

Constraining neutrino transition magnetic moments

We are presenting a preliminary results on the studies of neutrino transition magnetic moments using DUNE LAr, HK and JUNO detectors. Neutrinos, if Majorana particles, the combined effect of magnetic field and matter effect in core-collapse Super Nova can transform some of ν_e to $\bar{\nu}_e$ due to spin flavour conversions. As a result of this conversions the inverse beta decay signal will have an increment indicating evidence of transition magnetic moments. The DUNE LAr is sensitive to ν_e so will observed a deficiency of ν_e due to this conversion whereas both HK and JUNO which are sensitive to $\bar{\nu}_e$ will see excess of $\bar{\nu}_e$. The DUNE LAr and JUNO are more or less sensitive to other type of neutrinos due to use of ^{40}Ar and ^{12}C . So can estimate the event ratio using both neutrinos and hence sensitivity on transition magnetic moments. Even an non observation of such conversion put a restrictive bounds on the neutrino transition magnetic moments.

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