

Constraints on general neutrino interactions with a singlet fermion

The couplings between the neutrinos and a singlet fermion can be probed in both neutrino scattering experiments and dark matter direct detection experiments. In this talk, we discuss a detailed analysis of the general neutrino interactions with a singlet fermion at neutrino-electron scattering experiments. We obtain the constraints on the coupling coefficients of the scalar, pseudoscalar, vector, axialvector, tensor and electromagnetic dipole interactions from the CHARM-II, TEXONO and Borexino experiments. We also discuss the detection of sub-MeV DM absorbed by bound electron targets and illustrate that the vector coefficients preferred by XENON1T data are allowed by the neutrino-electron scattering experiments.

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