XXIV QUARK MATTER DARMSTADT 2014

Contribution ID: **227** Type: **Contributed Talk**

Elucidating the event-shape fluctuations via flow correlations and jet tomography studies in 2.76 TeV Pb+Pb collisions using the ATLAS detector

Tuesday 20 May 2014 09:40 (20 minutes)

Measurements of the distributions of event-by-event flow harmonics v_n and the correlations between harmonics v_n and v_m of different orders in $\sqrt{s_{NN}} = 2.76$ TeV Pb+Pb collisions are presented. These measurements give insight into the nature of fluctuations in the initial geometry and the role of linear and non-linear hydrodynamic response to the fluctuations, the latter can introduce correlations between flow harmonics. The study of fluctuations is also extended by measurements of the rapidity dependent fluctuations in the v_n. Furthermore, the event-by-event fluctuations in the event shape is elucidated by jet-tomography studies, where the correlations between the v_n of fully reconstructed jets and the v_m of soft particles are measured. The latter directly probes the path-length dependent jet quenching response to the variation of the event-shape controlled by bulk particles.

On behalf of collaboration:

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Session Classification: Collective dynamics

Track Classification: Collective Dynamics