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Probing non-standard neutrino interactions at ESSnuSB

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Non-standard interactions (NSI) of neutrinos arise in various models of physics beyond the Standard Model. These interactions affect the oscillations of neutrinos and can therefore be probed by long-baseline experiments. In this work, we study the possibility of probing NSI at the source and detector using the proposed superbeam experiment at the ESS facility (ESSnuSB).

ESSnuSB has been shown to have exceptional capability in measuring the Dirac-CP phase of the neutrino mixing matrix. We study the effect of NSI on this measurement at ESSnuSB. We also determine the bounds that ESSnuSB can impose on the values of the various NSI parameters, and compare them with the existing bounds.

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