Document details

‹ Back to results | 1 of 1

Export Download Print E-mail Save to PDF Add to List More... ›

View at Publisher

Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics Open Access
Volume 793, 10 June 2019, Pages 320-347

Search for a standard model-like Higgs boson in the mass range between 70 and 110 GeV in the diphoton final state in proton-proton collisions at s=8 and 13 TeV (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], Ghete, V.M.[b], Hrubec, J.[b], Jeitler, M.[b], Krammer, N.[b], Krätschmer, I.[b], Liko, D.[b], Madlener, T.[b], Mikulec, I.[b],

View additional authors

[a]Yerevan Physics Institute, Yerevan, Armenia
[b]Institut für Hochenergiephysik, Wien, Austria
[c]Institute for Nuclear Problems, Minsk, Belarus

View additional affiliations

Abstract

View references (77)

The results of a search for a standard model-like Higgs boson in the mass range between 70 and 110 GeV decaying into two photons are presented. The analysis uses the data set collected with the CMS experiment in proton-proton collisions during the 2012 and 2016 LHC running periods. The data sample corresponds to an integrated luminosity of 19.7 (35.9)fb $^{-1}$ at s=8 (13)TeV. The expected and observed 95% confidence level upper limits on the product of the cross section and branching fraction into two photons are presented. The observed upper limit for the 2012 (2016)data set ranges from 129 (161)fb to 31 (26)fb. The statistical combination of the results from the analyses of the two data sets in the common mass range between 80 and 110 GeV yields an upper limit on the product of the cross section and branching fraction, normalized to that for a standard model-like Higgs boson, ranging from 0.7 to 0.2, with two notable exceptions: one in the region around the Z boson peak, where the limit rises to 1.1, which may be due to the presence of Drell–Yan dielectron production where electrons could be misidentified as isolated photons, and a second due to an observed excess with respect to the standard model prediction, which is maximal for a mass hypothesis of 95.3 GeV with a local (global)significance of 2.8 (1.3)standard deviations. © 2019 The Author(s)

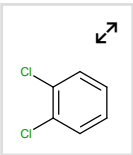
SciVal Topic Prominence

Topic: Collisions | Jets | Proton–proton collisions

Prominence percentile: 99.939

Chemistry database information

Substances



Author keywords

Cited by 9 documents

Dark Matter through the Higgs portal
Arcadi, G. , Djouadi, A. , Raidal, M.
(2020) Physics Reports

Detecting new signals under background mismodeling
Algeri, S.
(2020) Physical Review D

A 96 GeV Higgs boson in the N2HDM
Biekötter, T. , Chakraborti, M. , Heinemeyer, S.
(2020) European Physical Journal C

View all 9 citing documents

Related documents

Measurements of Higgs boson properties in the diphoton decay channel in proton-proton collisions at √s=13 TeV
Sirunyan, A.M. , Tumasyan, A. , Adam, W.
(2018) Journal of High Energy Physics

CMS Diphoton Higgs Physics

Funding details

Funding sponsor	Funding number	
California Earthquake Authority		CEA
SecretarÃa de EducaciÃ³n Superior, Ciencia, TecnologÃa e InnovaciÃ³n		SENESCYT
FundaÃ§Ã£o Carlos Chagas Filho de Amparo Ã Pesquisa do Estado do Rio de Janeiro		FAPERJ
State Fund for Fundamental Research of Ukraine		SFFR
CS Fund		CSF
FundaÃ§Ã£o para a CiÃªncia e a Tecnologia See opportunities by FCT ↗		FCT
Joint Institute for Nuclear Research		JINR
Ministry of Education - Singapore		MOE
Pakistan Atomic Energy Commission		PAEC
Consejo Nacional de Ciencia y TecnologÃa, Paraguay		El CONACYT
National Science and Technology Development Agency	Thailand	NSTDA
Ministry for Business Innovation and Employment		MBIE
Institute for Research in Fundamental Sciences		IPM
Ministry of Science and Technology		MOST
Missouri University of Science and Technology		MST
Hispanics in Philanthropy		HIP

