Contribution ID: **103** Type: **not specified**

# New limits on heavy neutral leptons with dark forces from neutrino data

The neutrino portal may lead us to a sector of heavy neutral leptons with additional interactions besides mixing with neutrinos.
I will discuss three main developments in constraining such "dark neutrino sectors" using neutrino experiments. Firstly, I present a new generator to simulate neutrino upscattering to HNLs and their subsequent decays.
Secondly, I will discuss new strategies to overcome the curse of dimensionality of this parameter space using kernel density estimators.
And finally, I will apply these tools to current data to find constraints from the MINERvA and T2K experiments.

## Participation

I plan to attend in person

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**Session Classification:** Heavy Neutral Leptons and possible connections with active neutrino physics