

Title: "Probing physics beyond the standard model in neutrino experiments"

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Abstract: The experimental confirmation of the oscillation of neutrino flavors in the last 2 decades has been a milestone in clarifying the framework of particle physics. Some of neutrino properties can be explained through the current rich data of the neutrino experiments; however, there are still important unanswered questions which need to be clarified. Next-generation, long-baseline neutrino oscillation experiments are under serious consideration to answer these questions. The unprecedented neutrino fluxes at these experiments make them suitable for precision calculations of the SM predictions as well as searching for light new physics (NP) via measurements of the trident production and neutrino scattering off electrons and nuclei in the near detectors. We provide estimates of the number and distribution of trident events at several current and future near detector facilities and use them to study light  $Z'$  models. We quantify the DUNE sensitivity to dimension-6 operators in the SMEFT parameters.