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Model study of the energy dependence of the correlation between anisotropic flow and the mean transverse momentum in Au+Au collisions

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One of the key goals of the heavy-ion programs is to study the transport properties of the quark-gluon plasma (QGP) forming in the collisions of two nuclei, such as the specific shear viscosity η/s as a function of temperature T and baryon chemical potential μ_B. The precise extraction of such parameters may present a certain difficulties. To strengthen the constraints for η/s(T, μ_B) the modified Pearson correlation coefficient ρ(v₂²,[p_T]) between the average transverse momentum [p_T] and square of the elliptic flow coefficient v₂² might be employed.
In this work, sensitivity of the correlation coefficient ρ(v₂²,[p_T]) to the attenuation effects of the specific shear viscosity and the initial-state geometry of the collisions is studied using the UrQMD+vHLLE hybrid model to simulate Au+Au collisions. Measurements of the correlation between v₂² and [p_T] could aid precision extraction of η/s(T, μ_B) from the experimental data available at RHIC.

The speaker is a student or young scientist

Yes

Section

1. Intermediate and high energies, heavy ion collisions

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