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Search for heavy-neutrino production of the $U(1)_{B-L}$ model at the future muon collider

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The $U(1)_{B-L}$ model contains three heavy Right-Handed (RH) neutrinos, essential for anomaly cancellation and preserving gauge invariance. The model is attractive due to its relatively simple theoretical structure, and the crucial test of the model is the detection of the new heavy neutral Z' gauge boson, the heavy-neutrinos ν_R, and the new Higgs boson H. With these motivations, we carried out a study on the Z' resonance and heavy-neutrino pair production at the future muon collider through the process $\mu^+\mu^- \to Z' \to \nu_R\nu_R \to l^\pm W^\mp l^\mp W^\pm$ with the subsequent decay of ν_R to pairs of $l^\pm W^\mp$ with $l = e, \mu$. The study is realized in the resonance of the Z' boson and for the energies and luminosities of the future muon collider of $\sqrt{s} = 4, 5, 6, 7$ TeV and $calL = 2, 3, 4, 10\ \mathrm{ab}^{-1}$.

Alternate track

1. Neutrino Physics

I read the instructions above

Yes

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