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To Be (Collective) or Not to Be (Collective) - Different Theoretical Approaches to Describing Small Collisions System Observables

Tuesday 29 September 2015 14:20 (20 minutes)

We have investigated the hypothesis that small collision systems ($p+A$, $d+A$, $3\text{He}+A$) at RHIC and the LHC form small droplets of nearly inviscid quark-gluon plasma within the context of hydrodynamic models (Phys.Rev.Lett. 113 (2014) 11, 112301) and with an extension of the AMPT model (arXiv:1501.06880). We explore the constraints on such pictures and the geometric scaling by varying the hydrodynamic viscosity and transition to hadronic cascade, and in AMPT by varying the initial geometry and parton-parton interaction strength. These studies also motivate a beam-energy scan of small systems that may be carried out at RHIC in 2016. We detail predictions for the various observables in this new energy regime. These studies can provide experimental and theoretical handles for elucidating the relevant physics behind small system collectivity with important implications on such observations in large system collisions.

On behalf of collaboration:

NONE

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