

Plenary Talk

PV II Wed 9:00 PVa

Recent physics highlights of experiments at the LHC —

•WOLFGANG WAGNER — Bergische Universität, Wuppertal, Germany

The experiments at the Large Hadron Collider (LHC) are in the process of exploiting the full data set recorded in Run 2 of the world's most powerful accelerator. In the years of 2015 to 2018 the LHC exceeded its design luminosity for proton-proton collisions by a factor of two, leading to large high-quality data sets ready for scrutinizing the standard model of particle physics in multiple ways. The analyses performed by the experimental collaborations ATLAS, CMS, LHCb and ALICE cover a wide range of particle physics: precise measurements of

Higgs-boson couplings to other standard model particles, testing the consistency of the Brout-Englert-Higgs mechanism, establishing and measuring rare top-quark production processes, exploring flavour transitions and CP violation in bottom- and charm-hadron decays, observing new exotic hadrons and finally direct searches for physics beyond the standard model, including the production of supersymmetric particles, leptoquarks, vector-like quarks, additional Higgs bosons, generic resonances and dark matter candidates. Heavy-ion collisions are used to study the quark-gluon plasma, exploring quantum chromodynamics in extreme conditions. The presentation provides an overview of analysis highlights obtained in the past year at the LHC.