



Document details

< Back to results | 1 of 1

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

[View at Publisher](#)

European Physical Journal C [Open Access](#)
Volume 79, Issue 8, 1 August 2019, Article number 702

Measurement of exclusive $\rho(770)0$ photoproduction in ultraperipheral pPb collisions at $\sqrt{s_{NN}}=5.02\text{ TeV}$ (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, Dragicevic, M.^b, Erö, J.^b, Del Valle, A.E.^b, Flechl, 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, Rad, N.^b, Rohringer, H.^b, Schieck, J.^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

[v](#) [View references \(48\)](#)

Exclusive $\rho(770)0$ photoproduction is measured for the first time in ultraperipheral pPb collisions at $s_{NN}=5.02\text{ TeV}$ with the CMS detector. The cross section $\sigma(\gamma p \rightarrow \rho(770)0 p)$ is $11.0 \pm 1.4(\text{stat}) \pm 1.0(\text{sys}) \mu\text{b}$ at $\langle W_{\gamma p} \rangle = 92.6\text{ GeV}$ for photon-proton centre-of-mass energies $W_{\gamma p}$ between 29 and 213 GeV. The differential cross section $d\sigma/d|t|$ is measured in the interval $0.025 < |t| < 1\text{ GeV}^2$ as a function of $W_{\gamma p}$, where t is the squared four-momentum transfer at the proton vertex. The results are compared with previous measurements and theoretical predictions. The measured cross section $\sigma(\gamma p \rightarrow \rho(770)0 p)$ has a power-law dependence on the photon-proton centre-of-mass, consistent with electron-proton collision measurements performed at HERA. The $W_{\gamma p}$ dependence of the exponential slope of the differential cross section $d\sigma/d|t|$ is also measured. © 2019, CERN for the benefit of the CMS collaboration.

SciVal Topic Prominence [ⓘ](#)

Topic: Collisions | Photoproduction | Nuclear gluon

Prominence percentile: 82.591 [ⓘ](#)

Funding details

Funding sponsor Funding number

California Earthquake Authority

CEA

European Regional Development Fund

Ministerstwo Nauki i Szkolnictwa Wyższego

Joint Institute for Nuclear Research

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

2 Citations in Scopus
1.64 Field-Weighted Citation Impact



PlumX Metrics [v](#)

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

Cited by 2 documents

Multiparticle production and initial quasitemperature from proton-induced carbon collisions at $p_{\text{Lab}} = 31\text{ GeV}/c$

Yang, P.-P., Duan, M.-Y., Liu, F.-H. (2020) *Advances in High Energy Physics*

WG2 summary: Low-X and diffraction

Armesto, N., Ciesielski, R., Newman, P.R. (2019) *Proceedings of Science*

[View all 2 citing documents](#)

Inform me when this document is cited in Scopus:

[Set citation alert >](#)

[Set citation feed >](#) Acronym

Related documents

Latest results of diffractive and exclusive measurements with CMS

Bylinkin, A. (2019) *Acta Physica Polonica B, Proceedings Supplement*

Energy dependence of exclusive J/ψ photoproduction in p-Pb interactions at ALICE

Contreras, J.G.

Funding sponsor	Funding number	(2018) Proceedings of Science Acronym
Pakistan Atomic Energy Commission		Energy-dependent hot-spots model via vector meson photoproduction PAEC
Welch Foundation See opportunities ↗	C-1845	Krelina, M. , Cepila, J. , Contreras, J.G. (2018) Proceedings of Science
National Science and Technology Development Agency		View all related documents based on references NSTDA Find more related documents in Scopus based on:
Ministry of Science and Technology		Authors > MOST
Fundacja na rzecz Nauki Polskiej See opportunities by FNP ↗		FNP
Hispanics in Philanthropy		HIP
Deutsche Forschungsgemeinschaft See opportunities by DFG ↗		DFG
Comisi3n Asesora de Investigaci3n Cient3fica y T3cnica	MDM-2015-0509	CAICYT
National Research Foundation of Korea		NRF
Secretar3a de Estado de Investigaci3n, Desarrollo e Innovaci3n		SEIDI
Qatar National Research Fund		QNRF
Ministry of Science, ICT and Future Planning		MSIP
A.G. Leventis Foundation		
U.S. Department of Energy See opportunities by USDOE ↗		USDOE
Academy of Finland		
Coordena3o de Aperfei3oamento de Pessoal de N3vel Superior		CAPES
National Science Council		NSC

