

Towards the measurement of neutrino cross section on H₂O and CH target at 1 GeV region by T2K-WAGASCI experiment

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The T2K experiment aims to measure CP violation in the lepton sector and the latest T2K results show that CP symmetry is violated at 90% confidence level. To achieve higher significance in this measurement it is essential to reduce both statistical and systematic uncertainties. The T2K-WAGASCI detectors have been introduced to T2K experiment as new near detectors to reduce the systematic uncertainty related to the neutrino-nucleus interactions. They are located at 1.5 degree from the neutrino beam axis, a different off-axis angle with respect to the ND280 detector, and T2K-WAGASCI is therefore exposed to a different neutrino flux and will make new measurements of neutrino-nucleus interactions at the JPARC neutrino beam.

The T2K-WAGASCI consists of two kinds of neutrino target detectors and muon range detectors. WAGASCI modules have a three-dimensional grid structure of plastic scintillator bars and water target. The Proton Module is a fully-active tracking detector consisting of only scintillator strips. These neutrino detectors are surrounded by two side muon range detectors and Baby MIND, a magnetised downstream muon range detector. Baby MIND consists of iron-core magnet planes, with a magnetic field strength of 1.5 T, and scintillator tracking planes. It enables a reduction of the neutrino background for measurements of antineutrinos and vice versa.

In this talk the analysis status on the cross section measurement on H₂O and CH target in the 1 GeV energy region with data set corresponding to 6.5×10^{20} protons on target will be shown and the potential impact on the T2K oscillation measurement will be discussed.

Working group

WG2

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