

Role of beam tunes in extricating standard and new physics at DUNE

Wednesday, 21 June 2017 16:50 (20 minutes)

Deep Underground Neutrino Experiment (DUNE) is an upcoming long baseline neutrino oscillation experiment with discovery of CP violation as its important primary goal. Additionally, DUNE is also sensitive to effects due to new physics which can interfere with inferences pertaining to unknown parameters especially the leptonic CP phase. In the present Letter, we combine experimental feasibility together with theoretical requirements and propose a metric for separating physics scenarios at DUNE. Using our metric, we obtain an optimal combination of beam tunes and distribution of run times in neutrino and anti-neutrino modes that are helpful to isolate new physics scenarios from the standard. To the best of our knowledge, our strategy is entirely new and has not been reported elsewhere.

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Session Classification: Working Group: Neutrino Physics

Track Classification: Neutrino Physics Working Group