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Physical Review C

Volume 100, Issue 2, 1 August 2019, Article number 024902

Centrality and pseudorapidity dependence of the transverse energy density in p Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV (Article) (Open Access)

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Abstract

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The almost hermetic coverage of the CMS detector is used to measure the distribution of transverse energy, E_T , over 13.2 units of pseudorapidity η for pPb collisions at a center-of-mass energy per nucleon pair of $\sqrt{s_{NN}}=5.02$ TeV. The huge angular acceptance exploits the fact that the CASTOR calorimeter at $-6.6 < \eta < -5.2$ is effectively present on both sides of the colliding system because of a switch in the proton-going and lead-going beam directions. This wide acceptance enables the study of correlations between well-separated angular regions and makes the measurement a particularly powerful test of event generators. For minimum bias pPb collisions the maximum value of $dE_T/d\eta$ is 22 GeV, which implies an E_T per participant nucleon pair comparable to that of peripheral PbPb collisions at $\sqrt{s_{NN}}=2.76$ TeV. The increase of $dE_T/d\eta$ with centrality is much stronger for the lead-going side than for the proton-going side. The η dependence of $dE_T/d\eta$ is sensitive to the η range in which the centrality variable is defined. Several modern generators are compared to these results but none is able to capture all aspects of the η and centrality dependence of the data and the correlations observed between different η regions. © 2019 CERN.

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Murray, M.
(2013) *Nuclear Physics A*

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The almost hermetic coverage of the CMS detector is used to measure the distribution of transverse energy, E_T , over 13.2 units of pseudorapidity, η , for p Pb collisions at a center-of-mass energy per nucleon pair of $\sqrt{s_{NN}} = 5.02$ TeV . The huge angular acceptance exploits the fact that the CASTOR calorimeter at $-6.6 < \eta < -5.2$ is effectively present on both sides of the colliding system because of a switch in the proton-going and lead-going beam directions. This wide acceptance enables the study of correlations between well-separated angular regions and makes the measurement a particularly powerful test of event generators. For minimum bias p Pb collisions the maximum value of $dE_T/d\eta$ is 22 GeV , which implies an E_T per participant nucleon pair comparable to that of peripheral PbPb collisions at $\sqrt{s_{NN}} = 2.76$ TeV . The increase of $dE_T/d\eta$ with centrality is much stronger for the lead-going side than for the proton-going side. The η dependence of $dE_T/d\eta$ is sensitive... View all

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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 detectors 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

ISSN: 24699985

Source Type: Journal

Original language: English

DOI: 10.1103/PhysRevC.100.024902

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- ☐ 1 Busza, W., Rajagopal, K., Van Der Schee, W.

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(2018) *Annual Review of Nuclear and Particle Science*, 68, pp. 339-376. Cited 50 times.

<http://www.annualreviews.org.ezproxy.um.edu.my/journal/nucl>

doi: 10.1146/annurev-nucl-101917-020852

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- ☐ 2 Bjorken, J.D.

Highly relativistic nucleus-nucleus collisions: The central rapidity region

(1983) *Physical Review D*, 27 (1), pp. 140-151. Cited 2515 times.

doi: 10.1103/PhysRevD.27.140

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- ☐ 3 Adam, J., Adamová, D., Aggarwal, M.M., Aglieri Rinella, G., Agnello, M., Agrawal, N., Ahammed, Z., (...), Zyzak, M.

Measurement of transverse energy at midrapidity in Pb-Pb collisions at $\sqrt{s_{NN}}=2.76$ TeV [\(Open Access\)](#)

(2016) *Physical Review C*, 94 (3), art. no. 034903. Cited 20 times.

<http://harvest.aps.org.ezproxy.um.edu.my/bagit/articles/10.1103/PhysRevC.94.034903/apsxml>

doi: 10.1103/PhysRevC.94.034903

[View at Publisher](#)

- ☐ 4 Chatrchyan, S., Khachatryan, V., Sirunyan, A.M., Tumasyan, A., Adam, W., Bergauer, T., Dragicevic, M., (...), Swanson, J.

Measurement of the pseudorapidity and centrality dependence of the transverse energy density in pb-pb collisions at $\sqrt{s_{NN}}=2.76$ TeV [\(Open Access\)](#)

(2012) *Physical Review Letters*, 109 (15), art. no. 152303. Cited 45 times.

<http://oai.aps.org.ezproxy.um.edu.my/filefetch?>

[identifier=10.1103/PhysRevLett.109.152303&component=fulltext&description=markup&format=xml](http://oai.aps.org.ezproxy.um.edu.my/filefetch?identifier=10.1103/PhysRevLett.109.152303&component=fulltext&description=markup&format=xml)

doi: 10.1103/PhysRevLett.109.152303

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- ☐ 5 Alber, T., Appelshäuser, H., Bächler, J., Bartke, J., Białkowska, H., Bieser, F., Bloomer, M.A., (...), Zyburt, R.

Transverse energy production in Pb208 + Pb collisions at 158 GeV per nucleon

(1995) *Physical Review Letters*, 75 (21), pp. 3814-3817. Cited 137 times.

doi: 10.1103/PhysRevLett.75.3814

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