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An improved method for quantum matrix multiplication. (English) Zbl 07725892

Summary: Following the celebrated quantum algorithm for solving linear equations (so-called HHL algorithm), A. M. Childs et al. [SIAM J. Comput. 46, No. 6, 1920–1950 (2017; Zbl 1383.68034)] provided an approach to solve a linear system of equations with exponentially improved dependence on precision. In this note, we aim to complement such a result for applying a matrix to some quantum state, based upon their Chebyshev polynomial approach. A few examples that motivate this application are included, and we further discuss an application of this improved matrix application algorithm explicitly with an efficient quantum procedure.

MSC:
81P68 Quantum computation

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References:

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