Contribution ID: **387** Type: **Oral**

Measurement of the Width and Skewness of Elliptic Flow Fluctuations in PbPb Collisions at 5.02 TeV with CMS

Wednesday, February 8, 2017 2:20 PM (20 minutes)

Event-by-event participant geometry fluctuations are studied by measuring the distributions of event-by-event flow harmonics $p(v_n)$. Insight as to the nature of these fluctuations is obtained by calculating from $p(v_n)$ the cumulants and moments associated with the event shape. Flow harmonic distributions in PbPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV are measured for the integrated p_T (η) range $0.3 \leq p_T \leq 3.0$ GeV/c ($|\eta| \leq 2.4$) using the CMS detector at the LHC. The event-shape engineering technique is used to further divide events into classes based on their ellipticity, which allows for the study of detailed correlations between initial-shape components that would otherwise be destroyed by event-averaging techniques. Hydrodynamic models predict the 2^{nd} order participant eccentricity distributions to have a negative skewness, which is identified as the main source of non-Gaussian behavior in $p(v_2)$ distributions. The skewness for $p(v_2)$ distributions is measured with high precision over the full centrality range. In addition, $p(v_n)$ distributions are fitted with an elliptic power law parameterization to infer the proportionality constant between the flow harmonics and the initial-state geometry. Furthermore, correlations between different order harmonics are measured using the event-shape selection technique.

Preferred Track

Collective Dynamics

Collaboration

CMS

Primary author: CASTLE, James Robert (The University of Kansas (US))

Presenter: CASTLE, James Robert (The University of Kansas (US))

Session Classification: Parallel Session 7.3: Collective Dynamics (II)

Track Classification: Collective Dynamics