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$\nu_{\mu} CC\pi^0$ reaction in the Tracker of the ND280 detector in the T2K experiment

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Good knowledge of both inclusive and exclusive neutrino interaction cross sections is one of the key issues for a precise determination of the neutrino oscillation parameters in the T2K experiment. These studies are performed at the near detector (ND280). Its central tracker part equipped with a water target serves, among others, to study the $\nu_{\mu} CC\pi^0$ reaction. At the energies of the T2K neutrino beam its contribution to the total cross section is relatively large, so the reaction is a potential source of background for the quasi-elastic $\nu_{\mu} CC$ reaction. Two different production mechanisms contribute: single pion resonance production and DIS. In addition, FSI has to be considered. Thus, the analysis of the $\nu_{\mu} CC\pi^0$ reaction aims also at a better tuning of the MC models used to describe neutrino interactions in T2K.

This poster describes the reconstruction and selection criteria leading to the determination of the exclusive cross section for the $\nu_{\mu} CC\pi^0$ reaction.

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