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Probing B-L Models and the Seesaw from Displaced Vertex Signal

In this talk, we study some of the consequence of one example of a beyond the Standard Model theory. Namely, we discuss a model based on a spontaneously broken $B - L$ gauge symmetry. It can explain the light neutrino masses via a Type-I seesaw mechanism with heavy neutrinos. From the limits on the light neutrinos masses due to double beta decay experiments and cosmological observations together with the seesaw relation, the heavy neutrinos present in the model are likely to be weakly mixed to the light neutrinos thus leading to potential displaced vertex signals at the LHC. We summarise the existing limits on the model parameters, and perform displaced vertex searches to explore the model further.

These studies are able to show even better sensitivities to the current limits for certain regions of the parameter space. Displaced vertex searches can reach active-sterile mixing strengths of order $V_{\mu N} \approx 10^{-6}$, compatible with light neutrino mass generation through the seesaw mechanism for heavy neutrinos with masses around 1 – 100 GeV.

Scheduling Preferences

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