

STUDIES OF NEUTRINO PROPERTIES AND INTERACTIONS AT THE KUO-SHENG REACTOR NEUTRINO LABORATORY WITH SUB-KEV GERMANIUM DETECTORS

Tuesday 25 July 2017 17:45 (15 minutes)

Germanium detectors with sub-keV sensitivities [1] offer a unique opportunity to study neutrino interactions and properties [2] as well as to search for light WIMP Dark Matter and axion-like particles [3]. The TEXONO Collaboration has been pursuing this research program at the Kuo-Sheng Neutrino Laboratory (KSNL) in Taiwan. We will highlight our results on neutrino electromagnetic properties, search of sterile neutrinos, as well as studies towards observation of neutrino-nucleus coherent scattering. The detector R&D programs which allow us to experimentally probe this new energy window will be discussed. The efforts set the stage and complement the CDEX dark matter experiment and beyond at the new China Jinping Underground Laboratory (CJPL) in China.

[1] H. T. Wong et al., J. Phys. Conf. Ser. 39, 266 (2006) ; H.B. Li et al., Astropart. Phys. 56, 1 (2014) ; A.K. Soma et al., Nucl. Instrum. Meth. A836, 67 (2016) ; L.T. Yang et al., arXiv:1610.07521 (2016).

[2] J.-W. Chen et al., Phys. Rev. D 90, 011301(R) (2014) ; J.-W. Chen et al., Phys.Rev. D 91,013005 (2015) ; J.-W. Chen et al., Phys. Rev. D93, 093012 (2016) ; S. Kerman et al., Phys. Rev. D93, 113006 (2016).

[3] H.B. Li et al, Phys. Rev. Lett. 110, 261301 (2013) ; Q. Yue et al., Phys. Rev. D 90, 091701(R) (2014) ; S.K. Liu et al., Phys. Rev. D 90, 032003 (2014) ; W. Zhao et al., Phys. Rev. D93, 092003 (2016) ; S.K. Liu et al., arXiv:1610.07521 (2016).

Author: Dr SINGH, Lakhwinder (Institute of Physics, Academia Sinica, Taipei 11529, Taiwan)

Co-author: Prof. WONG, Henry Tsz-King (Institute of Physics, Academia Sinica, Taipei 11529, Taiwan)

Presenter: Dr SINGH, Lakhwinder (Institute of Physics, Academia Sinica, Taipei 11529, Taiwan)

Session Classification: Dark Matter

Track Classification: New Technologies