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Progress Report on Staggered Multigrid

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As the push towards the exascale enables increasingly accurate lattice calculations, the inversion of the Dirac matrix becomes a superlinearly growing expense. Adaptive algebraic multigrid (AAMG) methods for all fermion discretizations are essential to address this phenomena of critical slowing down. As a preconditioner, AAMG expedites Dirac matrix inversions with manageable start up costs. This is important for modern lattice measurements which require the efficient computation of an increasing number of Dirac propagators. In this talk we will discuss progress towards the development of an AAMG algorithm for staggered fermions based upon the successful implementation of Wilson-Clover multigrid. Optimal performance is being sought in the QUDA library on GPUs.

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