

## Document details

&lt; Back to results | 1 of 24 Next &gt;

[Export](#)
[Download](#)
[Print](#)
[E-mail](#)
[Save to PDF](#)
[Add to List](#)
[More... >](#)
[Full Text](#) View at Publisher

 Journal of High Energy Physics [Open Access](#)  
 Volume 2019, Issue 1, 1 January 2019, Article number 183

 Measurement of inclusive and differential Higgs boson production cross sections in the diphoton decay channel 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>, Ambrogio, 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](#)
<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 \(58\)](#)

Measurements of the inclusive and differential production cross sections for the Higgs boson in the diphoton decay channel are performed using the data set of proton-proton collisions at  $\sqrt{s}=13$  TeV collected by the CMS experiment at the LHC in 2016 and corresponding to an integrated luminosity of  $35.9 \text{ fb}^{-1}$ . The cross sections are measured in a fiducial phase space defined by a set of requirements on the isolation and kinematic variables of the photons. Differential cross sections are measured as functions of the kinematic properties of the diphoton system and the event. A subset of the measurements is performed in regions of the fiducial phase space, where relative contributions of specific Higgs boson production mechanisms are enhanced. The total cross section in the chosen fiducial phase space is measured to be  $84 \pm 11$  (stat)  $\pm 7$  (syst)  $\text{fb} = 84 \pm 13 \text{ fb}$ , to be compared with a theoretical prediction of  $73 \pm 4 \text{ fb}$ . All measurements are found to be in agreement with the theoretical predictions for the standard model Higgs boson with a mass of 125.09 GeV within the experimental and theoretical uncertainties. [Figure not available: see fulltext.]. © 2019, SISSA, Trieste, Italy.

## SciVal Topic Prominence

Topic: jets | production | parton shower

Prominence percentile: 99.875

## Author keywords

[Hadron-Hadron scattering \(experiments\)](#)
[Higgs physics](#)
[Photon production](#)

## Funding details

Funding sponsor Funding number

 California  
 Earthquake Authority

## Metrics

0 Citations in Scopus

0 Field-Weighted  
Citation Impact

## PlumX Metrics

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

## Cited by 0 documents

 Inform me when this document  
 is cited in Scopus:

[Set citation alert >](#)
[Set citation feed >](#)

## Related documents

 Measurements of properties of  
 the Higgs boson decaying to a  $\gamma$   
 boson pair in pp collisions at  
 $\sqrt{s}=13$  TeV

 Sirunyan, A.M. , Tumasyan, A. ,  
 Adam, W.  
 (2019) *Physics Letters, Section B:  
 Nuclear, Elementary Particle and  
 High-Energy Physics*

 Measurements of Higgs boson  
 properties in the diphoton decay  
 channel in proton-proton  
 collisions at  $\sqrt{s}=13$  TeV

 Sirunyan, A.M. , Tumasyan, A. ,  
 Adam, W.  
 (2018) *Journal of High Energy  
 Physics*

 Search for excited quarks of light  
 and heavy flavor in  $\gamma$ +jet final  
 states in proton-proton collisions  
 at  $\sqrt{s}=13$  TeV

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

Funding sponsor	Funding number	View all related documents based on references <a href="#">Acronym</a>
Secretaría de Educación Superior, Ciencia, Tecnología e Innovación		Find more related documents in Scopus based on: <a href="#">Authors &gt;</a> <a href="#">Keywords &gt;</a>
Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro		
State Fund for Fundamental Research of Ukraine	Ukraine	
CS Fund	Croatia	
Fuel Cell Technologies Program		
Joint Institute for Nuclear Research		
Ministry of Education		
Pakistan Atomic Energy Commission	Pakistan	
Consejo Nacional de Ciencia y Tecnología		
Ministry for Business Innovation and Employment		
National Science and Technology Development Agency	Thailand	
Institute for Research in Fundamental Sciences		
Foundation for Promotion of Material Science and Technology of Japan	Taipei	
Federación Española de Enfermedades Raras		
Hispanics in Philanthropy		
California Department of Fish and Game		