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Testing new Monte Carlo evolution algorithms in Grid

Thursday, 14 December 2017 12:30 (20 minutes)

I will present the preliminary tests on two modifications of the Hybrid Monte Carlo (HMC) algorithm. Both algorithms are designed to travel much farther in the Hamiltonian phase space for each trajectory and reduce the autocorrelations among physical observables thus tackling the critical slowing down towards the continuum limit. We present a comparison of costs of the new algorithms with the standard HMC evolution for pure gauge fields, studying the autocorrelation times for various quantities including the topological charge. Both algorithms were implemented using the next generation Grid Data Parallel code developed by the University of Edinburgh and designed to achieve optimal performance on a wide range of architectures. I will discuss some of Grid features.

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