

T2K latest results on neutrino-nucleus cross sections

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A detailed understanding of neutrino-nucleus interactions is essential for the precise measurement of neutrino oscillations at long baseline experiments, such as T2K. The T2K near detector complex, designed to constrain the T2K flux and cross section models, also provides a complementary program of neutrino interaction cross-section measurements. Through the use of multiple target materials (carbon, water, lead, iron), and the ability to sample different neutrino spectra (with detectors located on- and off-axis with respect to the beam direction), T2K is able to investigate atomic number and energy dependence of interaction cross sections in a single experiment. In particular, T2K has recently performed the first joint on/off-axis measurement of the Charged Current channel without pion in the final state.

Moreover, T2K features a magnetized near detector (ND280) capable of reconstructing and identifying the final state particles produced in neutrino interactions. Therefore measurements of exclusive final states have been performed separately for neutrino and antineutrino interactions, as a function of various differential variables.

With increasing statistics, dedicated efforts are devoted to investigate rare or poorly studied interaction channels. Indeed, an improved analysis of the coherent pion production cross section has been recently accomplished, including an antineutrino sample for the first time.

The most recent results, together with an overview of the T2K measurement strategy, adopted to reduce the model dependence, will be presented in this talk.

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