



Contribution ID: 5

Type: **Long talk (20 mins)**

## Constraining Heavy Neutral Leptons with DUNE & Neutrinoless Double Beta Decay

*Thursday, December 15, 2022 4:30 PM (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

### Would you be interested in receiving feedback on your presentation?

Yes

### Are you happy for your talk to be recorded?

Yes

### Other categories:

### Please select the most relevant category

Phenomenology

**Authors:** Dr BOLTON, Patrick (INFN); Prof. DEPPISCH, Frank (UCL); Mr RAI, Mudit (Pittsburgh); Mr ZHANG, Zhong (UCL)

**Presenter:** Mr ZHANG, Zhong (UCL)

**Session Classification:** Full Length Talks