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Neutrino Cross Sections at Supernova Energies

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Neutrinos with energies between a few and a few tens of MeV are relevant for a number of physics topics. Notably, this is the energy range corresponding to emission of neutrinos from supernovae. In addition, it is relevant for studies of solar, reactor and atmospheric neutrinos, as well as for physics using accelerator-produced neutrinos from pions or radioactive nuclei decaying at rest. Surprisingly, with the exception of interactions on electrons and protons, the interactions of neutrinos with matter in this energy range are quite poorly understood, both theoretically and experimentally. This talk will describe neutrino physics and astrophysics in the supernova-neutrino energy range, the state of knowledge of cross sections on relevant nuclei, and initiatives for experimental measurements.