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Generic algorithm for multi-particle cumulants of azimuthal correlations in high energy nucleus collisions

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Anisotropic flow is used to study the key properties and the evolution of the quark-gluon plasma (QGP) created in heavy-ion collisions and to search for a small droplet of QGP in small collision systems. One of the ways of studying these phenomena is via multi-particle cumulants of different orders. Currently, only a few of them are available and have been studied in theoretical calculations and experimental measurements as the direct implementation of higher orders have not been feasible before.

In this talk, we present a recursive algorithm to provide general formulas of multi-particle cumulants. It enables a construction of arbitrary order of single and mixed harmonic multi-particle cumulant which measures the general correlations between any moments of different flow coefficient. These variables that have been studied using a toy Monte Carlo, MC-Glauber, and HIJING transport model, can contribute to distinguishing between different initial state models and can help extracting more precisely the information of the dynamic evolution of the created hot and dense matter.

Internet talk

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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