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Effects of critical point on key observables from 3+1 D EbE hybrid simulations

The Quark Gluon Plasma (QGP) has been produced systematically in relativistic heavy ion collisions during the last decades. Despite this, one of the most important question about quark matter is still open: the existence and location of a critical point in the QCD phase diagram.

At high energies, such as 200 GeV A at RHIC or a few TeV at LHC, the region of the QCD phase diagram being probed is, (at mid-rapidity), that of high temperature and almost zero baryonic chemical potential.

In order to explore other regions of the QCD phase diagram, on the experimental side, many efforts are being done or planned at various laboratories and accelerators.

In this work, we study three of the promising observables for detecting the critical point or a first-order phase transition line: anisotropic flow in the longitudinal direction, cumulants of conserved charge and HBT radii.

Using a state-of-the-art 3+1 D simulation we aim to investigate the behavior of these observables comparing results with and without critical point on several RHIC energies.

Category

Theory

Collaboration (if applicable)

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