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A quasi-particle equation of state with a phenomenological critical point for heavy-ion nuclear collisions

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In this work, we propose a quasi-particle equation of state with a phenomenological critical point.
The QGP phase of the model is determined by a quasi-particle model fitting to the Lattice QCD data.
At zero baryon density, the model is smoothly connected to the hadronic resonance model.
A phenomenological critical point is implemented in such a way when the baryon density increases and passes a critical value, the phase transition turns from a crossover into a first order phase transition.
We apply the model to the study of relativistic heavy-ion collisions numerically by using a hydrodynamic model.
The impact of the existence of the phenomenological critical point is addressed.

Summary

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