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Title: Measurements of the Higgs boson properties and their interpretations with the ATLAS experiment

With the full Run 2 pp collision dataset collected at 13 TeV, very detailed measurements of Higgs boson properties and its interactions can be performed using its decays into bosons and fermions, shining light over the electroweak symmetry breaking mechanism. This talk presents the latest measurements of the Higgs boson properties by the ATLAS experiment in various decay channels, including production mode cross sections, simplified template cross sections, mass, CP, width, 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 Standard Model makes a definite prediction for the Higgs boson self-coupling and thereby the shape of the Higgs potential. Experimentally, both can be probed through the production of Higgs boson pairs (HH). The latest HH searches are reported, where results are interpreted both in terms of sensitivity to the Standard Model and as limits on the Higgs boson self-coupling.