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Measurements of Correlations between Anisotropic Flow Harmonics in Pb–Pb Collisions in ALICE

Wednesday, 30 September 2015 10:00 (20 minutes)

Anisotropic flow is one of the key observables used to probe the properties and evolution of the hot and dense matter produced in heavy-ion collisions. It was recently realized that event-by-event initial fluctuations lead to correlations between different harmonics (correlations of v_n and v_m when n m), present also in transport model calculations. The strengths of some of these correlations are much more sensitive to QGP transport properties (e.g. η/s) compared to standalone v_n measurements [1]. In this talk, we report the first ALICE measurements of the correlation strength between various anisotropic flow harmonics. The correlation strength is characterized with multi-particle cumulants of mixed harmonics, which by construction depend only on the fluctuations of magnitudes of the anisotropic flow vectors. A detailed comparison to Monte Carlo models, including AMPT and HIJING, is also presented. These studies further constrain initial conditions, the properties and the evolution of the system in theoretical calculations of heavy-ion collisions.

[1] H. Niemi, G. S. Denicol, H. Holopainen and P. Huovinen, Phys. Rev. C **87** (2013) 054901

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