Observation of the Higgs boson decay to a pair of τ leptons with the CMS detector

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

Measurement of inclusive and differential Higgs boson production cross sections in the diphoton decay channel in proton-proton collisions at √s=13 TeV

Sirunyan, A.M. , Tumasyan, A. , Adam, W.
(2019) Journal of High Energy Physics

View all related documents based on references

Find more related documents in Scopus based on:

Authors > Keywords >

Funding sponsor	Funding number	Acronym
BenemÃ©rita Universidad AutÃ³noma de Puebla		BUAP
European Regional Development Fund		FEDER
Deutsche Forschungsgemeinschaft See opportunities by DFG↗		DFG
National Research Foundation of Korea		NRF
SecretarÃa de Estado de InvestigaciÃ³n, Desarrollo e InnovaciÃ³n		SEIDI
FundaÃ§Ã£o de Amparo Ã Pesquisa do Estado do Rio Grande do Sul		FAPERGS
Ministry of Science, ICT and Future Planning		MSIP
Bundesministerium fÃ¼r Bildung, Wissenschaft, Forschung und Technologie		BMBWF
Ministry of Science,Technology and Research		MoSTR
U.S. Department of Energy See opportunities by USDOE ↗		USDOE
Academy of Finland		
CoordenaÃ§Ã£o de AperfeiÃ§oamento de Pessoal de NÃvel Superior		CAPES
National Science Council		NSC
Mountain Equipment Co-operative		MEC
TÃ¼rkiye Atom Enerjisi Kurumu		TAEK
Research Promotion Foundation		RPF

Funding sponsor	Funding number	Acronym
National Science Foundation See opportunities by NSF↗		NSF
Science and Technology Facilities Council See opportunities by STFC↗		STFC
Helmholtz-Gemeinschaft See opportunities by HGF↗		HGF
Star Scientific Foundation		
Austrian Science Fund		FWF
FundaÃ§Ã£o de Amparo Ã Pesquisa do Estado de SÃ£o Paulo See opportunities by FAPESP↗		FAPESP
SecretarÃa de EducaciÃ³n PÃºblica		SEP
Fonds De La Recherche Scientifique - FNRS		FNRS
National Academy of Sciences of Ukraine		NASU
Bundesministerium fÃ¼r Bildung und Frauen		BMBF
National Natural Science Foundation of China		NSFC
Centro de InvestigaciÃ³n y de Estudios Avanzados del Instituto PolitÃ©cnico Nacional		CINVESTAV
Istituto Nazionale di Fisica Nucleare		INFN
Department of Atomic Energy, Government of India		DAE
University of Minnesota		UM
Rochester Academy of Science		RAS

Funding sponsor	Funding number	Acronym
State Atomic Energy Corporation ROSATOM		ROSATOM
Department of Science and Technology, Ministry of Science and Technology, India See opportunities by DST↗		DST
Conselho Nacional de Desenvolvimento CientÃfico e TecnolÃ³gico		CNPq
Maryland Ornithological Society See opportunities by MOS↗		MOS
Russian Foundation for Basic Research		RFBR
Chinese Academy of Sciences		CAS
Departamento Administrativo de Ciencia, TecnologÃa e InnovaciÃ³n (COLCIENCIAS)		COLCIENCIAS
CERN		
European Regional Development Fund		FEDER
General Secretariat for Research and Technology		GSRT
Fonds Wetenschappelijk Onderzoek		FWO
Science Foundation Ireland See opportunities by SFI ↗		SFI
Ministry of Education and Science		MES
Louisiana Academy of Sciences		LAS
National Research Center "Kurchatov Institute"		NRC KI

