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Asymmetries from effective interactions of heavy Majorana neutrinos in future lepton colliders

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We study the potential of forward–backward and other angular asymmetries to reveal the production of heavy Majorana neutrinos with effective interactions in a simple benchmark scenario with dim-6 scalar, vector and tensor operators and neglecting the tiny heavy-active Type I seesaw mixings. Asymmetries between particles produced jointly with the N and its decay products, or indeed between them, can be complementary to displacement observables to seek for the production of heavy N in lepton colliders. We present the $e^+e^- \to \nu N \to \nu \mu j j$ and $e^+e^- \to \nu N \to \nu \mu \mu \nu$ case studies to show the cuts on kinematic variables to separate our signal from SM backgrounds and possible analyses.

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