

DPF-PHENO 2024

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Tau Tridents at DUNE and FASER

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The neutrino trident process is where a neutrino scatters off nuclei and produces a lepton pair. Most trident studies have focused on electron and muon production as they represent the most likely source of trident events in the Standard Model (SM). We analyze the possibility of detecting tau leptons from SM trident processes at the DUNE near detector. The detection of tau leptons at the DUNE near detector is considered anomalous so we must take into account all relevant SM backgrounds to avoid falsely attributing this anomalous detection to signs of new physics. We include both coherent and incoherent neutrino scattering off argon nuclei in the detector and estimate the event rate for both single and pair production of tau leptons for the DUNE standard flux, as well as the tau-optimized flux.

Mini Symposia (Invited Talks Only)

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