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Higgs Boson Production via Higgs Strahlung e+e- → (Z, Z´) → Zh and ttH, at Future e+e- Linear Colliders in the Context of a U(1) B-L Extension of the Standard Model

Abstract

We study the phenomenology of the light h and heavy H Higgs boson production and decay in the context of a U(1)B-L extension of the standard model with an additional Z´ boson at future e+e- linear colliders with center-of-mass energies of $\sqrt{s} = 500 - 3000$ GeV and integrated luminosities of £ = 500 − 2000 fb-1. The study includes the processes e+e- → (Z, Z´) → Zh and e+e- → (Z, Z´) → ZH, and ttH, considering both the resonant and non-resonant effects. We find that the total number of expected Zh and ZH events can reach 106 and 105, respectively, which is a very optimistic scenario allowing us to perform precision measurements for both Higgs bosons h and H, as well as for the Z´ boson in future high-energy and high-luminosity e+e- colliders experiments. Our study complements other studies on the B–L model and on the Higgs-strahlung processes e+e- → (Z, Z´) → Zh and e+e- → (Z, Z´) → ZH.

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