Numerical Comparison and Utilization of Riemann Gradient Descent

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Problem Statement

- ❑ Fully quantum gradient descent algorithm
- ❑ Resource efficient and faster

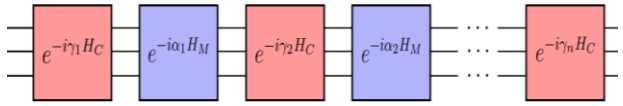
Methods

- ❑ Numerical Implementation
- ❑ Ran on Max Cut Hamiltonian and Randomly Populated Pauli Hamiltonians

Conclusions

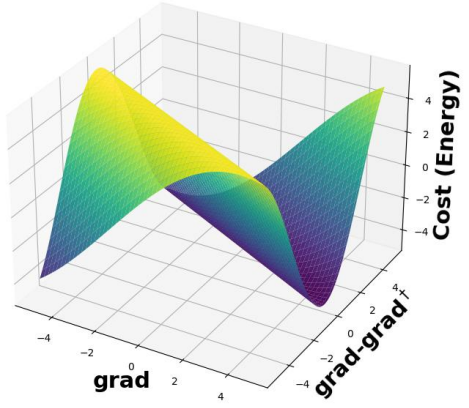
- ❑ Iterations until convergence scales with matrix spectral norm for Max Cut
- ❑ n^2 and n^3 have solve slower than fully populated Pauli Hamiltonian

Quantum Circuit

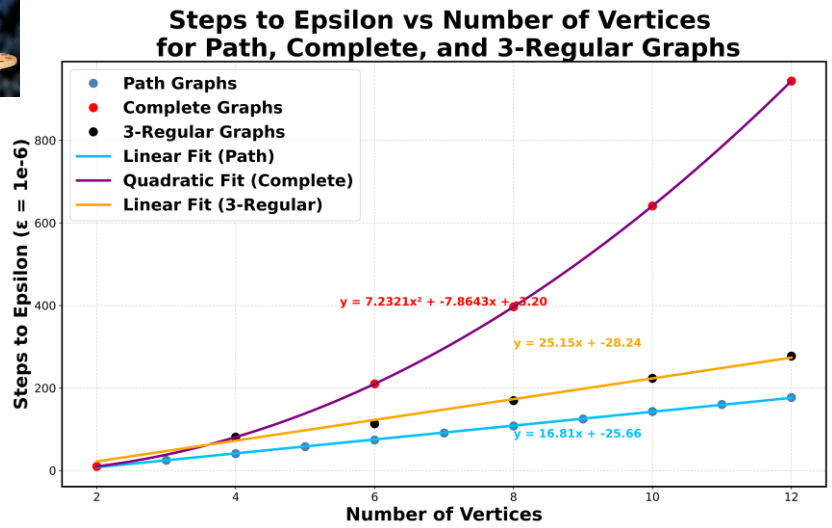


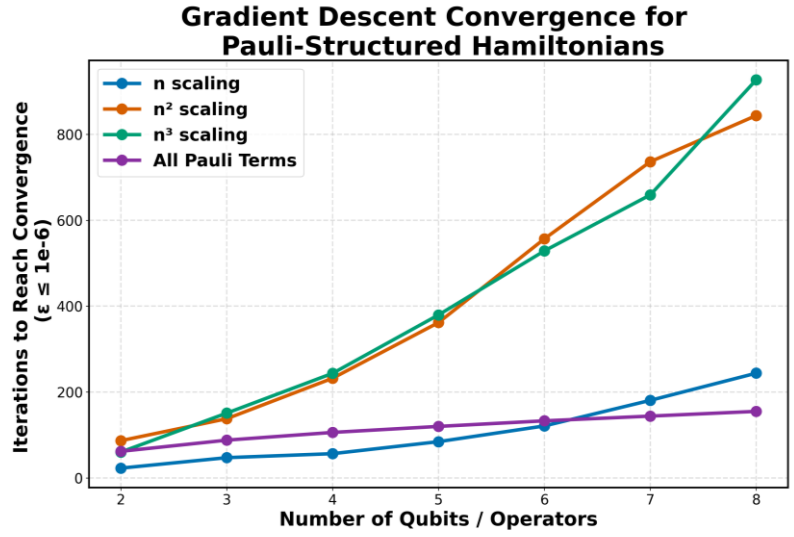
QAOA circuit from pennylane.ai

Cost Landscape



Preliminary Results





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