

Scaling functions for the Inverse Compressibility near the QCD critical point

The QCD phase diagram can be mapped out by studying fluctuations and their response to changes of the temperature and baryon chemical potential. Theoretical studies [1] indicate that the cumulant ratios C_n/C_m , used to characterize the fluctuation of conserved charges, provide a valuable probe of deconfinement and chiral dynamics, as well as for identifying the position of the critical end point (CEP) in the QCD phase diagram. The ratio C_1/C_2 , which is linked to the inverse compressibility, vanishes at the CEP due to the divergence of the net quark number fluctuations at the critical point belonging to the Z(2) universality class [1]. Therefore, its associated scaling function can give insight on the location of the critical end point, as well as the critical exponents required to assign its static universality class. Scaling functions for the ratio C_1/C_2 , obtained from net-proton multiplicity distributions for a broad range of collision centralities in Au+Au ($\sqrt{s_{NN}} = 7.7 - 200$ GeV) collisions, will be presented and discussed.

[1] B. Stokic, B. Friman and K. Redlich,
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Preferred Track

Correlations and Fluctuations

Collaboration

Other

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