

Neutron Capture Cross Section Measurement on Carbon via Inverse Beta Decay in Daya Bay Reactor Antineutrino Experiment

martedì 18 giugno 2024 17:30 (2 ore)

We present the method of determination of neutron capture cross section on Carbon with 3158 days of operation of Daya Bay reactor antineutrino experiment through the inverse beta decay reaction. The detection process involves the annihilation of a positron followed by a thermalized neutron capture event. In Daya Bay experiment, three predominant forms of neutron capture events emerge: neutron-hydrogen, neutron-gadolinium, and neutron-carbon interactions. In this study we use hydrogen and gadolinium as comparative elements to determine the cross section of $^{12}\text{C}(n, \sigma)^{13}\text{C}$ by neutrons arising from inverse beta decay.

Poster prize

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Classifica Sessioni: Poster session and reception 1

Classificazione della track: Reactor neutrinos