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Topological features of the deconfinement transition in quenched QCD

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The QCD crossover is marked by the rapid change in various observables such as the chiral condensate, the Polyakov loop or the topological susceptibility. We studied the topological properties in pure SU(3) gauge theory where the transition is first order.

Our study focused on the topological susceptibility and the b_2 coefficient of the expansion of the free energy density around $\theta = 0$. There was already some evidence for the discontinuity in the topological susceptibility at the transition temperature in SU(N) Yang-Mills theories. We determined the continuum extrapolated value of this discontinuity for $N = 3$ in the infinite volume limit. We also determined the temperature dependence of the b_2 coefficient directly at $\theta = 0$ and by using information from imaginary θ simulations.

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