

In-medium changes of nucleon cross sections tested in neutrino-induced reactions

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In this talk, we investigate the impact of nucleon-nucleon in-medium modifications on neutrino-nucleus cross section predictions using the GiBUU transport model. Historically studied in the context of heavy-ion collisions, the extent to which free nucleon-nucleon forces are modified in-medium remains undetermined by those data sets. We find that including an in-medium lowering of the NN cross section and density dependence on Δ excitation improves agreement with MicroBooNE neutrino-argon scattering data. This is observed for both proton and neutral pion spectra in charged-current muon neutrino and neutral-current single pion production datasets. The impact of collision broadening of the Δ resonance is also investigated.

Working Group

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