

Tau neutrino oscillations in the far forward rapidities

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In the very forward region of the LHC, a number of tau neutrinos can be produced mostly from the D_s^\pm decay. For an integrated luminosity of 3000 fb^{-1} at the HL-LHC, thousands of charged current tau neutrino events are expected in a detector of m^3 size. It will allow the study of the mixing between sterile neutrinos and tau neutrinos with the fact that the possible specifics of the experiments at the Forward Physics Facility would be insensitive to oscillation between the standard model neutrinos. We will present a case-study of tau neutrino oscillations considering a 3+1 neutrino model with three active neutrinos and a sterile neutrino with a testable parameter set and discuss the potential and challenges for its investigation.

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