

Studies of Coherency Effects in Neutrino-Nucleus Elastic Scattering using PGe Detectors

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Neutrino nucleus elastic scattering (ν Ael) is the direct test for electroweak interaction in the Standard Model of particle physics. Several experimental programs are being actively pursued in the observation of low energy ν Ael. The TEXONO research program at Kuo-Sheng neutrino laboratory (KSNL) uses state-of-art point contact Germanium detector technology with $\mathcal{O}(100\text{ eV})$ threshold to probe such low energy interactions. We will highlight the current status and results of the ν Ael activities at the TEXONO experiment. The studies of analytical formulation and the constraints on coherency effects in ν Ael will also be presented.

[1] “Coherency in neutrino-nucleus elastic scattering”, S. Kerman et al., TEXONO Collaboration, Phys. Rev. D 93, 113006 (2016).

[2] “Studies of quantum-mechanical coherency effects in neutrino-nucleus elastic scattering”, V. Sharma et al., TEXONO Collaboration, Phys. Rev. D 103, 092002 (2021).

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