

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 activesterile 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