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On the universal $O(N)$ scaling behavior of $(2+1)$ -flavor QCD

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We analyze the universal scaling behavior of $(2+1)$ -flavor QCD in terms of various scaling functions corresponding to the magnetic equation of state, the specific heat and generalized quark number susceptibilities.

Lattice simulations on $N_t=4$ and $N_t=8$ lattices with improved staggered fermions within a wide range of quark masses have been performed and are fitted to the scaling functions. In general we find good agreement with $O(N)$ universal scaling for light quark masses which are smaller or about the physical masses. The scaling naturally includes Goldstone behavior in the chiral condensate.

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talk

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