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Experimental studies and perspectives for neutrino nuclear responses and isotopes production using negative muons

Neutrino nuclear responses associated with astro-neutrinos and double beta decays are crucial to extract neutrino properties of astro-particle physics interests. The present report reviews briefly recent experimental studies and perspectives for neutrino nuclear responses and isotopes production using negative muons. Gamma rays following ordinary muon capture reactions are used for studies of nuclear responses for anti-neutrinos associated with double beta decays and astro-neutrinos, and for high-sensitivity nuclear-isotope detection and production. Recently, we have started a new research project for these subjects in collaboration with Universiti Teknologi Malaysia (UTM) Johor Bahru, RCNP Osaka and the Joint Institute for Nuclear Research (JINR) Dubna. The present work was started at the Research Center for Nuclear Physics (RCNP), Osaka University, and now it is continuing at RCNP, J-PARC and the Paul Scherrer Institute (PSI).

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