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Towards the measurement of neutrino cross section on water in the 1 GeV region using the WAGASCI detector of the T2K experiment

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The WAGASCI-BabyMIND project inside the T2K experiment aims at measuring the neutrino cross-section on water and CH with the T2K neutrino beam. The project name comes from two newly developed detectors: the WAGASCI detector, a 3D grid-like water and scintillator detector that acts as the water target, and the BabyMIND detector, a magnetized muon spectrometer made of many intertwined planes of scintillators and magnetized iron.

The motivation of the WAGASCI experiment is to reduce the systematic uncertainty on the neutrino cross-section with the same target and acceptance as the SuperKamiokande far detector, which the current ND280 near detector does not cover completely. The first physics run with full setup collected data from Nov. 2019 to Feb. 2020. This data set corresponds to a beam exposure of about 5.0×10^{20} protons on target in neutrino mode.

In this talk, we will present the current status of the analysis for the water target, mainly focusing on the evaluation of the performance of the WAGASCI and BabyMIND detectors.

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