

## Ensemble Quasi-Newton HMC

*Monday, July 23, 2018 2:40 PM (20 minutes)*

We present a modification of the hybrid Monte Carlo algorithm for tackling the critical slowing down of generating Markov chains of lattice gauge configurations towards the continuum limit. We propose a new method to exchange information between an ensemble of Markov Chains, and use it to construct an approximate inverse Hessian matrix of the action inspired from Quasi-Newton algorithms for optimization. The kinetic term of the molecular dynamic evolution includes the approximate Hessian for long distance couplings among the momenta. We will show the result of applying the new algorithm to the U(1) gauge theory in two dimensions, and discuss our future plans.

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