Neutrino Nucleus Reactions based on Recent Shell-Model Interactions

Toshio Suzuki[1,2]
[1] *Department of Physics, College of Humanities and Sciences, Nihon University Sakurajosui 3-25-40, Setagaya-ku, Tokyo 156-8550, Japan*
[2] *National Astronomical Observatory of Japan, Mitaka, Tokyo 181-8588, Japan*

Neutrino-nucleus reactions are investigated based on recent new shell model Hamiltonians, which can describe well spin and magnetic properties of nuclei. The effects of the tensor force are properly taken into account in the Hamiltonians. Neutrino-induced reactions on ^{12}C [1], ^{13}C [2], ^{16}O and ^{56}Ni [3] as well as electron capture recations on Ni isotopes [4] are discussed. Neutrino-induced reactions on ^{40}Ar for solar neutrinos are studied with VMU (monopole-based universal interaction) [5]. New reaction cross sections obtained by the present Hamiltonians are found to be enhanced compared with previous calculations in most cases.

References

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