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Multiparticle correlations and higher order harmonics in pPb collisions at root s(NN)=8.16 TeV

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Abstract

The elliptic and higher-order azimuthal anisotropy Fourier harmonics ($v(n)$) are obtained for pPb collisions at root s(NN) = 8.16 TeV over a wide range of event multiplicities based on multiparticle correlations. The data were collected by the CMS experiment during the 2016 LHC run. A sample of peripheral PbPb collisions at root s(NN) = 5.02 TeV covering a similar range of event multiplicities to the pPb results is also analyzed for comparison. The ratios of different harmonic moments are obtained for both $v(2)$ and $v(3)$ with high precision, which allows a direct comparison to theoretical predictions assuming a hydrodynamic evolution of the created medium with initial-state density fluctuations, particularly probing the non-Gaussian nature of initial-state fluctuations in small collision systems. The presented results provide crucial insights into the origin of collective long-range correlations observed in small collision systems.

Keywords

Author Keywords: CMS; heavy ion; cumulant; flow; collectivity; small system; quark-gluon plasma

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By: Aad, G.; Abbott, B.; Abdallah, J.; et al.
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PHYSICAL REVIEW LETTERS Volume: 116 Issue: 17 Article Number: 172301 Published: APR 27 2016
2. **Anisotropic flow of charged hadrons, pions and (anti-)protons measured at high transverse momentum in Pb-Pb collisions at $\sqrt{s_{NN}}=2.76$ TeV** Times Cited: 344
By: Abelev, B.; Adam, J.; Adamova, D.; et al.
Group Author(s): ALICE Collaboration
PHYSICS LETTERS B Volume: 719 Issue: 1-3 Pages: 18-28 Published: FEB 12 2013
3. **Distributions of charged hadrons associated with high transverse momentum particles in pp and Au+Au collisions at $\sqrt{s_{NN}}=200$ GeV** Times Cited: 8
By: Adams, J.
Phys. Rev. Lett Volume: 95 Article Number: 152301 Published: 2005
4. **System size dependence of cluster properties from two-particle angular correlations in Cu plus Cu and Au plus Au collisions at $\sqrt{s_{NN}}=200$ GeV** Times Cited: 67
By: Alver, B.; Back, B.; Baker, M. D.; et al.
PHYSICAL REVIEW C Volume: 81 Issue: 2 Article Number: 024904 Published: FEB 2010
5. **Multiparticle correlations and higher order harmonics in pPb collisions at $\sqrt{s_{NN}}=8.16$ TeV** Times Cited: 1
By: [Anonymous].
Tech. Rep Published: 2018
Publisher: CERN, Geneva
URL: <http://cds.cern.ch/record/2317409>
6. **Applying Bayesian parameter estimation to relativistic heavy-ion collisions: Simultaneous characterization of the initial state and quark-gluon plasma medium** Times Cited: 107
By: Bernhard, Jonah E.; Moreland, J. Scott; Bass, Steffen A.; et al.
PHYSICAL REVIEW C Volume: 94 Issue: 2 Article Number: 024907 Published: AUG 12 2016