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Quantum algorithms for large-scale problems

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Abstract

In view of the significant progress made on the hardware side of quantum computing, unravelling the potential of large-scale quantum computers, and especially discovering compelling applications that can justify the huge amount of effort, time and investments needed in the next decades for their development, is a pressing issue. In this talk I will give an overview of the vibrant research field of quantum algorithms for large-scale quantum computers. I will in particular discuss exciting recent developments, such as quantum algorithms for string problems with potential applications to bioinformatics, quantum algorithms for graph problems with potential applications to big data, and quantum algorithms for algebraic problems such as matrix multiplication and eigenvalue estimation.