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Lepton Number Violation in Symmetry-protected Seesaw Models

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Type I seesaw models, which provide an explanation for the observed small neutrino masses, additionally predict the existence of heavy neutral leptons (HNLs). In collider-observable scenarios, these HNLs must form nearly mass-degenerate pseudo-Dirac pairs, as captured by symmetry-protected seesaw models. The mass splitting within these pairs induces heavy neutrino-antineutrino oscillations, leading to observables that are sensitive to lepton number violation. We explore the potential of current and future collider experiments to quantify the amount of lepton number violation.

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