

Neutrino nuclear responses for astroneutrinos and double beta decays

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We report briefly recent studies of neutrino nuclear responses for astro-neutrinos and double beta decays by using charge exchange reactions (CERs). Neutrino nuclear responses (square of nuclear matrix elements NMEs) are crucial for neutrino studies in nuclei.

Subjects discussed include experimental studies of nuclear muon and neutrino CERs at RCNP Osaka Univ. and the re-normalization (quenching) of the axial vector weak coupling. It is shown that the axial vector NMEs for GT and SD transitions are re-normalized (quenched) in a nucleus by the coefficient of $k=0.5-0.6$ with respect to the pnQRPA NMEs in a wide momentum region of 2-80 MeV/c. This is considered to be due to nucleonic and non-nucleonic correlations and nuclear medium effect.

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