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Type: **Parallel Talk**

## Measurement of the azimuthal anisotropy of charged particles in 5.02 TeV Pb+Pb and 5.44 TeV Xe+Xe collisions with ATLAS

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The experimental data collected by the ATLAS experiment during the 2015 Pb+Pb and 2017 Xe+Xe LHC runs offer new opportunities to study charged particle azimuthal anisotropy. The high-statistics Pb+Pb sample allows for a detailed study of the azimuthal anisotropy of produced particles. This should improve the understanding of initial conditions of nuclear collisions, hydrodynamical behavior of quark-gluon plasma and parton energy loss. New ATLAS measurements of differential and global Fourier harmonics of charged particles ( $v_n$ ) in 5.02 TeV Pb+Pb and 5.44 TeV Xe+Xe collisions in a wide range of transverse momenta, pseudorapidity ( $|\eta| < 2.5$ ) and collision centrality are presented. The higher order harmonics, sensitive to fluctuations in the initial state, are measured up to  $n = 7$  using the two-particle correlation, cumulant and scalar product methods. The dynamic properties of QGP are studied using a recently-proposed modified Pearson's correlation coefficient,  $\rho(v_n^2, p_T)$ , between the eventwise mean transverse momentum and the magnitude of the flow vector in 5.02 TeV Pb+Pb and  $p$ +Pb collisions. Several important observations are made. The elliptic and triangular flow harmonics show an interesting universal  $p_T$ -scaling. A linear correlation between the  $v_2$  and  $v_3$  coefficients at low and high  $p_T$  ranges is observed and quantified. The Pearson's correlation coefficient  $\rho(v_2^2)$  is found to be negative in peripheral and positive in central Pb+Pb collisions. The value of  $\rho(v_3^2)$  is found to be much smaller than  $\rho(v_2^2)$  and to have similar centrality behavior as  $\rho(v_2^2)$ .

### Content type

Experiment

### Collaboration

ATLAS

### Centralised submission by Collaboration

Presenter name already specified

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