

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

Wednesday 21 March 2018 10:10 (20 minutes)

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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