

HH->bby and triple H coupling in ATLAS

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The HH->bby is a promising channel to measure the trilinear Higgs self-coupling, benefitting from the narrow mass peak of the H-> $\gamma\gamma$ decay and the large branching fraction of the H->bb decay. The prospects for observing di-Higgs production through the bby channel in the HL-LHC are presented. This study assumes an integrated luminosity of 3000 fb⁻¹ and mean pileup rates $\langle \mu \rangle$ of 200. An expected significance of 1.05 is obtained in HH->bby observation which translates into the Higgs boson self-coupling being constrained to $-0.8 < \kappa/\kappa_{\text{SM}} < 7.7$ at 95% confidence level.

Presenter: BRIGLIN, Daniel Lawrence (University of Birmingham (GB))

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