

## Document details

[< Back to results](#) | 1 of 1[Export](#) [Download](#) [Print](#) [E-mail](#) [Save to PDF](#) [Add to List](#) [More... >](#)[Full Text](#) [View at Publisher](#)Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics [Open Access](#)  
Volume 790, 10 March 2019, Pages 509-532Measurement of prompt  $\psi(2S)$  production cross sections in proton–lead and proton–proton collisions at  $s_{NN} = 5.02\text{TeV}$  (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>, Brondolin, E.<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>, Friedl, M.<sup>b</sup>, Ghete, V.M.<sup>b</sup>, Hrubec, J.<sup>b</sup>, Jeitler, M.<sup>b</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 [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, BelarusView additional affiliations [v](#)

## Abstract

[v View references \(55\)](#)

Measurements of prompt  $\psi(2S)$  meson production cross sections in proton–lead (pPb) and proton–proton (pp) collisions at a nucleon–nucleon center-of-mass energy of  $s_{NN} = 5.02\text{TeV}$  are reported. The results are based on pPb and pp data collected by the CMS experiment at the LHC, corresponding to integrated luminosities of  $34.6\text{ nb}^{-1}$  and  $28.0\text{ pb}^{-1}$ , respectively. The nuclear modification factor  $R_{pPb}$  is measured for prompt  $\psi(2S)$  in the transverse momentum range  $4 < p_T < 30\text{ GeV}/c$  and the center-of-mass rapidity range  $-2.4 < y_{CM} < 1.93$ . The results on  $\psi(2S) R_{pPb}$  are compared to the corresponding modification factor for prompt  $J/\psi$  mesons. The results point to different nuclear effects at play in the production of the excited charmonium state compared to the ground state, in the region of backward rapidity and for  $p_T < 10\text{ GeV}/c$ . © 2019 The Author

SciVal Topic Prominence [i](#)

Topic: collisions | production | nuclear modification

Prominence percentile: 91.688 [i](#)

## Author keywords

[CMS](#) [pPb](#) [ψ\(2S\)](#)

## Funding details

Funding sponsor Funding number

California  
Earthquake AuthorityEuropean Regional  
Development FundMinistry of  
Education and  
ScienceMetrics [i](#) [View all metrics >](#)

1 Citation in Scopus

4.55 Field-Weighted  
Citation ImpactPlumX Metrics [v](#)Usage, Captures, Mentions,  
Social Media and Citations  
beyond Scopus.

## Cited by 1 document

In-medium charmonium  
production in proton-nucleus  
collisionsDu, X. , Rapp, R.  
(2019) *Journal of 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

Measurement of prompt and  
nonprompt  $J/\psi$  production in p  
p and p Pb collisions at  
 $\sqrt{s_{NN}} = 5.02\text{TeV}$ Sirunyan, A.M. , Tumasyan, A. ,  
Adam, W.  
(2017) *European Physical Journal  
C*Quarkonium Suppression from  
Coherent Energy Loss in Fixed-  
Target Experiments Using LHC  
BeamsArleo, F. , Peigné, S.  
(2015) *Advances in High Energy  
Physics*Measurement of prompt and  
nonprompt charmonium  
suppression in PbPb collisions at  
5.02 TeV

Funding sponsor	Funding number	Sirunyan, A.M. , Tumasyan, A. , Adam, W. Acronym (2018) <i>European Physical Journal C</i>
Joint Institute for Nuclear Research		View all related documents based on references
Pakistan Atomic Energy Commission	Pakistan	Find more related documents in Scopus based on:
Welch Foundation See opportunities	C-1845	Authors > Keywords >
National Science and Technology Development Agency	Thailand	
	675440	
Ministry of Science and Technology		
Fundacja na rzecz Nauki Polskiej See opportunities		
Hispanics in Philanthropy		
Korea Research Council for Industrial Science and Technology		
California Department of Fish and Game		
Comisión Asesora de Investigación Científica y Técnica	MDM-2015-0509	
Secretaría de Estado de Investigación, Desarrollo e Innovación		
Qatar National Research Fund		
National Research Foundation		
Ministry of Science ICT and Future Planning		
Canadian Mathematical Society See opportunities		
A.G. Leventis Foundation		

Funding sponsor	Funding number	Acronym
Academy of Finland		
Coordenação de Aperfeiçoamento de Pessoal de Nível Superior		
Türkiye Atom Enerjisi Kurumu		
Ministerio de Educación y Cultura		
	30820817	
Research Promotion Foundation	Cyprus	
Science and Technology Facilities Council See opportunities		
Austrian Science Fund		
Bundesministerium für Wissenschaft, Forschung und Wirtschaft		
National Academy of Sciences of Ukraine		
Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional		
Istituto Nazionale di Fisica Nucleare		
Department of Atomic Energy, Government of India		
Conselho Nacional de Desenvolvimento Científico e Tecnológico		
Российский Фонд Фундаментальных Исследований (РФФИ)		
Canadian Anesthesiologists' Society		

Funding sponsor	Funding number	Acronym
Belgian Federal Science Policy Office		
Alexander von Humboldt-Stiftung See opportunities↗		
Departamento Administrativo de Ciencia, Tecnología e Innovación		COLCIENCIAS
Ministerstvo Školství, Mládeže a Tělovýchovy		
European Commission See opportunities↗		
CERN		
	Serbia	
	NSC	
Fonds Wetenschappelijk Onderzoek		
Santa Fe Institute		
Ministry of Education and Science		
Louisiana Academy of Sciences		
Secretaría de Educación Superior, Ciencia, Tecnología e Innovación		
Fonds pour la Formation à la Recherche dans l'Industrie et dans l'Agriculture		
Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro		
State Fund for Fundamental Research of Ukraine	Ukraine	

Funding sponsor	Funding number	Acronym
CS Fund	Croatia	
Fuel Cell Technologies Program		
Ministry of Education		
Consejo Nacional de Ciencia y Tecnología		
Ministry for Business Innovation and Employment		
Weston Havens Foundation		
Institute for Research in Fundamental Sciences		
Foundation for Promotion of Material Science and Technology of Japan	Taipei	
Federación Española de Enfermedades Raras		
Alfred P. Sloan Foundation See opportunities <a href="#">↗</a>		
Human Growth Foundation		
Department of Science and Technology		
Fundação de Amparo à Pesquisa do Estado de São Paulo See opportunities <a href="#">↗</a>		
Secretaría de Educación Pública		
Fonds De La Recherche Scientifique - FNRS		
National Natural Science Foundation of China		

Bundesministerium  
für Bildung und  
Forschung

Universidade de  
Macau

Rochester Academy  
of Science

State Atomic Energy  
Corporation  
ROSATOM

Agentschap voor  
Innovatie door  
Wetenschap en  
Technologie

Chulalongkorn  
University

Ministerstvo  
Školství, Mládeže a  
Tělovýchovy

European Regional  
Development Fund

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

General Secretariat for Research and Technology	Hungary
---	---------

Nemzeti Kutatási, Fejlesztési és Innovációs Alap	125105,124850,123842,123959,124845
--	------------------------------------

#### Funding text

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: BMWFW and FWF (Austria); FNRS and FWO (Belgium); CNPq, CAPES, FAPERJ, 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 (Greece); NKFIÁ ... [View all](#) 