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Di-Higgs resonance searches in weak boson fusion

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Abstract: We examine the weak boson fusion (WBF) production of exotic heavy Higgs states with subsequent decay into 125 GeV Higgs bosons. We include contributions from the gluon fusion production channel and study the interplay of both production modes to improve the discovery potential at the LHC. We observe that in scenarios with isospin singlet mixing in the Higgs sector, resonant di-Higgs production in the WBF mode becomes a phenomenologically relevant channel at small mixing angles, and the inclusion of weak boson sideline can lead to a sizeable improvement in the discovery potential.

Summary

Authors: BARMAN, Rahool Kumar (Indian Association for the Cultivation of Science, Kolkata); GONCALVES, Dorival (Oklahoma State University); ENGLERT, Christoph (University of Glasgow); SPANNOWSKY, Michael (University of Durham (GB))

Presenter: BARMAN, Rahool Kumar (Indian Association for the Cultivation of Science, Kolkata)

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