The chiral transition in two-flavor QCD

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Abstract: QCD with N_f=2 is a specially interesting system to investigate the chiral transition. The order of the transition has still not been established. We report the results of an in-depth numerical investigation performed with staggered fermions on lattices with N_t=4 and N_s=12,16,20,24,32 and quark masses am_q ranging from 0.01335 to 0.307036. Using finite-size techniques we compare the scaling behavior of a number of thermodynamical susceptibilities with the expectations of an O(4) and O(2) universality classes. Clear disagreement is observed. Some hints of a first order transition are found. Preliminary reports of this work were presented at past Lattice conferences.