

Neutrino trident production at the MINERvA experiment

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Our aim is to study the so called neutrino trident production in the context of the MINERvA experiment. This process has a small cross section, in comparison to neutrino-nucleus charged current inclusive interaction. It experimentally appears as a pair of oppositely charged leptons. More specifically, for MINERvA, we will use as a signature the presence of dimuons in the final state. We have implemented a detailed simulation of neutrino trident production in the neutrino Monte Carlo generator GENIE. Additionally, we have performed a careful study of the background processes for dimuon interactions. These include quasielastic charged current charm production, as well as exclusive charged current single-pion production. In the latter, we test the ability of the MINERvA detector in the pion reconstruction, the pion may be misreconstructed as an antimuon. Finally, we analyze the capacity of disentangling trident events from its backgrounds and explore the possibility to scale this study, keeping the same experimental characteristics as MINERvA. In fact it would be also useful for future planned neutrino experiments.

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