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Charged-particle angular correlations in XeXe collisions at sNN =5.44 TeV (Article) (Open Access)

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Abstract

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Azimuthal correlations of charged particles in xenon-xenon collisions at a center-of-mass energy per nucleon pair of sNN =5.44 TeV are studied. The data were collected by the CMS experiment at the LHC with a total integrated luminosity of 3.42μb-1. The collective motion of the system formed in the collision is parametrized by a Fourier expansion of the azimuthal particle density distribution. The azimuthal anisotropy coefficients v2, v3, and v4 are obtained by the scalar-product, two-particle correlation , and multiparticle correlation methods. Within a hydrodynamic picture, these methods have different sensitivities to noncollective and fluctuation effects. The dependence of the Fourier coefficients on the size of the colliding system is explored by comparing the xenon-xenon results with equivalent lead-lead data. Model calculations that include initial-state fluctuation effects are also compared to the experimental results. The observed angular correlations provide new constraints on the hydrodynamic description of heavy ion collisions . ©2019 CERN, for the CMS Collaboration. Published by the American Physical Society under the terms of the Creative Commons Attribution 4.0 International license. Further distribution of this work must maintain attribution to the author(s) and the published article's title, journal citation, and DOI. Funded by SCOAP3.

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