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A New Higgs Boson With Electron-Muon Flavor-Violating Couplings

Thursday, 6 June 2024 16:30 (30 minutes)

Motivated by a hint of possible excess of a new resonance decaying to eμ at 146 GeV, we try to interpret the excess in the context of the type-III two-Higgs-doublet-model. We find that the excess is only moderately constrained by low-energy lepton-flavor-violation processes, in particular the μ⟶eγ decay. We also compare the CMS bounds across the entire search region against constraints of μ⟶eγ and μ⟶e conversion in nuclei. Our finding indicates that the collider bounds can be superior to those of low-energy processes for the scalar mass between 110 GeV and 150 GeV, suggesting the importance of this mass range for future searches.

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Leptons

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