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Search for Low Mass Vector Resonances Decaying to Quark-Antiquark Pairs 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>, Brondolin, E.<sup>b</sup>, Dragicevic, M.<sup>b</sup>, Erö, J.<sup>b</sup>, Flechl, M.<sup>b</sup>, Friedl, M.<sup>b</sup>, Frühwirth, R.<sup>b,grs</sup>, Ghete, V.M.<sup>b</sup>, Grossmann, J.<sup>b</sup>, Hrubec, J.<sup>b</sup>, Jeitler, M.<sup>b,gt</sup>, König, A.<sup>b</sup>, Krammer, N.<sup>b</sup>, Krätschmer, I.<sup>b</sup>, Liko, D.<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 reported for a narrow vector resonance decaying to quark-antiquark pairs in proton-proton collisions at  $\sqrt{s}=13$  TeV, collected with the CMS detector at the LHC. The data sample corresponds to an integrated luminosity of 2.7 fb<sup>-1</sup>. The vector resonance is produced at large transverse momenta, with its decay products merged into a single jet. The resulting signature is a peak over background in the distribution of the invariant mass of the jet. The results are interpreted in the framework of a leptophobic vector resonance and no evidence is found for such particles in the mass range of 100-300 GeV. Upper limits at 95% confidence level on the production cross section are presented in a region of mass-coupling phase space previously unexplored at the LHC. The region below 140 GeV has not been explored by any previous experiments. © 2017 CERN.

## Indexed keywords

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