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Title:	Exploring the new physics phases in 3+1 scenario in neutrino oscillation experiments
Authors:	Fiza, Nishat (/jspui/browse?type=author&value=Fiza%2C+Nishat)
Keywords:	Beyond Standard Neutrino Physics Model CP violation
Issue Date:	2021
Publisher:	Springer Nature
Citation:	Journal of High Energy Physics, 2021(9)
Abstract:	The various global analyses of available neutrino oscillation data indicate the presence of the standard 3 + 0 neutrino oscillation picture. However, there are a few short baseline anomalies that point to the possible existence of a fourth neutrino (with mass in the eV-scale), essentially sterile in nature. Should sterile neutrino exist in nature and its presence is not taken into consideration properly in the analyses of neutrino data, the interference terms arising due to the additional CP phases in presence of a sterile neutrino can severely impact the physics searches in long baseline (LBL) neutrino oscillation experiments. In the current work we consider one light (eV-scale) sterile neutrino and probe all the three CP phases (δ_{13} , δ_{24} , δ_{34}) in the context of the upcoming Deep Underground Neutrino Experiment (DUNE) and also estimate how the results improve when data from NOvA, T2K and T2HK are added in the analysis. We illustrate the $\Delta\chi^2$ correlations of the CP phases among each other, and also with the three active-sterile mixing angles. Finally, we briefly illustrate how the relevant parameter spaces in the context of neutrinoless double beta decay get modified in light of the bounds in presence of a light sterile neutrino.
Description:	Only IISERM authors are available in the record
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