

Charged-Current Inclusive Neutrino Cross-Sections in the Superscaling Model Including Quasielastic, Pion Production and Meson-Exchange Contributions

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Charged current inclusive neutrino-nucleus cross sections are evaluated using the superscaling model for quasielastic scattering and its extension to the pion production region [1]. The contribution of two-particle-two-hole vector meson-exchange current excitations is also considered within a fully relativistic model tested against electron scattering data [2]. The results are compared with the inclusive neutrino-nucleus data from the T2K [3] and SciBooNE [4] experiments. For experiments where $\langle E_\nu \rangle \sim 0.8$ GeV, the three mechanisms considered in this work provide good agreement with the data. However, when the neutrino energy is larger, effects from beyond the Δ also appear to be playing a role. The results show that processes induced by two-body currents play a minor role at the kinematics considered.

References

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