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Charged-particle nuclear modification factors in XeXe collisions at $\sqrt{s_{NN}} = 5.44$ TeV (Article) [\(Open Access\)](#)

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Abstract

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The differential yields of charged particles having pseudorapidity within $|\eta| < 1$ are measured using xenon-xenon (XeXe) collisions at $\sqrt{s_{NN}} = 5.44$ TeV. The data, corresponding to an integrated luminosity of $3.42 \mu\text{b}^{-1}$, were collected in 2017 by the CMS experiment at the LHC. The yields are reported as functions of collision centrality and transverse momentum, p_T , from 0.5 to 100 GeV. A previously reported p_T spectrum from proton-proton collisions at $\sqrt{s} = 5.02$ 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 p_T range of 6–8 GeV, but increases to approximately 0.7 at 100 GeV. Above ≈ 6 GeV, the XeXe data show a notably smaller suppression than previous results for lead-lead (PbPb) collisions at $\sqrt{s_{NN}} = 5.02$ 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. © 2018, The Author(s).

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