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Measurement of the correlation between flow harmonics of different order in lead-lead collisions at $\sqrt{s_{NN}}=2.76$ TeV with ATLAS

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ATLAS measurements of correlations between elliptic or triangular flow, v_m ($m=2,3$), and other flow harmonics v_n ($n=2-5$), in Pb+Pb collisions at $\sqrt{s_{NN}}=2.76$ TeV are presented. The v_m - v_n correlations are measured as a function of centrality, and as a function of varying event-geometry but fixed centrality using the “event-shape” selection technique. The measurements show that the effects of viscosity in heavy-ion collisions depend only on the collision centrality and not on the collision geometry. These measurements comprehensively demonstrate that a significant fraction of the higher order flow ($n>3$), is in fact generated from the hydrodynamic response to lower order eccentricities. The separation of the higher order flow harmonics into linear and non-linear components that are directly related to the same- and lower-order eccentricity of the initial geometry is done and their centrality dependence is measured. Comparisons to previous event-plane correlations that probe the non-linear hydrodynamic response are also presented.

On behalf of collaboration:

ATLAS

Primary author: RADHAKRISHNAN, Sooraj Krishnan (State University of New York (US))

Presenter: RADHAKRISHNAN, Sooraj Krishnan (State University of New York (US))

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