

Rapidity dependent flow fluctuations at RHIC

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We study elliptic and triangular flow and their dependence on rapidity using 3+1D hydrodynamic simulations with initial conditions (Nexus) that contain realistic fluctuations in all 3 dimensions. We compare to experimental data from STAR and find that long range, two particle v_3 correlations agree reasonably well with measurements. We find that an apparent decrease of v_3 with pseudorapidity in traditional measurements is not, in fact, a dependence on η , which is negligible within the TPC acceptance, but instead is a dependence on relative pseudorapidity due to a lack of perfect correlation between v_3 at different rapidities. We also observe short-range correlations, due to rapidity dependent fluctuations in the initial condition. While the short-range correlation is slightly smaller in both magnitude and range, it serves as a demonstration that short-range correlations are not necessarily generated only by non-flow sources such as jets, but can have a significant contribution from purely hydrodynamic effects.

Preferred Track

Correlations and Fluctuations

Collaboration

Not applicable

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