

ILC signatures of the minimal $U(1)_X$ extended Standard Model

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We consider the minimal $U(1)_X$ extension of the Standard Model (SM), where three right-handed neutrinos (RHNs) and one SM singlet $U(1)_X$ Higgs field are introduced. The model is anomaly free in the presence of the three RHNs. Associated with the $U(1)_X$ symmetry breaking by the $U(1)_X$ Higgs VEV, the RHNs acquire Majorana masses, and the seesaw mechanism for generating light SM neutrino masses is automatically implemented after the electroweak symmetry breaking. In this talk, I will report our studies on $U(1)_X$ gauge boson signatures at the ILC with a variety of final states, such as a pair of SM fermions and ZH . I will also discuss a pair production of RHNs mediated by the $U(1)_X$ gauge boson.

Presenter: OKADA, Nobuchika

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