Contribution ID: **158** Type: **Poster**

Neutrino Magnetic Moment–Mass Conundrum in the Light of Recent Experiments

The excess in electron recoil events reported recently by the XENON1T experiment may be interpreted as evidence for a sizable transition magnetic moment of Majorana neutrinos. We show the consistency of this scenario when a single component transition magnetic moment takes values ϵ (1.65 - 3.42) × 10^{-11} μ_B. Such a large value typically leads to unacceptably large neutrino masses. We show that new leptonic symmetries can solve this problem and demonstrate this with several examples. We first revive and then propose a simplified model based on $SU(2)_H$ horizontal symmetry and also generalize to a three-family $SU(3)_H$ -symmetry. Collider and low energy tests of these models are analyzed. We have also analyzed implications of the XENON1T data for the Zee model and its extensions which naturally generate a large neutrino magnetic moment with suppressed m_ν via a spin symmetry mechanism, but found that it is not large enough to explain recent data. We also propose a mechanism to evade stringent astrophysical limits on neutrino magnetic moments arising from stellar evolution by inducing a medium-dependent mass for the neutrino. Results will be discussed in this talk.

Working group

WG5

Primary authors: Dr JANA, SUDIP (Max-Planck-Institut für Kernphysik); BABU, Kaladi (Oklahoma State University); Prof. LINDNER, Manfred (Max-Planck-Institut fuer Kernphysik, Heidelberg, Germany)

Presenter: Dr JANA, SUDIP (Max-Planck-Institut für Kernphysik)

Session Classification: Poster session NB: do not use Safari; use Firefox, Chrome or Edge