Lattice2010



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Exact Calculation of Disconnected Loops

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The exact computation of the disconnected diagram contribution to a number of hadronic observables, such as the eta prime mass and the nucleon isoscalar form factors, is considered to explicitly expose the gauge noise associated with these diagrams. A Wilson action on lattices of SU(3) SESAM gauge field configurations with two dynamical flavors and a volume of 16^3X32 are utilized. An exact inversion method is employed to perform O(10^6) inversions of the Wilson-Dirac matrix per configuration. To accelerate computations, GPGPU technology is exploited by utilizing conjugate gradient solvers on the NVIDIA CUDA platform. A modified interface to QUDA library is employed which provides mixed precision implementations of both CG and BiCGstab algorithms. In particular, it allows one to achieve a performance level in excess of 100 Gflop/s with respect to NVIDIA GT200 micro-architecture.

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Talk

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