

Study of the nuclear deformation at RHIC

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1 Collective phenomena in heavy-ion collisions are very sensitive to initial ge-
2 ometry including nuclei deformation effects. In the hydrodynamic model de-
3 scription of heavy ion collisions, the final-state anisotropic flow v_n are linearly
4 related to the strength of the multi-pole shape of the nucleon density distri-
5 bution in the transverse plane ϵ_n , $v_n \propto \epsilon_n$. The ϵ_n are sensitive to the shape
6 of the colliding ions, characterized by nuclear deformation. Results on the v_n
7 from various collision systems with the STAR detector will be presented. The
8 precise calculations with Monte-Carlo Glauber [1] and a multi-phase transport
9 (AMPT) model [2] could be helpful to understand the role of the shape of
10 atomic nuclei in heavy-ion collisions.

[1] Jiangyong Jia, <https://arxiv.org/pdf/2106.08768.pdf>.

[2] Giuliano Giacalone, Jiangyong Jia and Chunjian Zhang, <https://arxiv.org/pdf/2105.01638.pdf>.