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Role of nuclear correlations in neutrino interactions with nuclei and nuclear matter.

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Neutrino-nuclear interactions play an important role in astrophysics and in terrestrial neutrino experiments. Correlations and interactions between nucleons influence neutrino-nucleus cross-sections in nuclei for neutrino energies in the range MeV-GeV, and neutrino production and propagation in supernovae and neutron stars. To summarize our current understanding ? survey recent calculations neutrino-nuclear interaction rates and emphasize the role of nucleon-nucleon correlations. I will also discuss some open questions and the need to develop new techniques to extract the nuclear response function using non-perturbative methods that can incorporate both short and long-distance correlations and multi-particle excitations in nuclei and nuclear matter.