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## Search for Z gamma resonances using leptonic and hadronic final states in proton-proton collisions at root s=13 TeV

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### Abstract

A search is presented for resonances decaying to a Z boson and a photon. The analysis is based on data from proton-proton collisions at a center-of-mass energy of 13 TeV, corresponding to an integrated luminosity of 35.9 fb<sup>-1</sup>, and collected with the CMS detector at the LHC in 2016. Two decay modes of the Z boson are investigated. In the leptonic channels, the Z boson candidates are reconstructed using electron or muon pairs. In the hadronic channels, they are identified using a large-radius jet, containing either light-quark or b quark decay products of the Z boson, via jet substructure and advanced b quark tagging techniques. The results from these channels are combined and interpreted in terms of upper limits on the product of the production cross section and the branching fraction to Z gamma for narrow and broad spin-0 resonances with masses between 0.35 and 4.0 TeV, providing thereby the most stringent limits on such resonances.

### Keywords

Author Keywords: Beyond Standard Model; Hadron-Hadron scattering (experiments); Particle and resonance production

KeyWords Plus: ATLAS DETECTOR; PP COLLISIONS; HIGGS-BOSON; P(P)OVER-BAR COLLISIONS; PARTICLE; LHC; PHOTON; DECAYS; MASS

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