

Investigation of nuclear deformation influence on anisotropic flows in heavy-ion collisions at NICA energies

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For deformed nuclei, different orientations of the projectile and target lead to different overlap regions, participant eccentricities, spectator configurations and initial density profiles. In this work, we study the influence of nuclear deformation on the initial collision geometry, anisotropic flow, and correlations between flow harmonics at collision energies relevant to the MPD experiment at NICA [1]. The analysis is performed using model data from the JAM transport model [2] and the Monte Carlo Glauber model [3]. Different deformation configurations and mutual orientations of the colliding nuclei are considered to investigate their effects on the initial anisotropy of the system, charged-particle production, and collision geometry. For each configuration the directed (v_1), elliptic (v_2), and triangular (v_3) flow coefficients were measured. Furthermore, correlations between different flow harmonics are analyzed in order to estimate the sensitivity of collective observables to deformation of the colliding nuclei.

References

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