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Block Solver for multiple right hand sides on NVIDIA GPUs

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Analysis tasks in Lattice QCD often requires solving linear equations for multiple right hand sides for a constant gauge field. Recently deflation methods have become more widely used and proven to be very efficient. They however do require the calculation and storing of eigenvectors which is either not always feasible or too expensive. Here we present results for an implementation of a block solver for multiple right hand sides using the QUDA library for QCD on NVIDIA GPUs. By making use of the gauge field reuse in the Dslash operator, mixed precision approaches and block Krylov space methods they do provide outstanding solver performance. We present results on NVIDIA's most recent Pascal architecture.

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