

Measurement of $Z\gamma$ plus jets differential cross section using 139 fb⁻¹ data collected by the ATLAS detector

Differential cross-section measurements of $Z\gamma$ production in association with hadronic jets are presented, using the full Run-2 proton-proton dataset of 139 fb⁻¹ produced by the LHC at $\sqrt{s} = 13$ TeV collected by the ATLAS detector. Distributions are measured using events in which the Z boson decays leptonically and the photon is predominantly radiated off the initial state quarks. Both one- and two-dimensional observables are considered, including distributions sensitive to the hard scatter in the event and observable which probe additional soft and collinear radiation. The measurements are compared to different Standard Model predictions, both parton-shower Monte-Carlo simulation and fixed-order QCD calculations. General good agreement is observed between data and state-of-the-art theoretical next-to-nextleading-order predictions MATRIX/MiNNLO \sqrt{s} and with MadGraph5_aMC@NLO and Sherpa multileg next-to-leading order generators.

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