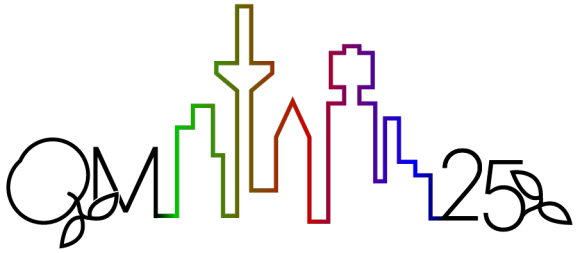

Contribution ID: **1107** Type: **Poster**

Study of Local Λ-hyperon Polarization in Relativistic Heavy-Ion Collisions Within Transport Model Approach

We present a comprehensive differential study of Λ hyperon polarization in Au+Au collisions at low and intermediate energies and different impact parameters, employing the microscopic transport model UrQMD in conjunction with the statistical hadron-resonance gas model. We show that in central collisions the resulting thermal vorticity configuration effectively manifests as the formation of two vortex rings in the forward and backward rapidity regions. As a result, the local polarization of Λ hyperons exhibits an oscillatory behaviour as a function of the azimuthal angle, reflecting the underlying symmetry of the collision system. In contrast, in non-central collisions, the directed flow significantly alters this pattern, preventing full cancellation of the opposing contributions to the polarization and resulting in a non-zero global polarization, highlighting the polarization sensitivity to the collision geometry and collective flow. We propose the measurement of the azimuthal-angle dependence of local polarization with respect to the reaction plane as a novel probe to investigate the internal structure and evolution of the fireball in central and semi-central heavy-ion collisions.

Category

Theory

Collaboration (if applicable)

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