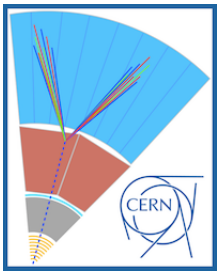

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Heavy Neutral Leptons without prejudice

Wednesday, 4 June 2025 10:10 (17 minutes)

We analyze prominent signatures in Higgs physics at colliders (LHC and FCC-ee) that arise when the Standard Model (SM) is extended by a Yukawa interaction with heavy neutral leptons (HNLs). This setup assumes no direct mapping between the Yukawa coupling and mixing with active neutrinos. At the LHC, we investigate HNL production through Higgs bosons, followed by decays through Higgs or gauge bosons into SM fermions, to assess the experimental reach at both primary detectors and far detectors like FASER and MATHUSLA. At the FCC-ee, we study HNL production from both Z and Higgs bosons at various center-of-mass energies to evaluate sensitivity limits. Additionally, we explore how precision Higgs measurements constrain beyond-the-SM parameters in the limit of zero neutrino mixing.

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