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Testing dynamic stabilization in complex Langevin simulations

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Complex Langevin methods have been successfully applied in theories that suffer from a sign problem such as HDQCD. We present and illustrate a novel method that ensures that Complex Langevin simulations stay close to the $SU(3)$ manifold, which lead to correct and improved results in the framework of HDQCD and pure gauge simulations. Applying the same technique in fully dynamical QCD simulations shows great potential to allow the determination of the phase diagram from first principles.

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