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Search for Higgs Boson Pair Production at the ATLAS Experiment

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The study of Higgs boson pair production at the LHC and potential future high-energy colliders offers a unique opportunity to probe the dynamics of electroweak symmetry breaking. In the Standard Model, non-resonant di-Higgs production enables direct access to the Higgs trilinear self-coupling, serving as a crucial test of the Higgs mechanism. Beyond the Standard Model, both resonant and non-resonant di-Higgs production are sensitive to extensions of the Higgs sector, which could imply a first-order electroweak phase transition in the early universe. Experimentally, di-Higgs production presents a rich variety of decay channels to investigate, along with associated challenges. In this talk, I will present recent experimental results on di-Higgs production from the ATLAS experiment.

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