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Abstract content
 (Max 300 words)
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Thermodynamic properties of the quark-gluon plasma have been the subject of extensive numerical and analytical work over the past decades. Monte Carlo lattice calculations have made great progress; in particular for the pure SU(3) gluon plasma, which serves as a benchmark for theoretical descriptions of full QCD. Nonetheless, ‘artifacts’ of this coarse-grained approach lead to uncertainties near the (phase) transition at $T \sim 260$ MeV, which are closely related to the divergences encountered in perturbation theory in the continuum limit. The latter must first be regularised and then renormalised, which we propose to do by comparing to the QCD trace anomaly. Fixing the analytic results at a semi-perturbative temperature, we find the bulk properties tend towards the free limit more gradually than has been presented in recent lattice findings. This discrepancy is actually crucial to understand because it emerges from a well-defined limit, in which both treatments can do ‘precision physics’.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

MSc

Main supervisor (name and email) and his / her institution

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