Contribution ID: **35** Type: **Parallel Talk**

Suppression of quasielastic electron scattering cross sections at small momentum transfers

Friday, 8 July 2022 18:45 (15 minutes)

Reliable modeling of quasielastic (QE) lepton scattering on nuclei is of great interest to neutrino oscillations experiments, especially at low values of the 3-momentum transfer $\mathbf{q}$. We report on a phenomenological analysis of all available electron scattering data on carbon within the framework of the superscaling model (including Pauli blocking). In addition to the expected enhancement of the transverse QE response function (R_T^{QE}), we find that at low values of $\mathbf{q}$ there is "Extra Suppression" of the QE longitudinal response function (R_L^{QE}) beyond the expected suppression from Pauli blocking. The total (combined Pauli plus Extra) suppression of R_L^{QE} is larger than the minimum suppression predicted by the Coulomb Sum Rule. We extract $|\mathbf{q}|$ dependent parameterizations that can be used to determine the R_L^{QE} "Extra Suppression" factor for any nucleon momentum distribution. We also provide parameterizations of the form factors for the excitation of nuclear states (which are also needed for modeling electron scattering cross sections small $\mathbf{q}$).

In-person participation

No

Primary authors: BODEK, Arie (University of Rochester); Dr CHRISTY, M. Eric (Thomas Jefferson National Accelerator Facility)

Presenter: BODEK, Arie (University of Rochester)

Session Classification: Neutrino Physics

Track Classification: Neutrino Physics