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Measurement of muon neutrino CC0pi cross sections on Oxygen and Carbon at the T2K near detector

A detailed understanding of neutrino(ν)-nucleus interactions is essential for the precise measurement of ν oscillations at long-baseline experiments, such as T2K. Moreover, since T2K utilises a water Cherenkov far detector, the study of ν cross sections on Oxygen is imperative. In this poster we report preliminary results from a measurement of ν-Oxygen and ν-Carbon cross sections and their ratio for interactions without pions in the final state as a function of outgoing muon kinematics. For the first time we combine data from the two Fine-Grained Detectors (FGDs) of the T2K near detector ND280: FGD1 is made of plastic scintillator, whilst FGD2 contains also water. The analysis allows the simultaneous extraction of C and O cross sections via a binned likelihood fit. FGD1 data, constraining FGD2 ν-Carbon interactions, helps to reduce statistical errors on ν-Oxygen ones. The analysis methods reduce model-dependence as much as possible to allow fruitful comparisons with theoretical models.

Authorship annotation

for the T2K collaboration

Session and Location

Wednesday Session, Poster Wall #95 (Auditorium Gallery Left)

Poster included in proceedings:

yes

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