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Recent developments in the measurements of genuine multi-harmonic correlations in Pb–Pb collisions — •Cindy Mordasini for the ALICE-Collaboration — Technische Universität München, James-Franck-Straße 1, 85748 Garching bei München

Recently, one of the fundamental steps in constraining the transport properties of the quark–gluon plasma (QGP) was the definition of the Symmetric Cumulants (SCs), which measured the genuine correlations between two different flow amplitudes. Naturally, questions like the existence of genuine correlations between more than two flow amplitudes arose. Quantifying them would provide new information on the properties of the QGP.

The approach shown here focuses on using the flow amplitudes in the cumulant expansion to define these new observables, contrary to the usual method based on the azimuthal angles[1]. This new formalism is illustrated for the three-harmonic SCs, with the first results obtained with ALICE in Pb–Pb collisions at $\sqrt{s_{\mathrm{NN}}} = 2.76$ TeV[2] and 5.02 TeV. Finally, the Asymmetric Cumulants, where the flow amplitudes are raised to different powers, will be introduced[3]. For all these observables, predictions from hydrodynamics models will be shown.

References.

1. C. Mordasini, A. Bilandzic, D. Karakoç, S.F. Taghavi, PRC 102, 024907 (2020)
2. ALICE Collaboration, arXiv:2021.02579 (2021) Submitted to PRL
3. A. Bilandzic, M. Lesch, C. Mordasini, S.F. Taghavi, arXiv:2101.05619 (2021)

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Topic: Schwerionenkollisionen und QCD Phasen
Email: cindy.mordasini@tum.de