

MEC-Induced Two-Nucleon Emission in Neutrino-Nucleus Scattering

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Meson-exchange currents (MEC) play a crucial role in the nuclear response to a leptonic probe, inducing the emission of two nucleons, the so-called 2p2h excitations. Here we present the results of our recent work [1, 2], where the 2p2h contribution to the semi-inclusive electron and neutrino cross section off a carbon target has been evaluated. The calculation employs fully relativistic two-body currents and is carried out within the Relativistic Fermi Gas framework. It provides a generalization to the weak sector of the electromagnetic inclusive model developed in Ref. [3] and an extension of the calculation to enable semi-inclusive predictions, which involve the detection of both the outgoing lepton and one or more hadrons in the final state. This process provides more specific and detailed insights into nuclear dynamics compared to inclusive measurements. However, very few microscopic calculations of this cross section in the 2p2h channel are available. The scope of this work is to fill this gap, meeting the needs of the experimental neutrino physics community.

References

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