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## Probing heavy Majorana neutrino pair production at ILC in a $U(1)_{B-L}$ extension of the Standard Model

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We consider a gauged  $B-L$  (Baryon number minus Lepton number) extension of the Standard Model (SM), which is anomaly free in the presence of three SM singlet Right Handed Neutrinos (RHNs). Associated with the  $U(1)_{B-L}$  gauge symmetry breaking, the RHNs acquire Majorana masses and then with the electroweak symmetry breaking, tiny Majorana masses for the SM(-like) neutrinos are naturally generated by the seesaw mechanism. As a result of the seesaw mechanism, the heavy mass eigenstates which are mainly composed of the SM-singlet RHNs obtain suppressed electroweak interactions through small mixings with the SM neutrinos. To investigate the seesaw mechanism, we study the pair production of heavy Majorana neutrinos through the  $U(1)_{B-L}$  gauge boson  $Z'$  at the 250 GeV and 500 GeV International Linear Collider (ILC). Considering the current and prospective future bounds on the  $B-L$  model parameters from the search for a resonant  $Z'$  boson production at the Large Hadron Collider (LHC), we focus on a “smoking-gun” signature of the Majorana nature of the heavy neutrinos: a final state with a pair of same-sign, same-flavor leptons, small missing momentum, and four hadronic jets. We estimate the projected significance of the signature at the ILC.

### In-person or Virtual?

In-person

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