

# Observations and measurements of Z and photons' scattering and interactions with the CMS detector

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The first observation of the electroweak (EW) production of a Z boson, a photon, and two forward jets ( $Z\gamma jj$ ) in proton-proton collisions at a center-of-mass energy of 13 TeV is presented. A data set corresponding to an integrated luminosity of  $137 \text{ fb}^{-1}$ , collected by the CMS experiment at the LHC in 2016-2018 is used. The measured fiducial cross section for EW  $Z\gamma jj$  is  $5.21 \pm 0.52(\text{stat}) \pm 0.56(\text{syst}) \text{ fb} = 5.21 \pm 0.76 \text{ fb}$ . Single-differential cross sections in photon, leading lepton, and leading jet transverse momenta, and double-differential cross sections in  $m_{jj}$  and  $|\Delta\eta_{jj}|$  are also measured. Exclusion limits on anomalous quartic gauge couplings are derived at 95% confidence level in terms of the effective field theory operators.

See more details in arXiv:2106.11082

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