezpur University, Assam, India)

Session Classification: Poster Session

Track Classification: Neutrino Physics