Contribution ID: **278** Type: **Poster**

ν_μCC0π cross-section measurement with calorimetric information at the upgraded T2K near detector

Friday, 21 June 2024 17:30 (2 hours)

Neutrino cross-sections are often extracted purely in terms of lepton kinematics. In recent years more detailed analyses have been developed that additionally make use of kinematics in the hadronic system, which has proven very successful. However, even with new detector technologies of unparalleled precision, pattern recognition and reconstruction algorithms still require particle energies above a given detection threshold. Calorimetric variables directly inferred from the total visible energy created in scintillation or ionisation processes in the detector material provide an alternative handle on the kinematics in the hadronic system and do not rely on a successful kinematic reconstruction of the hadron track. In quasi-elastic-like topologies the visible energy in the hadronic system corresponds to the sum of proton kinetic energies (ΣT_p), a variable explored via a calorimetric approach in a recent publication by the Minerνa collaboration. This poster will present an on-going cross-section analysis conducted at the upgraded ND280 detector within the T2K collaboration. The cross-section of ν_μCC interactions without pions in the final state will be extracted in terms of muon kinematics and calorimetric variables. Particular focus will be brought on biases in the reconstruction of hadronic energy from visible energy due to material effects like Birks' quenching when particle multiplicities are unknown.

Poster prize

Yes

Given name

Katharina

Surname

Lachner

First affiliation

University of Warwick

Second affiliation

Institutional email

katharina.lachner@warwick.ac.uk

Gender

Female

Collaboration (if any)

T2K

Primary author: LACHNER, Katharina (University of Warwick)

Presenter: LACHNER, Katharina (University of Warwick)

Session Classification: Poster session and reception 2

Track Classification: Neutrino interactions