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T2K results on neutrino cross-sections

Wednesday, 23 August 2023 09:50 (20 minutes)

Precise knowledge of how neutrinos interact with matter is essential for measuring neutrino oscillations in long-baseline experiments. At the T2K experiment, the near detector complex measures neutrino interactions to constrain cross section models for oscillation studies and characterises the beam flux. In addition, the near detector complex provides a separate platform for performing neutrino-nucleon cross section measurements. The composition and design of one of the near detectors, ND280, allows for a large variety of cross section measurements on different targets to be performed.

The most recent cross section measurements from the ND280 detector, together with an overview of the T2K measurement strategy, adopted to reduce the model dependence, will be presented. With increasing statistics, dedicated efforts are devoted to investigating rare or poorly studied interaction channels studied including electron neutrino, kaon and neutral current interactions. In this talk, the latest measurements of pion production will be shown. This includes measurements of transverse pion kinematics, and an improved analysis of the coherent pion production cross section which makes use of an anti-neutrino sample for the first time.

Collaboration / Activity

T2K collaboration

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