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MILC code performance on high end CPU and GPU supercomputer clusters

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With recent developments in parallel supercomputing architecture, many core, multi-core, and GPU processors are now commonplace resulting in more levels of parallelism, memory hierarchy, and programming complexity. It has been necessary to adapt the MILC code to these new processors starting with NVIDIA GPUs and more recently the Intel Xeon Phi processors. We report on our efforts to port and optimize our code for the Intel Knights Landing architecture. We consider performance of the MILC code with MPI and OpenMP, and optimizations with QOPQDP and QPhiX. For the latter approach we concentrate on the staggered conjugate gradient and gauge force. We also consider performance on recent NVIDIA GPUs using the QUDA library.

Title

MILC code performance on high end CPU and GPU supercomputer clusters

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