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Heavy Neutrinos at Future Linear e+e- Colliders

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Neutrinos are probably the most mysterious particles of the Standard Model. The mass hierarchy and oscillations, as well as the nature of their antiparticles, are being currently studied in experiments around the world. Moreover, in many models of the New Physics, baryon asymmetry or dark matter density in the universe are explained by introducing new species of neutrinos. Among others, heavy neutrinos of the Dirac nature were proposed to solve mysteries of the Universe. Such neutrinos with masses above the EW scale could be produced at future linear *e+e-* colliders, like the Compact LInear Collider (CLIC) or the International Linear Collider (ILC).

We studied the possibility of observing decays of heavy Dirac neutrino in *qql* final state at ILC running at 1 TeV and CLIC at 3 TeV. The analysis is based on the WHIZARD event generation and fast simulation of detector response with DELPHES. Dirac neutrinos with masses from 200 GeV to 3.2 TeV are considered. We estimated the limits on the production cross sections and on the neutrino-lepton coupling, and compared them with current limits coming from the LHC running at 13 TeV, as well as the expected future limits from hadron colliders. Obtained results are stricter than any other limit estimates published so far.

Time Zone

Europe/Africa/Middle East

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