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E4: Performance of several Lanczos eigensolvers with HISQ fermions

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Recent improvements in the numerical lattice simulation have been achieved by making use of the eigenvalue spectrum of the lattice Dirac operator or its variants. The Lanczos algorithm has been employed for that purpose, and the lattice community has studied its improvements with different approaches. We investigate state-of-the-art Lanczos eigensolvers available in the Grid and the QUDA libraries, which include Implicitly Restarted Lanczos, Multi-Grid Lanczos (or Local Coherence Lanczos), Block Lanczos, and Thick Restarted Lanczos. We measure and analyze their performances with the HISQ Dirac operator.

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