ID de Contribution: **17** Type: **Parallel session talk**

Measurement of ν̄e-e- Scattering Cross-Section and Constraints on New Physics with a CsI(Tl) Crystal Array at the Kuo-Sheng Reactor Laboratory

vendredi 22 juillet 2011 14:45 (15 minutes)

The ν̄e-e- elastic scattering cross-section was measured with a CsI(Tl) scintillating crystal array having a total mass of 187 kg. The detector was exposed to an average reactor neutrino flux of 6.4 × 1012 cm-2s-1 at the Kuo-Sheng Nuclear Power Station in Taiwan.
The experimental design, conceptual merits,detector hardware, data analysis and background understanding of the experiment will be discussed. We will present final resuls with 29882/7369 kg-days of Reactor ON/OFF data, on the cross-section and the standard electroweak parameters sin2W and (gV,gA) measurements, the test on charged-current neutral-neutral interference, as well as limits on neutrino magnetic moments and charge radius squared [1].
We will also present constraints on non-standard interactions (NSI) of neutrino and Unparticle Physics (UP) in ν̄e-e- interaction channel [2] based on this data set as well as our previous data sets with ULE-HP Ge detectors which were used for the measurements of neutrino magnetic moment [3] and Dark Matter, WIMP searches [4].
[1] "Measurement of Neutrino-Electron Scattering Cross-Section with a CsI(Tl) Scintillating Crystal Detector Array at the Kuo-Sheng Nuclear Power Reactor", M. Deniz et al., Phys. Rev. D 81, 072001 (2010).
[2] "Constraints on nonstandard neutrino interactions and unparticle physics with ν̄e-e- scattering at the Kuo-Sheng nuclear power reactor", M. Deniz et al., Phys. Rev. D 82, 033004 (2010).
[3] "New limits on spin-independent and spin independent couplings of low-mass WIMP dark matter with a germanium detector at a threshold of 200 eV", S.T. Lin et al., Phys. Rev. D 79, 061101(R) (2009).
[4] "Search of Neutrino Magnetic Moments with a High-Purity Germanium Detector at the Kuo-Sheng Nuclear Power Station", H. T. Wong et al., Phys. Rev. D 75, 012001 (2007).

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