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Physics with the ATLAS Detector at the LHC

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With the announcement of the discovery of the Higgs boson in July 2012 by the two general purpose experiments ATLAS and CMS at the Large Hadron Collider (LHC) at CERN, particle physics has entered a new era. Until today the experiments have collected large data sets at centre-of-mass energies of 7 and 8 TeV (Run 1, 2010-2012) and at 13 TeV (Run 2, since 2015). These data allow for
precise measurements of the properties of the discovered Higgs boson as well as for precise measurements of Standard Model processes and parameters. In parallel the large data set has been explored to search for physics beyond the Standard Model.
In the present talk an overview on the most important physics results at the LHC is given. In addition, future prospects of the experimental programme at the High-Luminosity LHC (HLLHC) are presented, together with the planned upgrade programme of the ATLAS detector to cope with the largely increased luminosity and data rate at the HL-LHC.

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