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Neutrino cross-section measurements in the NINJA experiment

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The NINJA collaboration aims to study neutrino-nucleus interactions in the energy range of hundreds of MeV to a few GeV using an emulsion-based detector. A series of neutrino-nucleus interaction measurements was conducted using the emulsion detector with water and iron targets in the near detector hall of the T2K experiment at J-PARC. The emulsion detector is suitable for precision measurements of charged particles produced in neutrino interactions with a low momentum threshold, especially low momentum protons as low as $200 \text{ MeV}/c$, thanks to its thin-layered structure and sub- μm spatial resolution. In the neutrino cross-section measurement, we have measured flux-averaged charged-current inclusive cross sections on iron both neutrino and anti-neutrino. In this talk, we will present the extraction methods and the results of cross section using the emulsion detector.

Author: OSHIMA, Hitoshi (ICRR, the University of Tokyo)

Presenter: OSHIMA, Hitoshi (ICRR, the University of Tokyo)

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