Contribution ID: **50** Type: **not specified**

Neutrino interaction measurement using emulsion based detector at NINJA experiment

Thursday 10 July 2025 17:00 (15 minutes)

Neutrino oscillation measurements via long-baseline experiments rely on the accurate measurement of neutrino interactions with the nucleus and subsequent reconstruction of the neutrino energy. A signature of charged-current (CC) neutrino interaction in the detector is the lepton in the final state and further event classification of CC events in detectors is done based on the composition of the hadronic part of the final state. Charged-current quasi-elastic (CCQE) event contains one nucleon in the final state and is the dominant interaction mode at low neutrino energies (few hundred MeV range). Another mode of interaction in that energy region is called 2p2h, which has two nucleons and one lepton in the final state. In such events, detection and reconstruction of nucleons is crucial for the accurate measurement of neutrino energy. Low energy nucleons in final state pose challenge during the reconstruction process and are a major contribution towards systematic errors in the neutrino energy reconstruction. NINJA experiment employs nuclear emulsion detectors to measure neutrino-water interactions with low proton momentum threshold (~ 200 MeV/c). Key features of nuclear emulsion detectors is their high granularity and 3-dimensions tracking capability. These characteristics allow them to reconstruction short tracks coming from neutrino interaction vertex. The NINJA detector is installed in the near detector complex of the T2K neutrino experiment and utilizes the neutrino beam from J-PARC. In this talk, I will report on theNINJA experiment and the current status of emulsion film analysis.

Presenter: JAKKAPU, Mahesh (Ruder Boskovic Institute, Zagreb)

Session Classification: Parallel 3