



Poster session 3 – Wednesday 6 July

P3.030 NEUT/NuWro cross-section modelling at low three-momentum transfer

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The neutrino Charged-Current inclusive (CC-inc.) interaction cross-section has been found to differ significantly when comparing measurements on hydrogen and carbon targets. This is a result of several additional nuclear effects, such as multi-nucleon interactions, emerging when neutrinos scatter off heavier targets, and the suppression of the quasi-elastic cross-section at low 4-momentum transfer.

The MINERvA collaboration has recently reported separate measurements of both the Energy (q_0) and 3-momentum (q_3) transferred to the nucleus in CC-inc. events. This was achieved by looking at both the muon, and hadronic final state particles. Expressed as a double differential in the energy observed in the MINERvA detector (E_{av}) and q_3 , this measurement provides additional insight into the different regions of the phase-space where the cross-section may be modified by nuclear effects.

In this poster I present comparisons between the NEUT and NuWro event generators and this MINERvA dataset. We find that the constant binding energy in the Global Fermi Gas model produces a large deficit in the lowest $E_{av} - q_3$ bins due to a suppression of the charged-current quasi-elastic model at low energy transfer to the nucleus. The Local Fermi Gas model in NuWro is found to have better agreement with the data in this region, but a significant deficit is still observed in the higher nuclear recoil bins.