

Communication-avoiding optimization methods for fermion matrix inverters

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The global all-to-all communications in the Krylov subspace iterative methods is one of the major performance-limiting factors on large-scale parallel machines. In this report we give a brief overview of recent algorithmic approaches to mitigate communication cost in the iterative solvers. We present several variants of communication-optimized fermion matrix inverters implemented in the QUDA library. Finally, we will discuss a few possible scenarios of utilizing exascale-ready algorithms from the Trilinos framework for LQCD applications.

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