Contribution ID : **63** Type : **Plenary/section talk**

Heavy neutrinos effects for oscillation of light neutrinos at short distances

Wednesday, 4 October 2017 15:45 (15)

The transition and survival probabilities for the different light neutrinos are calculated with account of contributions of heavy neutrinos. The graphical dependences are obtained for the disappearance probability of muon neutrino/antineutrino and appearance probability of electron neutrino/antineutrino in the muon neutrino/antineutrino flux as functions of distance and other model parameters and at different neutrino energies, as well as functions of the ratio of the distance to the neutrino energy. It is shown that in the case of the mixing matrix of a definite type between light and heavy neutrinos the explanation of the neutrino anomalies at short distances is possible. A new parameterization and a certain form of the mixing matrix for light and heavy neutrinos are used with account of the possible violation of CP invariance. The theoretical results obtained can be applied for the interpretation and prediction of results of the ground-based experiments on searching for heavy neutrinos, and also for the analysis of certain astrophysical data.

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Session Classification : Neutrino and Astroparticle Physics - 3

Track Classification : Neutrino and astroparticle physics