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Volume 2018, Issue 7, 1 July 2018, Article number 75Search for a heavy resonance decaying into a Z boson and a vector boson in the $\nu\nu^-q\bar{q}$ final state (Article) [\(Open Access\)](#)Sirunyan, A.M.^a, Tumasyan, A.^a, Adam, W.^b, Ambrogi, F.^b, Asilar, E.^b, Bergauer, T.^b, Brandstetter, J.^b, Brondolin, E.^b, Dragicevic, M.^b, Erö, J.^b, Escalante Del Valle, A.^b, Flechl, M.^b, Friedl, M.^b, Frühwirth, R.^{b,gr}, Ghete, V.M.^b, Grossmann, J.^b, Hrubec, J.^b, Jeitler, M.^{b,gr}, König, A.^b, Krammer, N.^b, Krätschmer, I.^b,[View additional authors](#) [v](#)^aYerevan Physics Institute, Yerevan, Armenia^bInstitut für Hochenergiephysik, Wien, Austria^cInstitute for Nuclear Problems, Minsk, Belarus[View additional affiliations](#) [v](#)

Abstract

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A search is presented for a heavy resonance decaying into either a pair of Z bosons or a Z boson and a W boson (ZZ or WZ), with a Z boson decaying into a pair of neutrinos and the other boson decaying hadronically into two collimated quarks that are reconstructed as a highly energetic large-cone jet. The search is performed using the data collected with the CMS detector at the CERN LHC during 2016 in proton-proton collisions at a center-of-mass energy of 13 TeV, corresponding to a total integrated luminosity of 35.9 fb⁻¹. No excess is observed in data with regard to background expectations. Results are interpreted in scenarios of physics beyond the standard model. Limits at 95% confidence level on production cross sections are set at 0.9 fb (63 fb) for spin-1 W' bosons, included in the heavy vector triplet model, with mass 4.0 TeV (1.0 TeV), and at 0.5 fb (40 fb) for spin-2 bulk gravitons with mass 4.0 TeV (1.0 TeV). Lower limits are set on the masses of W' bosons in the context of two versions of the heavy vector triplet model of 3.1 TeV and 3.4 TeV, respectively. [Figure not available: see fulltext.]. © 2018, The Author(s).

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Topic: jets | production | parton shower

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Author keywords

[Beyond Standard Model](#) [Hadron-Hadron scattering \(experiments\)](#)

Funding details

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California Earthquake Authority

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Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro		Ovcharova, Ana , et al <i>Deutsches Elektronen-Synchrotron, DESY, Hamburg</i>	
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