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Measurements of Higgs boson production and decay rates and their interpretation with the ATLAS experiment

Thursday 12 January 2023 14:50 (20 minutes)

The event rates and kinematics of Higgs boson production and decay processes at the LHC are sensitive probes of possible new phenomena beyond the Standard Model (BSM). This talk presents precise measurements of Higgs boson production and decay rates, obtained using the full Run 2 pp collision dataset collected by the ATLAS experiment at 13 TeV. These include total and fiducial cross-sections for the main Higgs boson processes as well as branching ratios into final states with bosons and fermions. Differential cross-sections in a variety of observables are also reported, as well as a fine-grained description of the Higgs boson production kinematics within the Simplified Template Cross-section (STXS) framework. Combinations of such measurements are also presented, as well as their interpretation in terme of Higgs boson couplings and in the context of Effective Field Theory (EFT) frameworks and specific BSM models.

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