



# Document details

< Back to results | 1 of 1

[↗](#) Export [↓](#) Download [🖨](#) Print [✉](#) E-mail [📄](#) Save to PDF [★](#) Add to List [More... >](#)

[View at Publisher](#)

Journal of High Energy Physics [Open Access](#)  
Volume 2019, Issue 5, 1 May 2019, Article number 210

## Search for a low - mass $\tau^- \tau^+$ resonance in association with a bottom quark 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, g<sup>w</sup></sup>, Ghete, V.M.<sup>b</sup>, Hrubec, J.<sup>b</sup>, Jeitler, M.<sup>b, g<sup>w</sup></sup>, Krammer, N.<sup>b</sup>, Krätschmer, I.<sup>b</sup>, Liko, D.<sup>b</sup>, Mädlener, T.<sup>b</sup>, Mikulec, I.<sup>b</sup>, Rad, N.<sup>b</sup>, [↕](#)

[View additional authors](#) [↕](#)

<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](#) [↕](#)

### Abstract

[↕](#) View references (87)

A general search is presented for a low-mass  $\tau\tau$  resonance produced in association with a bottom quark. The search is based on proton-proton collision data at a center-of-mass energy of 13 TeV collected by the CMS experiment at the LHC, corresponding to an integrated luminosity of 35.9 fb<sup>-1</sup>. The data are consistent with the standard model expectation. Upper limits at 95% confidence level on the cross section times branching fraction are determined for two signal models: a light pseudoscalar Higgs boson decaying to a pair of  $\tau$  leptons produced in association with bottom quarks, and a low-mass boson  $X$  decaying to a  $\tau$ -lepton pair that is produced in the decay of a bottom-like quark  $B$  such that  $B \rightarrow bX$ . Masses between 25 and 70 GeV are probed for the light pseudoscalar boson with upper limits ranging from 250 to 44 pb. Upper limits from 20 to 0.3 pb are set on  $B$  masses between 170 and 450 GeV for  $X$  boson masses between 20 and 70 GeV.[Figure not available: see fulltext.]. © 2019, The Author(s).

### SciVal Topic Prominence [ⓘ](#)

Topic: Collisions | Jets | Proton-proton collisions

Prominence percentile: 99.939 [ⓘ](#)

### Author keywords

[Hadron-Hadron scattering \(experiments\)](#) [Higgs physics](#) [Tau Physics](#)

### Funding details

Funding sponsor	Funding number
-----------------	----------------

California Earthquake Authority	
---------------------------------	--

Secretaría de Educación Superior, Ciencia, Tecnología e Innovación	
--	--

### Metrics [ⓘ](#) [View all metrics >](#)

1	Citation in Scopus
0.61	Field-Weighted Citation Impact



### PlumX Metrics [↕](#)

Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

### Cited by 1 document

A heavy neutral gauge boson near the Z boson mass pole via third generation fermions at the LHC

Abdullah, M. , Dalchenko, M. , Kamon, T.  
(2020) *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics*

[View details of this citation](#)

Inform me when this document is cited in Scopus:

[Set citation alert >](#)

[Set citation feed >](#)

### Related documents

Search for an exotic decay of the Higgs boson to a pair of light pseudoscalars in the final state with two b quarks and two  $\tau$  leptons in proton-proton collisions at  $\sqrt{s}=13$ TeV

Sirunyan, A.M. , Tumasyan, A. , Adam, W. , CEA  
(2018) *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics*

SENESCYT  
Search for an exotic decay of the Higgs boson to a pair of light pseudoscalars in the final state of two muons and two  $\tau$  leptons in

Funding sponsor	Funding number	proton-proton collisions at $\sqrt{s}=13$ TeV	Acronym
Fundação de Amparo à Pesquisa do Estado do Rio de Janeiro		Sirunyan, A.M. , Tumasyan, A. , Adam, W. (2018) <i>Journal of High Energy Physics</i>	FAPERJ
State Fund for Fundamental Research of Ukraine		Search for resonances in the mass spectrum of muon pairs produced in association with b quark jets in proton-proton collisions at $\sqrt{s}=8$ and 13 TeV	FFR
CS Fund		Sirunyan, A.M. , Tumasyan, A. , Adam, W. (2018) <i>Journal of High Energy Physics</i>	CSF
Fundação para a Ciência e a Tecnologia See opportunities by FCT		<a href="#">View all related documents based on references</a>	FCT
Joint Institute for Nuclear Research		<a href="#">Find more related documents in Scopus based on:</a> Authors > Keywords >	JINR
Ministry of Education - Singapore			MOE
Pakistan Atomic Energy Commission			PAEC
Consejo Nacional de Ciencia y Tecnología, Paraguay			EI CONACYT
Ministry for Business Innovation and Employment			MBIE
National Science and Technology Development Agency	Thailand		NSTDA
Institute for Research in Fundamental Sciences			IPM
Ministry of Science and Technology			MOST
Missouri University of Science and Technology			MST
Benemérita Universidad Autónoma de Puebla			BUAP
European Regional Development Fund			FEDER
Hispanics in Philanthropy			HIP
Deutsche Forschungsgemeinschaft See opportunities by DFG			DFG