

Neutrinos from charm in the forward region

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The proposed forward physics facility at the LHC will offer the opportunity to collect a large data set of neutrino deep inelastic scattering in the energy range of $\sim 100 - 1000$ GeV. Already with Run 3, the FASER ν and SND@LHC experiments will collect neutrino events in the forward region 480 m from the ATLAS interaction point. The high energy electron neutrino and tau neutrino fluxes at these detectors come from hadroproduction of heavy flavor, predominantly charm hadrons. The predicted flux of neutrinos at the forward region is tied to the parton distribution functions, in particular the gluon PDF, in both the small x and large x regimes. We present predictions of the flux of neutrino and antineutrinos from charm for Run 3, where the approved experiments cover pseudorapidities larger than 7.2, and for the HL run for pseudorapidities larger than 6.9. We discuss the uncertainties in the flux that comes from PDF and QCD scale uncertainties in a NLO perturbative QCD evaluation.

Submitted on behalf of a Collaboration?

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