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## [Cancelled] Searching for a Heavy Neutral CP-Even Higgs Boson in the BLSSM at the LHC Run 3 and HL-LHC

The detection of a heavy neutral CP-even Higgs boson of the  $B-L$  Supersymmetric Standard Model (BLSSM),  $h'$ , with  $m_{h'} \simeq 400$  GeV, at the Large Hadron Collider (LHC) for a center-of-mass energy of  $\sqrt{s} = 14$  TeV, is investigated. The following production and decay channels are considered:  $gg \rightarrow h' \rightarrow ZZ \rightarrow 4\ell$  and  $gg \rightarrow h' \rightarrow W^+W^- \rightarrow 2\ell + MET$  (with  $MET$  being the Missing Transverse Energy), where  $\ell = e, \mu$ , with integrated luminosity  $L_{int} = 300 \text{ fb}^{-1}$  (Run 3). Furthermore, we also look into the di-Higgs channel  $gg \rightarrow h' \rightarrow hh \rightarrow bb\gamma\gamma$  at the High-Luminosity LHC (HL-LHC) with an integrated luminosity of  $L_{int} = 3000 \text{ fb}^{-1}$ .

We demonstrate that promising signals with high statistical significance can be obtained through the three aforementioned channels.

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