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Charged-particle nuclear modification factors in XeXe collisions at root S-NN=5.44 TeV

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JOURNAL OF HIGH ENERGY PHYSICS

Issue: 10

Article Number: 138

DOI: 10.1007/JHEP10(2018)138

Published: OCT 22 2018

Document Type: Article

[View Journal Impact](#)

Abstract

The differential yields of charged particles having pseudorapidity within vertical bar eta vertical bar < 1 are measured using xenon-xenon (XeXe) collisions at root S-NN = 5.44 TeV. The data, corresponding to an integrated luminosity of 3.42 mu b(-1), were collected in 2017 by the CMS experiment at the LHC. The yields are reported as functions of collision centrality and transverse momentum, pT, from 0.5 to 100 GeV. A previously reported pT spectrum from proton-proton collisions at root S = 5.02 TeV is used for comparison after correcting for the difference in center-of-mass energy. The nuclear modification factors using this reference, R-AA*, are constructed and compared to previous measurements and theoretical predictions. In head-on collisions, the R-AA* has a value of 0.17 in the pT range of 6-8 GeV, but increases to approximately 0.7 at 100 GeV. Above approximate to 6 GeV, the XeXe data show a notably smaller suppression than previous results for lead-lead (PbPb) collisions at root S-NN = 5.02 TeV when compared at the same centrality (i.e., the same fraction of total cross section). However, the XeXe suppression is slightly greater than that for PbPb in events having a similar number of participating nucleons.

Keywords

Author Keywords: [Hadron-Hadron scattering \(experiments\)](#); [Heavy-ion collision](#); [Quark gluon plasma](#)

KeyWords Plus: [QUARK-GLUON PLASMA](#); [TRANSVERSE-MOMENTUM](#); [CENTRALITY DEPENDENCE](#); [PB COLLISIONS](#); [HEAVY](#); [SPECTRA](#); [PERSPECTIVE](#); [RAPIDITY](#); [LIGHT](#); [FLOW](#)

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