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

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We report on an update (2021) of a phenomenological model for inelastic neutrino- and electron-nucleon scattering cross sections using effective leading order parton distribution functions with a new scaling variable ξ_w. Non-perturbative effects are well described using the ξ_w scaling variable in combination with multiplicative K factors at low Q^2. The model describes all inelastic charged-lepton-nucleon scattering data (HERA/NMC/BCDMS/SLAC/JLab) ranging from very high Q^2 to very low Q^2 and down to the $Q^2 = 0$ photo-production region. The model has been developed to be used in analysis of neutrino oscillation experiments in the few GeV region. The 2021 update accounts for the difference between axial and vector structure function which brings it into much better agreement with neutrino-nucleon total cross section measurements. The model has been developed primarily for hadronic final state masses W above 1.8 GeV. However with additional parameters the model also describe the *average* neutrino cross sections in the resonance region down to W=1.4 GeV.

In-person participation

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