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QCD phase diagram and baryon number fluctuations from DSEs

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We present new results for fluctuations of the baryon number for QCD with $N_f=2+1$ quark flavours at non-zero temperature and chemical potential [1]. These are extracted from a framework based on a combination of lattice QCD and Dyson-Schwinger equations. In previous works ([2], see [3] for a review) we found a critical end point in the region $(T^c, \mu_B^c)=(120,500)$ MeV. We discuss the changes of ratios of fluctuations up to fourth order along and below the transition line for temperatures and baryon chemical potential up to and beyond the critical end point. Comparing with preliminary STAR data for the skewness and kurtosis ratios, our results are compatible with the scenario of a critical end point at large chemical potential and slightly offset from the freeze-out line. We also discuss the caveats involved in this comparison.

[1] P.Isserstedt, M.Buballa, C.S.Fischer, P.Gunkel, arXiv:

[2] C.S.Fischer, J.Luecker and C.A.Welzbacher, Phys. Rev. D 90 (2014) no.3, 034022

[3] C.S.Fischer, Prog. Part. Nucl. Phys. 105 (2019) 1

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