

Variational Quantum Eigensolver - SQUANDER -

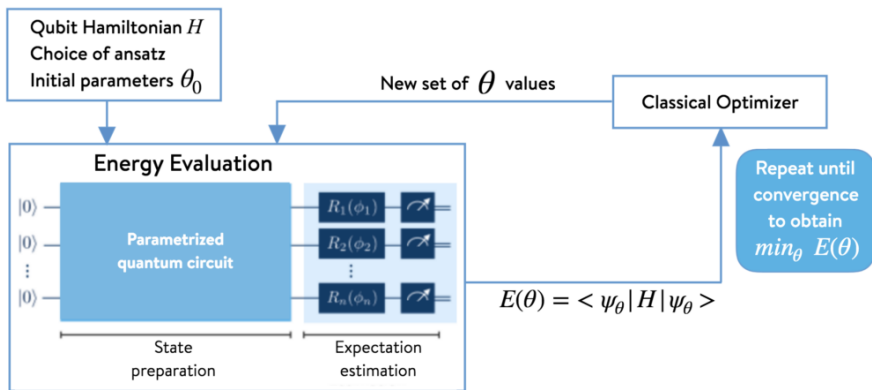
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Scientific Modelling Computer Laboratory
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Variational Quantum Eigensolver (VQE)

Recap

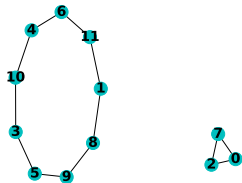


Source: qmunity.thequantuminsider.com

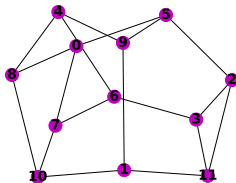
Random regular graphs as \hat{H}

Optimization results

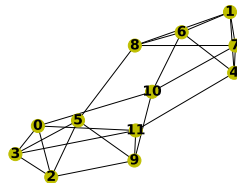
d=2



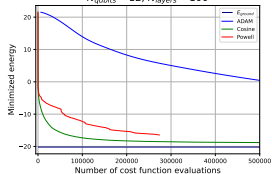
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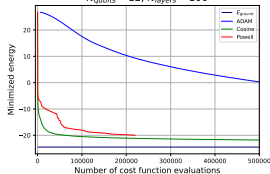
d=4



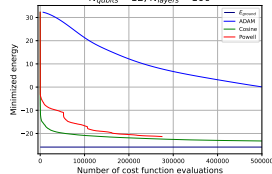
d=2
 $N_{\text{qubits}} = 12, N_{\text{layers}} = 100$



d=3
 $N_{\text{qubits}} = 12, N_{\text{layers}} = 100$



d=4
 $N_{\text{qubits}} = 12, N_{\text{layers}} = 100$



- Changing the *random seed* of the network generation process.
- Run simulation with *ADAM*, *Powell* and *Batched Line Search* methods.
- Compare the results.