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Investigation of the initial geometry description using collectivity in the AMPT model

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The motivation of geometry engineering with p, d, and 3He projectiles at RHIC is to investigate the relation between initial geometry and final momentum anisotropy, which is thought to be strong evidence of QGP. PHENIX results show the elliptic and triangular flow hierarchy in p/d/3He+Au collisions follows the eccentricity described by the MC Glauber model. However, the initial geometry of small systems is sensitive to detailed descriptions such as sub-nucleon geometry, area of energy deposition, and elastic scattering. A multiphase transport model (AMPT) can qualitatively describe the collective behavior with scatterings at partonic and hadronic stages. We utilize the AMPT to simulate small systems and investigate the correlation between initial geometry and final momentum anisotropy with different geometry descriptions. We will present the study on the relationship between the flow coefficient of produced particles and the eccentricity of initial geometry with various configurations.

Theory / experiment

Experiment

Group or collaboration name

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