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Exotics searches at CMS

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Summary

Although the Standard Model (SM) has been achieving brilliant experimental successes so far, it doesn't solve some questions, such as the dark matter composition, the inclusion of gravity and the hierarchy problem. Beyond Standar Model (BSM) physics is needed to accurately describe our Universe. Many such new physics models exist, conventionally separated into supersymmetry models and all other BSM models, referred to as exotica.

A review is presented of the most recent results at the energy of 13 TeV, obtained by the CMS detector, in the exotics sector. We focus on the analyses of the exotics and beyond two generation groups, the latter includes models featuring the decay of new resonances to heavy standard model objects (t,b,W,Z,H).

These searches, categorized here by search method more then by theoretical models, look for diphoton and dijet heavy resonances, heavy bosons (Z'and W'), dark matter and other signatures. The first collected data of Run 2 have not yielded any discovery in the exotics field, but have given an interesting excess of events in the diphoton signature and have allowed to greatly constrain a wide range of theoretical scenarios.

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