



Contribution ID: 293

Type: **Poster session**

Exploring the multi-dimensional space of dark neutrinos at the T2K near detector

The origin of the electron-like events in excess of Standard Model predictions at MiniBooNE remains unknown. Recently, new physics explanations based on neutrino upscattering to unstable states have become increasingly popular. For the first time, we consider a detailed evaluation of the constraints on these so-called dark neutrino models set by the gaseous Argon TPC at ND280, the off-axis near detector of T2K. We develop a novel method to evaluate the likelihood function across the entire parameter space, using a Monte Carlo simulation and kernel density estimation, without the need for interpolation or grid sampling. We find a robust exclusion of models where the new states have lifetimes of a few centimetres to tens of meters.

Primary author: FOPPIANI, Nicolo

Co-authors: HOSTERT, Matheus (University of Minnesota); ARGÜELLES DELGADO, Carlos (Harvard University)

Presenter: FOPPIANI, Nicolo

Session Classification: Neutrino Physics Session 2

Track Classification: Neutrino Physics