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Sensitivity study of a search for a charged scalar particle in $\sqrt{s} = 14$ TeV pp collisions (student talk)

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Many models that extend the Standard Model Higgs sector predict the existence of at least one charged Higgs boson, in addition to the neutral Higgs boson expected from the Standard Model. While searches have been performed, a charged Higgs boson has not yet been observed. Using physics and detector simulations, the sensitivity of a search for a charged Higgs boson at the forthcoming High Luminosity LHC is being studied. Focusing on the process $pp \to H^+H^- \to (W^+\gamma)(W^-\gamma) \to (jj\gamma)(jj\gamma)$ with a charged Higgs mass greater than 100 GeV, expected upper limits on the production cross-section times branching ratio of this process, $\sigma(pp \to H^+H^-) \times BR(H \to W\gamma)^2$, are calculated.

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