Contribution ID: **5** Type: **Long talk (20 mins)**

Constraining Heavy Neutral Leptons with DUNE & Neutrinoless Double Beta Decay

Thursday, 15 December 2022 16:30 (30 minutes)

Heavy Neutral Leptons (HNLs) are a popular extension of the Standard Model to explain the lightness of neutrino masses and the matter-antimatter asymmetry through leptogenesis. Future direct searches, such as fixed target setups like DUNE, and neutrinoless double beta decay are both expected to probe the regime of active-sterile neutrino mixing in a standard Seesaw scenario of neutrino mass generation for HNL masses around 1 GeV. We analyze the complementarity between future direct searches and neutrinoless double beta decay to probe the nature of HNLs, i.e., whether they Majorana or Quasi-Dirac states, and CP-violating phases in the sterile neutrino sector. Following an analytic discussion of the complementarity, we implement a generic fixed target experiment modelling DUNE. We perform a statistical study in how a combined observation of HNLs in direct searches and neutrinoless double beta decay can probe the nature of sterile neutrinos.

Type of presentation

20 minute talk

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Phenomenology

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Session Classification: Full Length Talks