Contribution ID: **135** Type: **Parallel Flash talk**

Characterising 2p2h interactions using low momentum protons

Friday, 19 February 2021 11:40 (5 minutes)

Neutrino interactions off correlated nucleon pairs (2p2h interactions) are thought to contribute significantly to events detected by long baseline neutrino oscillation experiments. These 2p2h processes are challenging to model and the corresponding uncertainties can be responsible for some of the leading systematic uncertainties in measurements of neutrino oscillation parameters. To help alleviate these uncertainties in future measurements, T2K aims to precisely characterise 2p2h interactions at it's near detector facility (ND280). A key signature for 2p2h interactions is the production of final states with multiple nucleons. However, ND280 is only able to reconstruct protons and only those above 450 MeV/c momenta. The consequence of this high momentum threshold is that the majority of 2p2h interactions are thought to leave at least one proton below detection threshold. To circumvent this issue, recent analysis efforts have tried to tag low momentum protons via calorimetric measurements of energy deposited near the neutrino interaction vertex, so called "vertex activity". This talk presents such an analysis considering events with one reconstructed muon track, one reconstructed proton track and a search for a 2nd proton in the vertex activity.

Collaboration name

T2K

Primary author: Dr ZALIPSKA, Joanna (National Centre of Nuclear Research)

Presenter: Dr ZALIPSKA, Joanna (National Centre of Nuclear Research)

Session Classification: Cross Sections