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Hunting for heavy neutral leptons at future lepton colliders

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Neutrinos are the most elusive particles known. Heavier sterile neutrinos mixing with the Standard Model partners might solve the mystery of the baryon asymmetry of the universe and take part in the mass generation mechanism for the light neutrinos. Future lepton colliders, including e^+e^- Higgs factories, as well as multi-TeV electron and muon machines, will provide the farthest search reach for such neutrinos in the mass range from above the Z pole into the multi-TeV regime. In our contribution, we will discuss the future lepton collider search potential for such particles in their prompt decays. We will also present a new approach to use kinematic variables to constrain the nature of heavy neutrinos, probing their Majorana or Dirac character. Finally, we will discuss the complementarity in the flavor-mixing parameter space between the two types of lepton colliders.

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