

Solving Domain Wall Dirac Equation Using Multisplitting Preconditioned Conjugate Gradient

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We show that using the multisplitting algorithm as a preconditioner for the conjugate gradient inversion of domain wall fermion Dirac operators effectively reduces the inter-node communication cost, at the expense of performing more on-node floating point operations. Compared to Schwarz domain decomposition solver algorithms our approach enforces Dirichlet boundary conditions consistently on the normal preconditioned operator. This method would be useful for lattice Monte Carlo evolutions on supercomputers with far more on-node flops than inter-node communication bandwidth.

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