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Search for **Narrow H gamma Resonances in Proton-Proton** Collisions at root s=13 TeV

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Abstract


A search for heavy, narrow resonances decaying to a Higgs boson and a photon (Hy) has been performed in proton-proton collision data at a center-of-mass energy of 13 TeV, corresponding to an integrated luminosity of 35.9 fb⁻¹ collected with the CMS detector at the LHC in 2016. Events containing a photon and a Lorentz-boosted hadronically decaying Higgs boson reconstructed as a single, large-radius jet are considered, and the y jet invariant mass spectrum is analyzed for the presence of narrow resonances. To increase the sensitivity of the search, events are categorized depending on whether or not the large-radius jet can be identified as a result of the merging of two jets originating from b quarks. Results in both categories are found to agree with the predictions of the standard model. Upper limits on the production rate of Hy resonances are set as a function of their mass in the range of 720-3250 GeV, representing the most stringent constraints to date.















Keywords

KeyWords Plus: [HIGGS-BOSON](#); [PP COLLISIONS](#); [MASS](#)

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