

Extra Dimensions in High-Mass Diphoton Spectrum at 13 TeV

Thursday, 19 July 2018 15:15 (15 minutes)

Among the proposed explanations for the hierarchy problem, or the relative weakness of gravity compared to the other fundamental forces, is the existence of extra dimensions. To test this, we probe the diphoton spectrum for high-mass events using proton-proton collisions at $\sqrt{s} = 13$ TeV. We present here the analysis results using 2016 data, corresponding to a 35.9 fb^{-1} integrated luminosity, collected from the CMS detector of the Large Hadron Collider at CERN. Resonant and nonresonant signatures of extra dimensions are searched using different background estimation techniques. Limits were set for both the warped (resonant) and large extra dimensional (nonresonant) models. We also show preliminary work on improving sensitivity in this spectrum. In particular, we explore the angular distribution of the diphoton final states in preparation for the analysis of the 2017 data.

Primary authors: CMS COLLABORATION; PEREZ, Cilicia Uzziel (The University of Alabama); Dr HENDERSON, Conor (The University of Alabama); BUCCILLI, Andrew (The University of Alabama); Dr WEST, Christopher Alan (The University of Alabama)

Presenter: PEREZ, Cilicia Uzziel (The University of Alabama)