

Seminar

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Complex Langevin simulations of a finite density matrix model for QCD

We study the Stephanov model, which is an RMT model for QCD at finite density, using the Complex Langevin algorithm. The Langevin algorithm (Stochastic Quantization) is not based on Markov Chain Monte Carlo methods and consequently does not suffer from the infamous sign problem that hampers studies at finite baryon density. Naive implementation of the algorithm shows convergence towards the phase quenched or quenched theory rather than to the intended theory with dynamical quarks. A detailed analysis of this issue and a potential resolution of the failure of this algorithm are discussed. We study the effect of gauge cooling on the Dirac eigenvalue distribution and time evolution of the norm for various cooling norms, which were specifically designed to remove the pathologies of the complex Langevin evolution. The cooling is further supplemented with a shifted representation for the random matrices. Additionally, we study the newly proposed deformation technique and a novel form of reweighting.

Donnerstag, 12.04.2018, 14:15 Uhr

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