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Azimuthal anisotropy in Pb+Pb, Xe+Xe and p+Pb collisions and vn-pt correlations in Pb+Pb and p+Pb collisions with the ATLAS experiment

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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 (up to 60 GeV), pseudorapidity ($|\eta|$<2.5) and collision centrality (0-80%) 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 elliptic and triangular flow harmonics show an interesting universal p_T-scaling. The flow results allow to improve the understanding of initial conditions of nuclear collisions, hydrodynamical behavior of quark-gluon plasma and parton energy loss. The dynamic properties of the QGP can also be studied using a modified Pearson's correlation coefficient, $\rho(v_n, p_T)$, that quantifies correlation between the mean transverse momentum and the magnitude of the flow vector. The ρ coefficient is presented for 5.02 TeV Pb+Pb and p+Pb collisions. Azimuthal anisotropy in Pb+Pb collisions is also compared with new measurements in pp and p+Pb collisions.

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