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Baryon-Strangeness correlation in p+p and Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV in UrQMD and PYTHIA model

Baryon-strangeness (BS) correlations have been proposed as sensitive observables to probe strongly interacting matter. A particular formulation of BS correlation: $C_{BS} = -3\langle BS \rangle_c / \langle S \rangle_c^2$ (where $\langle BS \rangle_c$ is the mix-cumulant of baryon and strangeness number and $\langle S \rangle_c^2$ is the second order cumulant of strangeness) has been predicted to be unity for an ideal Quark-Gluon-Plasma (QGP). In contrast, their calculation from the hadron-resonance-gas (HRG) model yields a value around 0.6 at vanishing μ_B.

In this talk, we report a study on BS correlation (C_{BS}) in p+p and Au+Au collisions at center-of-mass energy of 200 GeV using UrQMD and PYTHIA model. Results on transverse momentum, rapidity acceptance, and multiplicity dependence of calculations will be presented. A systematic study on the effect of multi-strange baryons on the BS correlation will be reported. These results serve as important baselines for experimental data at RHIC.

Category

Theory

Collaboration (if applicable)

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