

# CONSTRAINING THE NON-STANDARD INTERACTION PARAMETERS IN LONG BASELINE NEUTRINO EXPERIMENTS

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In this work we investigate the prospects for probing the strength of the possible non-standard neutrino interactions (NSI) in long baseline neutrino oscillation experiments [1]. We find that these experiments are sensitive to NSI couplings down to the level of 0.01-0.1 depending on the oscillation channel and the baseline length, as well as on the detector's fiducial mass. We also investigate the interference of the leptonic CP angle  $\delta_{CP}$  with the constraining of the NSI couplings. It is found that the interference is strong in the case of the  $\nu_e \leftrightarrow \nu_\mu$  and  $\nu_e \leftrightarrow \nu_\tau$  transitions but not significant in other transitions. In our numerical analysis we apply the GLOBES software and use the LBNO setup as our benchmark.

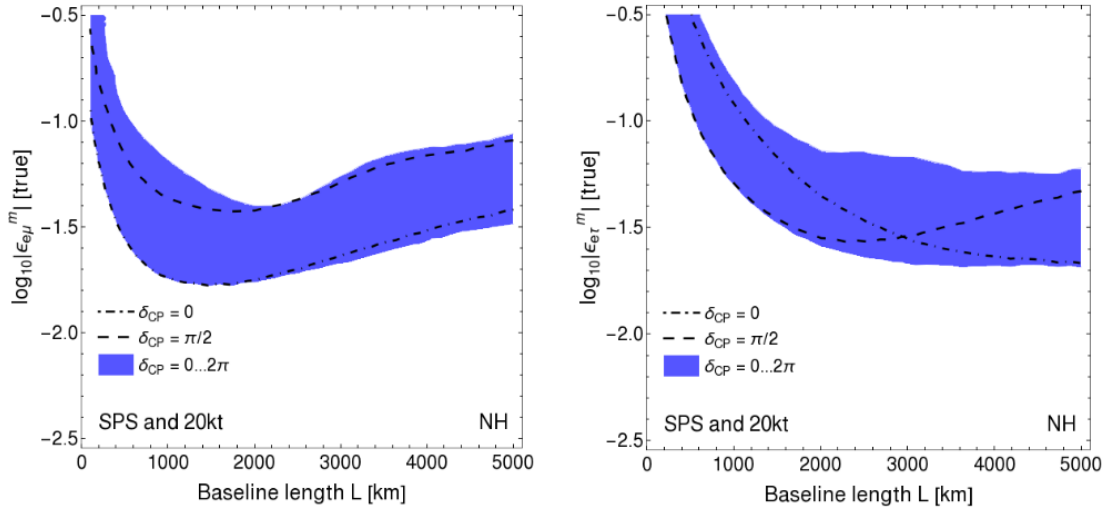


Figure 1: 90 % discovery reach of NSI parameters as a function of baseline length. Band thickness corresponds to the strength of correlation between  $\delta_{CP}$  and  $\varepsilon_{e\alpha}^m$ , where  $\alpha = \mu, \tau$ .

[1] K. Huitu, T. J. Kärkkäinen, J. Maalampi and S. Vihonen, HIP-2016-03/TH (2016).