

Measurements of Neutrino-Electron Scattering Cross-Section and the Electroweak Parameters at the Kuo-Sheng Reactor Neutrino Laboratory

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The TEXONO Collaboration has been pursuing a research program on low energy neutrino physics[1] at the Kuo Sheng Reactor Neutrino Laboratory in Taiwan, where sensitive searches on neutrino magnetic moments, reactor axions and WIMP dark matter have been performed. We report our final results on the measurement of neutrino-electron scattering cross-section using a CsI(Tl) scintillating crystal array with a total mass of 200 kg [2]. This interaction channel is unique among the Standard Model processes, having both the neutral- and charged-current components, as well as their interference term. The various electroweak parameters were derived. Limits are placed for possible neutrino electromagnetic processes. This measurement provides a probe to the Standard Model at the MeV region, complementary to the precision data at accelerators at higher energies.

References :

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