

Abstract Submitted  
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**Quantum Phase Estimation Algorithm on Heisenberg-Type Hamiltonians and Possible Optimizations** SCOTT JOHNSTUN, JEAN-FRANCOIS VAN HUELE, Brigham Young University — The Quantum Phase Estimation Algorithm is an algorithm of fundamental importance in quantum computation. It can be used to break RSA encryption, perform efficient database searches, and simulate quantum Hamiltonians. We review the algorithm as well as two optimizations based on circular statistics and iterative methods to improve its performance on quantum computers. We then choose a Heisenberg Hamiltonian and use it to demonstrate these optimizations through simulations and experiments on publicly available IBM quantum computers.

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