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Probing type-II seesaw mechanism in alternative $U(1)_X$ model

We investigate a pair production of doubly-charged scalars ($\Delta^{\pm\pm}$) at the High-Luminosity LHC in the recently proposed alternative $U(1)_X$ extension of the Standard Model with the type-II seesaw mechanism. We focus on the $\Delta^{\pm\pm}$ production mediated by $U(1)_X$ gauge boson (Z') and find an enhancement of the production cross section via Z' resonance compared with that through the Standard Model gauge interaction.