Study of two color QCD on large lattices

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Purpose To study deconfinement phase transition in QCD at large value of chemical potential.

Outline We study two colors lattice QCD (QC_2D) with two flavors of staggered fermions on 40^4 and 32^4 lattices with lattice spacing a=0.048 fm in the wide range of the quark chemical potential μ_q. Our focus is on the confinement-deconfinement transition in this theory. Thus we compute the string tension from the Wilson loops and the static quark free energy from the Polyakov loops.

Result We find that the deconfinement transition found earlier in the range $\mu_q \approx 800 - 1000$ MeV is shifted to higher values. This shift is attributed to decreasing of the temperature used in our simulations in comparison with earlier study.

Computing system: OCTOPUS

node-hour	1129 node-hour
memory used	595 GB
vector per	100 %
parallelize	3 node