Measurement of the cross section of high transverse momentum Zâ†’bbÂ¯ production in protonâ€“proton collisions at âˆšs=8 TeV with the ATLAS detector

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Abstract:

"This Letter reports the observation of a high transverse momentum Z→bb¯ signal in proton-proton collisions at s√=8 TeV and the measurement of its production cross section. The data analysed were collected in 2012 with the ATLAS detector at the LHC and correspond to an integrated luminosity of 19.5 fb−1. The Z→bb¯ decay is reconstructed from a pair of b-tagged jets, clustered with the anti-kt jet algorithm with R=0.4, that have low angular separation and form a dijet with pT>200 GeV. The signal yield is extracted from a fit to the dijet invariant mass distribution, with the dominant, multi-jet background mass shape estimated by employing a fully data-driven technique that reduces the dependence of the analysis on simulation. The fiducial cross section is determined to be σfidZ→bb¯=2.02±0.20(stat.)±0.25(syst.)±0.06(lumi.)pb=2.02±0.33pb, in good agreement with next-to-leading-order theoretical predictions."

Keywords: -