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Complex Langevin Dynamics for a Random Matrix Model of QCD at finite density

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We study a Random Matrix Model for QCD at finite density via Complex Langevin dynamics. This model has a phase transition to a phase with non-zero baryon density. We study the convergence of the algorithm as a function of the quark mass and the chemical potential and focus on two main observables: the baryon density and the chiral condensate. As expected, for simulations close to the chiral limit, the algorithm has wrong convergence properties when the quark mass is in the spectral domain of the quenched Dirac operator. Possible solutions of this problem are discussed.

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