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Complex Langevin simulations of QCD: the effects of dynamical stabilization

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Simulating full QCD for non-zero chemical potential introduces a sign-problem, which we here circumvent using the Complex Langevin method. At lower temperatures, the simulations are unstable, therefore the dynamical stabilization was proposed, which is a soft cutoff in imaginary directions of the complexified field manifold. Before simulating full QCD, we look at a simpler toy-model to study the bias which the dynamical stabilization introduces. We find that extrapolation to zero stabilization force is possible and gives good results. Similar behavior is observed in QCD for a slightly modified stabilization force.

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