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ATLAS searches for di-Higgs production at 13 TeV and prospects for HL-LHC

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The latest results on production of Higgs boson pairs at 13 TeV by the ATLAS experiment are reported, including a combination of six different decay modes. Results include $b\bar{b}t\bar{t}$, $b\bar{b}b\bar{b}$, $b\bar{b}g\bar{g}$, $b\bar{b}W\bar{W}$, $W\bar{W}W\bar{W}$ and $W\bar{W}g\bar{g}$ final states, and they are interpreted both in terms of sensitivity to the SM and as limits on κ_λ , a scaling of the triple-Higgs interaction strength. A new search dedicated to the Vector-Boson-Fusion production was performed in the $b\bar{b}b\bar{b}$ final state. Future prospects of testing the Higgs self-couplings at the High Luminosity LHC (HL-LHC) will also be presented.

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