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Search for Large Extra Dimensions and Compositeness in $\mu+\mu^-$ and $e+e^-$ channels in proton-proton collisions at $\sqrt{s}=13$ TeV in CMS”

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Non-resonant excesses in dilepton invariant mass spectra are predicted by several beyond the standard model (BSM) theories. In this search, two theoretical models, large extra dimensions (LED) and Compositeness are considered, and the status of the search in the mass range 400-5000 GeV will be presented using 2016 data collected by CMS detector. In LED, space-time is extended by an additional number (n) of compactified dimensions. In this model, all standard model particles are localized in a $(3+1)$ dimension (the brane). However, gravity propagates to all $(n+3) +1$ dimensions (the bulk). In Compositeness, quarks and leptons are composite structures, bound states of more fundamental constituents called preons. Below the interaction energy scale Λ , the strength of binding of constituents is very strong and binds preons to a composite state. At this energy scale, the effect of Compositeness can be visible as a four-fermion contact interaction. In our search three helicity models LL, LR and RR are considered. The signature of LED and Compositeness might be observed as a deviation from the prediction of the SM Drell-Yan process at high masses.

Primary author: THAPA, Prakash (Wayne State University)

Co-author: SPIEGEL, Leonard (FNAL)

Presenter: THAPA, Prakash (Wayne State University)

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