

## Heavy Neutrinos at Future Linear $e^+e^-$ Colliders

With the Standard Model being unable to describe the observed baryon asymmetry or dark matter density in the universe, many models of the New Physics introduce heavy neutrino species as a possible explanation for these effects. Dirac or Majorana 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 production and decays of heavy neutrinos in  $qq\ell$  final state at the ILC running at 500 GeV and 1 TeV and the CLIC running at 3 TeV. The analysis is based on the WHIZARD event generation and fast simulation of the detector response with DELPHES. Dirac and Majorana neutrinos with masses from 200 GeV to 3.2 TeV are considered. Estimated limits on the production cross sections and on the neutrino-lepton coupling are compared with the current limits coming from the LHC running at 13 TeV, as well as the expected future limits from hadron colliders. Impact of the gamma-induced backgrounds on the experimental sensitivity is also discussed. Obtained results are stricter than any other limit estimates published so far.

### Working group

WG5

**Primary author:** Mr MEKALA, Krzysztof (University of Warsaw)

**Co-authors:** ZARNECKI, Aleksander Filip (University of Warsaw); REUTER, Jürgen (DESY Hamburg, Germany); BRASS, Simon (DESY)

**Presenter:** Mr MEKALA, Krzysztof (University of Warsaw)

**Session Classification:** Poster session NB: do not use Safari; use Firefox, Chrome or Edge