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Far-forward production of charm and neutrinos in Forward Physics Facilities

Thursday 18 July 2024 20:40 (20 minutes)

We discuss far-forward production of D mesons and neutrinos in pp-collisions at the LHC. We include the gluon-gluon fusion, the intrinsic charm (IC) and the recombination mechanisms. We show that the IC and recombination give negligible contributions at the LHCb kinematics, i.e. in the interval $2 < y < 4.5$ and start to be crucial at larger rapidities, i.e. for $y > 6$. We present energy distributions for electron, muon and tau neutrinos to be measured in Forward Physics Facilities at the LHC. For all kinds of neutrinos the subleading contributions, i.e. the IC and/or the recombination, dominate over light meson components and the standard charm production contribution, for neutrino energies $E_\nu > 300$ GeV. For electron and muon neutrinos both the mechanisms lead to a similar production rates and their separation seems rather impossible. For the tau neutrino flux the recombination is reduced further making the measurement of the IC contribution very attractive.

Alternate track

I read the instructions above

Yes

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