

The observation of gamma rays via neutral current interaction at Super-Kamiokande using the T2K neutrino beam.

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We report the first measurement of the neutral current quasi-elastic (NCQE) cross section on oxygen by observing nuclear de-excitation gamma rays with the T2K neutrino beam. These gamma rays are observed in the Super-Kamiokande water Cherenkov detector. We select candidate events by using the T2K beam timing, and observed 43 events in the 4-30MeV reconstructed energy region, comparing to the MC prediction 55.7. We observed an NCQE cross section of $1.35 \times 10^{-38} \text{cm}^2$ with a 68% confidence interval of (1.06, 1.94) $\times 10^{-38} \text{cm}^2$.

WG3: Accelerator Physics (Yes/No)

No

WG2: Neutrino Scattering Physics (Yes/No)

Yes

WG4: Muon Physics (Yes/No)

No

WG1: Neutrino Oscillation Physics (Yes/No)

No

Type of presentation

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