# Lattice study of the critical point in heavy-quark QCD

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We study phase structure and critical point of QCD with heavy quarks at nonzero temperature by lattice QCD Monte Carlo simulations. We perform numerical simulations with large spatial volumes up to the aspect ratio $N_s/N_t = 15$. The large spatial volume allows us to investigate the scaling behavior around the critical point in detail. To realize the large-volume simulations, we employ rather coarse lattices with $N_t = 4, 6$ and adopt the hopping parameter expansion up to the next-to-leading order for the quark determinant. Through the Binder cumulant analysis, we show that the finite-size scaling of the Z(2) universality class around the critical point is confirmed with high precision. We also find that the correct scaling behavior is observed only on large lattices, and larger volumes are needed as the lattice spacing becomes finer.

References:
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