

Advances in quantum computation of perturbative QFT scattering

Perturbative QFT calculations can pose considerable computational challenges at higher orders and higher multiplicities. At the same time, the inherently quantum-mechanical nature of these calculations makes them promising candidates to exploit the qualitatively new computational capabilities of emerging quantum computing hardware. In this talk I will present recent advances in quantum computer algorithms for perturbative QFT calculations, including early hints that such machines could eventually outperform classical computers in this domain. Demonstrations are performed on state-of-the-art quantum computers with $O(100)$ qubits. We anticipate that in time the work can lead to improved reach and precision for perturbative QFT predictions.

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