Contribution ID: **646** Type: **Parallel session talk**

Using Multivariate Cumulants to Constrain the Initial State in XeXe and PbPb Collisions at the CMS Experiment

Thursday 18 July 2024 14:45 (17 minutes)

For the first time, correlations between higher order moments of two and three Fourier flow harmonics (up to orders 8 or 10) are measured in Run 2 XeXe (deformed nuclei) and Run 3 PbPb (spherical nuclei) collisions data as a function of collision centrality. The measurements are performed with multiparticle mixed harmonic cumulants using charged particles in the pseudorapidity region $|\eta| < 2.4$ and transverse momentum range $0.5 < p_{\mathrm{T}} < 3.0$ GeV/c. The results are compared to calculations using the IP-Glasma+MUSIC+UrQMD model to constrain the initial-state deformation parameters of Xe nuclei. The higher order moments of cumulants, skewness, kurtosis, and superskewness (5th moment) are expressed through the $v_2\{2k\}$ (k = 1, ..., 5) harmonics and are measured against centrality. These moments probe the dependence of flow harmonics on the size and initial geometry of the system as well as the transport properties of the quark-gluon plasma.

Alternate track

I read the instructions above

Yes

Primary authors: DATTAMUNSI, Aryaa (Indian Institute of Technology Madras (IN)); CMS

Presenter: DATTAMUNSI, Aryaa (Indian Institute of Technology Madras (IN))

Session Classification: Heavy Ions

Track Classification: 07. Heavy Ions