

Highlights from the ATLAS Experiment

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This report highlights the latest ATLAS physics results based on proton-proton collision data collected during LHC Run2 and Run3. High precision measurements of Higgs boson properties validate Standard Model predictions for production cross sections and couplings. Evidence is obtained for rare Higgs decays such as $H \rightarrow \mu\mu$ and $H \rightarrow Z\gamma$, while constraints are set on Higgs CP-violating interactions and self-couplings from di-Higgs and tri-Higgs searches. Differential top quark spectra and the toponium quasi bound state measurement offer stringent tests of pQCD. Studies of vector boson scattering yield evidence for longitudinally polarized W bosons, and several triboson processes are observed. Searches for physics beyond the Standard Model cover exotic Higgs signatures, dark matter, LLP and effective field theory interpretations, with no statistically significant excess identified. Complementary results from heavy ion and light ion collision data are also briefly reported.

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