Inelastic Axial and Vector Structure Functions for Lepton-Nucleon Scattering 2021 Update –

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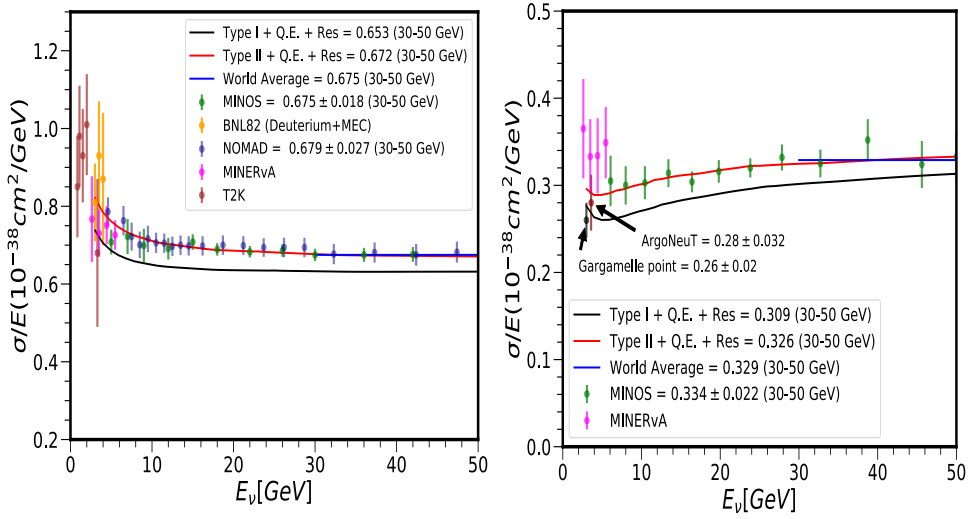
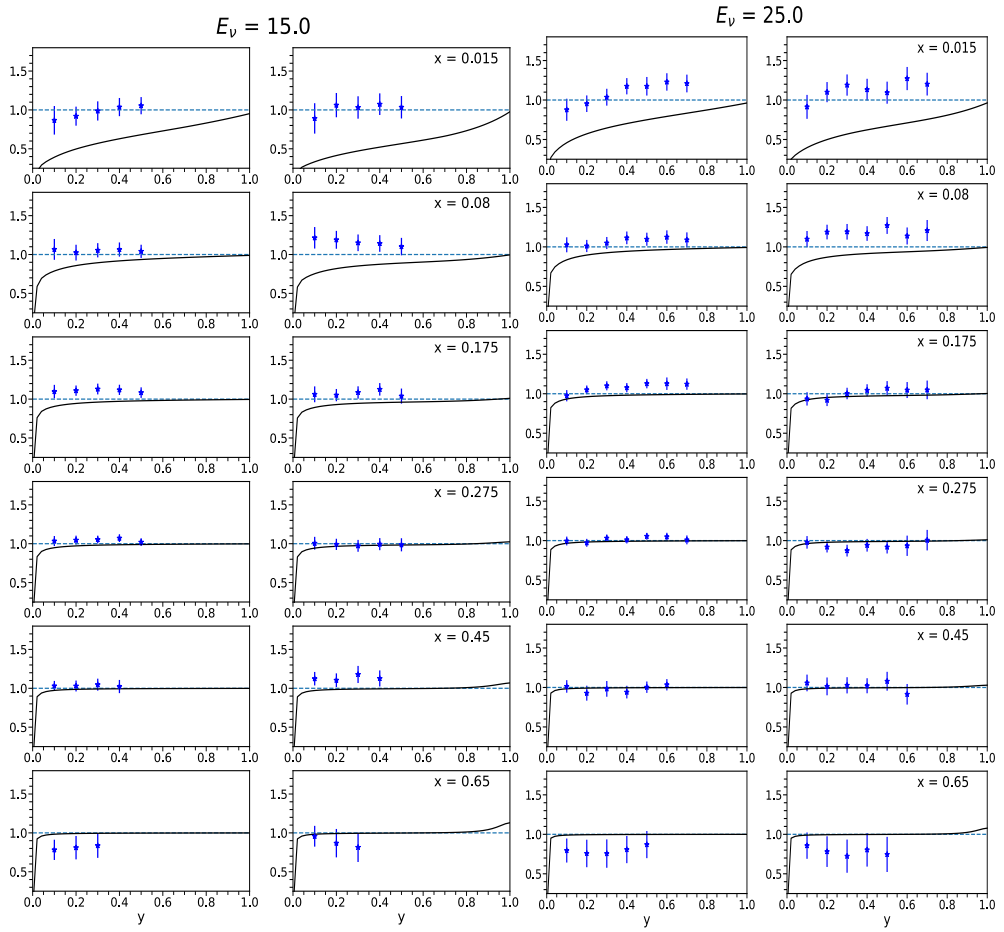
The model is based on parameters extracted from electron scattering data. The leading order GRV98 PDFs are used with modifications that include a new scaling variable (ξ_w) to account for deviations from Bjorken scaling at lower values of Q^2 and low Q^2 K factors that extend the validity of the model down the Q^2=0 photo-production limit. Here we present summary of the results of a 2021 update (details in arXiv:2108.09240) in which we further refine the model **and also account for the difference between axial and vector structure functions at low values of Q^2**. We refer to the version which assumes that vector and axial structure functions are the same as "Type I" (for modeling electron scattering). **We refer to the updated version that accounts for the difference in vector and structure functions as "Type II" (for neutrino scattering).**



Model predictions (per nucleon) for neutrino(left) and antineutrino (right) total cross sections on an isoscalar target compared to measurements. The green points are MINOS data, the blue points are NOMAD and the yellow crosses are BNL82. The MINERvA and T2K data are shown in purple and brown, respectively. The Gargamelle and ArgoNeut measurements are identified on the figure. There is good agreement with the Type II (A>V) model predictions with neutrino and antineutrino total cross section measurements.



The ratio of charged-current neutrino and antineutrino differential cross sections on lead from CHORUS (blue points) to the Type II (A>V) default model predictions. The ratios are shown for energies of 15 and 25 GeV, On the left side of each panel we show the comparison for neutrino cross sections and on the right side we show the comparisons for antineutrinos. The black line is the ratio of the predictions of the Type I (A=V) model for which the axial structure functions are set equal to the vector structure functions, to the predictions of the Type II (A>V) default model. The differential cross section data favor the Type II (A>V) model.