

Investigating Higgs self-interaction through di-Higgs plus jet production

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The Higgs self coupling measurement is quite essential for determining the shape of the Higgs potential and nature of the Higgs boson. We propose the di-Higgs plus jet final states at hadron colliders to increase the discovery sensitivity of the Higgs self coupling at the low invariant mass region. Our simulation indicates that the allowed region of the Higgs self coupling would be further narrowed from $[-1.5, 6.7]$ from the most recent ATLAS report down to $[0.5, 1.7]$. Furthermore, we find negative Higgs self couplings would be disfavored beyond 2σ confidence level at a future 100 TeV collider with the help of this signal.

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