

## Search for BSM Physics in High-Mass Diphoton Events with the CMS Detector at $\sqrt{s} = 13$ TeV

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The quest for new physics beyond the Standard Model (BSM) remains a cornerstone of contemporary particle physics, driving the pursuit of new particles. We present the recent results from an extensive search for BSM particle states in 'high-mass diphoton events', a signature indicative of various SM extensions such as Supersymmetry, extra dimensions, and non-minimal Higgs sectors.

Searches for both spin-0/2 particles, in resonant as well as non-resonant scenarios, were carried out using the full luminosity of the LHC Run-II in proton-proton collisions at  $\sqrt{s} = 13$  TeV with the CMS detector. We place constraints on the production of heavy Higgs bosons and the continuum clockwork mechanism, setting the most stringent limits to date on ADD extra dimensions and RS gravitons, excluding coupling parameters greater than 0.1.

This talk will highlight salient results and analysis methodology, with particular emphasis on the complementary techniques employed to model signals and backgrounds, thereby enhancing the BSM sensitivity.

### Track type

Collider and BSM Physics

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