Funding sponsor	Funding number	Acronym
Nemzeti KutatÃ¡si, FejlesztÃ©si Ã©s InnovaciÃ³s Alap		NKFIA
European Regional Development Fund		FEDER
Fonds pour la Formation Ã la Recherche dans lâ□□Industrie et dans lâ□□Agriculture		FRIA
Ministerstwo Nauki i Szkolnictwa WyÅ¼szego		MNiSW
Welch Foundation See opportunities↗	C-1845	
Horizon 2020	675440	
Weston Havens Foundation		
Fundacja na rzecz Nauki Polskiej See opportunities by FNP↗		FNP
ComisiÃ³n Asesora de InvestigaciÃ³n CientÃfica y TÃ©cnica	MDM-2015-0509	CAICYT
Qatar National Research Fund		QNRF
Belgian Federal Science Policy Office		BELSPO
Chulalongkorn University		CU
Agentschap voor Innovatie door Wetenschap en Technologie		IWT
Alexander von Humboldt-Stiftung See opportunities↗		
Ministerstvo Å kolstvÃ, MlÃ¡deÅ¾e a TÄ□lovÃ½chovy		MÅ MT
European Commission See opportunities by EC ↗		EC
A.G. Leventis Foundation		

Funding sponsor	Funding number	Acronym
Ministerio de EducaciÃ³n, Cultura y Deporte		MECD
Indo-French Centre for the Promotion of Advanced Research See opportunities by IFCPAR ↗		IFCPAR
	30820817	
Fonds Wetenschappelijk Onderzoek		FWO
	2012/07/E/ST2/01406,2014/13/B/ST2/02543,2014/14/M/ST2/00428,2014/15/B/ST2/03998,2015/19/B/ST2/02861	
European Research Council		ERC
Magyar TudomÃ¡nyos AkadÃ©mia		MTA
Nemzeti KutatÃ¡si, FejlesztÃ©si Ã©s InnovaciÃ³s Alap	125105,124850,123842,123959,124845	NKFIA

Funding text #1

We congratulate our colleagues in the CERN accelerator departments for the excellent performance of the LHC and thank the technical and administrative staffs at CERN and at other CMS institutes for their contributions to the success of the CMS effort. In addition, we gratefully acknowledge the computing centers and personnel of the Worldwide LHC Computing Grid for delivering so effectively the computing infrastructure essential to our analyses. Finally, we acknowledge the enduring support for the construction and operation of the LHC and the CMS detector provided by the following funding agencies: BMBWF and FWF (Austria); FNRS and FWO (Belgium); CNPq , CAPES , FAPERJ , FAPERGS , and FAPESP (Brazil); MES (Bulgaria); CERN ; CAS , MOST , and NSFC (China); COLCIENCIAS (Colombia); MSES and CSF (Croatia); RPF (Cyprus); SENESCYT (Ecuador); MoER , ERC IUT , and ERDF (Estonia); Academy of Finland , MEC , and HIP (Finland); CEA and CNRS/IN2P3 (France); BMBF , DFG , and HGF (Germany); GSRT (Greec... View all

Funding text #2

Rachada-pisek Individuals have received support from the Indo-French Network in High Energy Physics financed by the Indo-French Center for the Promotion of Advanced Research (CEFIPRA/IFCPAR), the Marie-Curie program and the European Research Council and Horizon 2020 Grant, contract No. 675440 (European Union); the Leventis Foundation ; the A.P. Sloan Foundation ; the Alexander von Humboldt Foundation ; the Belgian Federal Science Policy Office ; the Fonds pour la Formation à la Recherche dans l'Industrie et dans l'Agriculture (FRIA-Belgium); the Agentschap voor Innovatie door Wetenschap en Technologie (IWT-Belgium); the F.R.S.-FNRS and FWO (Belgium) under the “Excellence of Science - EOS” - be.h project n. 30820817 ; the Ministry of Education, Youth and Sports (MEYS) of the Czech Republic; the Lendület (“Momentum”) Program and the János Bolyai Research Scholarship of the Hungarian Academy of Sciences , the New National Excellence Program ÚNKP , the NKFIA research grants 123842 , 1239... View all

ISSN: 03702693
CODEN: PYLBA
Source Type: Journal
Original language: English

DOI: 10.1016/j.physletb.2019.03.064
Document Type: Article
Publisher: Elsevier B.V.