

Heavy Neutral Leptons searches on SBND

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The Short Baseline Neutrino (SBN) program at Fermilab is designed to provide precise measurements of neutrino oscillations using 3 Liquid Argon Time Projection Chambers (LArTPC) built along Fermilab's Booster Neutrino Beam (BNB). The Short Baseline Near Detector (SBND), located at only 110 m from the BNB target, will precisely characterize the neutrino flux before oscillations take place, thanks to its unprecedented neutrino interaction statistics.

The proximity of SBND to the target makes the experiment ideal for many beyond the Standard Model (BSM) searches of particles that could be produced along the neutrinos in the beam. This talk will focus on the search for HNLs, showing the sensitivity to the detection of these particles based on full beam and detector Monte Carlo simulations. In particular, it will focus on HNL decays into two-track topologies, presenting two sensitivities: one based on SBND's current reconstruction chain and a projection of foreseen detector capabilities.

Primary author: PELEGRINA GUTIÉRREZ, Luis (Universidad de Granada)

Presenter: PELEGRINA GUTIÉRREZ, Luis (Universidad de Granada)

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