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Study of Majorana Right Handed Neutrino (RHN) production at ILC

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We study Majorana Right Handed Neutrinos (RHN) production at ILC. Various extensions of the SM aim to explain the origin of the tiny neutrino mass; one of them is by the introduction of RHN. When we assume that RHN is a Majorana particle, RHN pair production is allowed in $e-e+$ collisions. We focus on this RHN pair production based on a minimal $U(1)B-L$ model. A distinctive signature is a pair of same sign leptons, which is almost free of SM backgrounds.

In our study, we used full detector simulation to analyze RHN production at ILC. We generated this process, investigated its properties, developed reconstruction and selection strategies and evaluated the sensitivity at ILC. Considering full SM backgrounds, we derived exclusion limits on minimal $U(1)B-L$ parameters at ILC.

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