Breakdown of the impulse approximation

From electron scattering one knows (see the frame on the right) that the impulse approximation works well when momentum transfer $|q| \gtrsim 400$ MeV/c and obviously fails below 300 MeV/c.

Consequences for neutrino scattering

In the energy region $\sim 1$ GeV, we can be sure only $\sim 80–90\%$ of the cross section obtained using the spectral function and even less for the Fermi gas model.

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