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Volume 2019, Issue 4, 1 April 2019, Article number 15Search for excited leptons in  $\ell\bar{\ell}\gamma$  final states in proton - proton collisions at  $\sqrt{s} = 13$  TeV (Article) [\(Open Access\)](#)Sirunyan, A.M.<sup>a</sup>, Tumasyan, A.<sup>a</sup>, Adam, W.<sup>b</sup>, Ambrogi, F.<sup>b</sup>, Asilar, E.<sup>b</sup>, Bergauer, T.<sup>b</sup>, Brandstetter, J.<sup>b</sup>, Dragicevic, M.<sup>b</sup>, Erö, J.<sup>b</sup>, Escalante Del Valle, A.<sup>b</sup>, Flechl, M.<sup>b</sup>, Frühwirth, R.<sup>b,gv</sup>, Ghete, V.M.<sup>b</sup>, Hrubec, J.<sup>b</sup>, Jeitler, M.<sup>b,gv</sup>, Krammer, N.<sup>b</sup>, Krätschmer, I.<sup>b</sup>, Liko, D.<sup>b</sup>, Madlener, T.<sup>b</sup>, Mikulec, I.<sup>b</sup>, Rad, N.<sup>b</sup>,[View additional authors](#) [v](#)<sup>a</sup>Yerevan Physics Institute, Yerevan, Armenia<sup>b</sup>Institut für Hochenergiephysik, Wien, Austria<sup>c</sup>Institute for Nuclear Problems, Minsk, Belarus[View additional affiliations](#) [v](#)

## Abstract

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A search is presented for excited electrons and muons in  $\ell\bar{\ell}\gamma$  final states at the LHC. The search is based on a data sample corresponding to an integrated luminosity of  $35.9 \text{ fb}^{-1}$  of proton - proton collisions at a center-of-mass energy of 13 TeV, collected with the CMS detector in 2016. This is the first search for excited leptons at  $s = 13$  TeV. The observation is consistent with the standard model background prediction, and the most stringent exclusion limits to date are set on the excited lepton mass and the compositeness scale, at 95% confidence level. Excited electrons and muons are excluded for masses below 3.9 and 3.8 TeV, respectively, under the assumption that the excited lepton mass equals the compositeness scale. The best observed limit on the compositeness scale is obtained with an excited lepton mass of around 1.0 TeV, excluding values below 25 TeV for both excited electrons and muons. [Figure not available: see fulltext.]. © 2019, The Author(s).

SciVal Topic Prominence [i](#)

Topic: leptons | collisions | scalar leptoquarks

Prominence percentile: 87.157 [i](#)

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