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Critical point and Columbia plot from functional QCD

In the past year, results for the location of the critical point from different approaches seem to converge towards previous predictions from functional QCD. We summarise recent theoretical results of the latter approach on the Columbia plot [1], the QCD phase diagram and the location of the critical point at finite baryon chemical potential [3]. We highlight our efforts to systematically gauge the approach by making contact with lattice results at zero and imaginary chemical potential [2] in various regions of the Columbia plot [1]. We furthermore discuss steps towards making contact with experiment via baryon number fluctuations [4].

[1] J. Bernhardt and C. S. Fischer, Phys. Rev. D 108 (2023) no.11, 114018

[2] J. Bernhardt and C. S. Fischer, Eur. Phys. J. A 59 (2023) no.8, 181

[3] P. J. Gunkel and C. S. Fischer, Phys. Rev. D 104 (2021) no.5, 054022

[4] P. Isserstedt, M. Buballa, C. S. Fischer and P. J. Gunkel, Phys. Rev. D 100 (2019) no.7, 074011

Category

Theory

Collaboration (if applicable)

Primary author: Prof. FISCHER, Christian (University of Giessen, Germany)

Presenter: Prof. FISCHER, Christian (University of Giessen, Germany)

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