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# Higgs Boson Property Measurements at the ATLAS Experiment

## Abstract

With the full Run 2 pp collision dataset collected at 13 TeV, very precise measurements of Higgs boson properties and its interactions can be performed, shedding light over the electroweak symmetry breaking mechanism. This talk presents measurements performed using the Run 2 dataset, as well as first results using the Run 3 pp collision dataset collected since 2022 at 13.6 TeV. Measurements of the Higgs boson properties by the ATLAS experiment in various decay channels are shown, including its production cross sections, simplified template cross sections, mass, width, CP quantum number, differential and fiducial cross sections, as well as their combination and interpretations. Specific scenarios of physics beyond the Standard Model are tested, as well as a generic extension in the framework of the Standard Model Effective Field Theory. The talk also presents the latest HH searches, which are sensitive to the Higgs boson self-coupling. results are shown in terms of sensitivity to the SM HH production and limits on the Higgs boson self-coupling. Direct searches for BSM signals are also shown.