Contribution ID: **198** Type: **Poster accelerator**

Study of neutrons produced in neutrino interactions with a water target at T2K

T2K is a long-baseline ν oscillation experiment. A ν_μ beam produced at J-PARC in Japan is detected by the Super-Kamiokande(SK)far detector positioned at 295 km away from the beam source.

Neutrons accompanying ν interactions on water are of value to ν oscillation analyses and nucleon decay searches. These analyses need a precise Monte Carlo(MC) simulation that predicts neutron multiplicity. However, there are different MC predictions due to uncertainties on ν-nucleon interaction, hadronic final-state interactions in nuclei, and secondary interactions in detector medium. No measurements of neutron multiplicity for water have yet been published.

In SK, neutrons can be tagged by detecting the 2.2 MeV gamma produced in neutron capture on protons. Since T2K has collected data for both the ν- and $\bar{\nu}$-mode beam, neutrons can be measured in the two different beam modes, respectively. The current status of a study to measure neutrons will be presented.

Poster included in proceedings:

yes

Authorship annotation

on behalf of the T2K collaboration

Session and Location

Wednesday Session, Poster Wall #54 (Auditorium Gallery Right)

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Track Classification: Poster (participating in poster prize competition)