Funding sponsor	Funding number	Acronym
Mountain Equipment Co-operative		MEC
Türkiye Atom Enerjisi Kurumu		TAEK
Fonds pour la Formation à la Recherche dans l'Industrie et dans l'Agriculture		FRIA
Research Promotion Foundation		RPF
National Science Foundation See opportunities by NSF		NSF
Science and Technology Facilities Council See opportunities by STFC		STFC
Austrian Science Fund		FWF
Bundesministerium für Wissenschaft, Forschung und Wirtschaft		BMWFV
National Academy of Sciences of Ukraine		NASU
Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional		CINVESTAV
Istituto Nazionale di Fisica Nucleare		INFN
Department of Atomic Energy, Government of India		DAE
Department of Science and Technology, Ministry of Science and Technology, India See opportunities by DST		DST
Conselho Nacional de Desenvolvimento Científico e Tecnológico		CNPq
Russian Foundation for Basic Research		RFBR

Funding sponsor	Funding number	Acronym
Belgian Federal Science Policy Office		BELSPO
Chinese Academy of Sciences		CAS
Departamento Administrativo de Ciencia, Tecnología e Innovación (COLCIENCIAS)		COLCIENCIAS
Alexander von Humboldt-Stiftung See opportunities ↗		
Ministerstvo Ā kolstvĀ, MIĀjdeĀ ³ / ₄ e a TĀ□lovĀ ¹ / ₂ chovy		MĀ MT
European Commission See opportunities by EC ↗		EC
National Institutes of Health See opportunities by NIH ↗		NIH
CERN		
Fonds Wetenschappelijk Onderzoek		FWO
Science Foundation Ireland See opportunities by SFI ↗		SFI
Ministry of Education and Science		MES
Louisiana Academy of Sciences		LAS
SecretarĀa de EducaciĀn Superior, Ciencia, TecnologĀa e InnovaciĀn		SENESCYT
FundaĀĀo Carlos Chagas Filho de Amparo Ā Pesquisa do Estado do Rio de Janeiro		FAPERJ
State Fund for Fundamental Research of Ukraine		SFFR
CS Fund		CSF

Funding sponsor	Funding number	Acronym
Funda��o para a Ci�ncia e a Tecnologia See opportunities by FCT ↗		FCT
Ministry of Education - Singapore		MOE
Consejo Nacional de Ciencia y Tecnolog�a, Paraguay		EI CONACYT
Ministry for Business Innovation and Employment		MBIE
Weston Havens Foundation		
Institute for Research in Fundamental Sciences		IPM
Missouri University of Science and Technology		MST
Benem�rita Universidad Aut�noma de Puebla		BUAP
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		
Helmholtz-Gemeinschaft See opportunities by HGF ↗		HGF
Star Scientific Foundation		
Funda�o de Amparo � Pesquisa do Estado de S�o Paulo See opportunities by FAPESP ↗		FAPESP
Secretar�a de Educa�n P�blica		SEP
Fonds De La Recherche Scientifique - FNRS		FNRS
National Natural Science Foundation of China		NSFC
Bundesministerium f�r Bildung und Frauen		BMBF
Horizon 2020	675440	

Funding sponsor	Funding number	Acronym
Hungarian Scientific Research Fund		OTKA
University of Minnesota		UM
Rochester Academy of Science		RAS
State Atomic Energy Corporation ROSATOM		ROSATOM
Agentschap voor Innovatie door Wetenschap en Technologie		IWT
Chulalongkorn University		CU
European Regional Development Fund		FEDER
Ministerio de Educaci3n, Cultura y Deporte		MECD
	30820817	
General Secretariat for Research and Technology		GSRT
European Research Council		ERC
Magyar Tudom3nyos Akad3mia		MTA
Nemzeti Kutat3si, Fejleszt3si 3s Innovaci3s Alap	125105,124850,123842,123959,124845	NKFIA

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 centres 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); OTKA and NIH (Hunga... [View all](#) 