Electroweak production of two jets in association with a Z boson in proton-proton collisions root s =13 TeV

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Abstract

A measurement of the electroweak (EW) production of two jets in association with a Z boson in proton-proton collisions at root s = 13 TeV is presented, based on data recorded in 2016 by the CMS experiment at the LHC corresponding to an integrated luminosity of 35.9 fb(-1). The measurement is performed in the lljj final state with l including electrons and muons, and the jets j corresponding to the quarks produced in the hard interaction. The measured cross section in a kinematic region defined by invariant masses m(ll) > 50 GeV, m(jj) > 120 GeV, and transverse momenta P-Tj > 25 GeV is sigma(EW) (lljj) = 534 +/- 20 (stat) fb (syst) fb, in agreement with leading-order standard model predictions. The final state is also used to perform a search for anomalous trilinear gauge couplings. No evidence is found and limits on anomalous trilinear gauge couplings associated with dimension-six operators are given in the framework of an effective field theory. The corresponding 95% confidence level intervals are -2.6 < cwww/Lambda(2) < 2.6 TeV-2 and -8.4 < cw/Lambda(2) < 10.1 TeV-2. The additional jet activity of events in a signal-enriched region is also studied, and the measurements are in agreement with predictions.

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KeyWords Plus: RAPIDITY GAPS; LHC; PHYSICS; SECTOR

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