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Combination of searches for Higgs boson pair production in the ATLAS experiment

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Searches for the production of Higgs boson pairs (HH) are of great interest especially for measuring the Higgs boson self-coupling, which is related to the shape of the Higgs potential. While the Standard Model (SM) predicts a very small event rate for this process, modifications of the Higgs boson self-coupling or new couplings introduced in effective field theories (EFTs) can lead to enhancements of the HH cross-section. In this talk, the latest non-resonant HH searches by the ATLAS experiment are reported, with emphasis on the results obtained from their statistical combination with the full LHC Run 2 dataset at 13 TeV. Results are interpreted both in terms of SM sensitivity and as limits on the Higgs boson self-coupling and Wilson coefficients in EFTs.

Summary

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