

From Higgs to di-Higgs to tri-Higgs

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Studying the properties of the Higgs boson remains a central objective of modern collider experiments, such as the ATLAS Experiment. While the discovery of the Higgs boson was a groundbreaking achievement over a decade ago, ongoing analyses continue to refine our understanding of its properties. Since then, many studies have been designed to constrain the properties related to the Higgs boson, such as its coupling to other Standard Model particles and the measurement of the coupling parameters of the Higgs potential. In this talk, it will be discussed ATLAS measurements aimed at constraining the Higgs potential, beginning with an overview of the various studies done to observe the Higgs and di-Higgs boson production. Finally, it will be highlighted the prospects of observing the tri-Higgs production and the obstacles associated with measuring the quartic Higgs coupling.

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