Near-term quantum chemistry relies on hybrid quantum-classical algorithms.

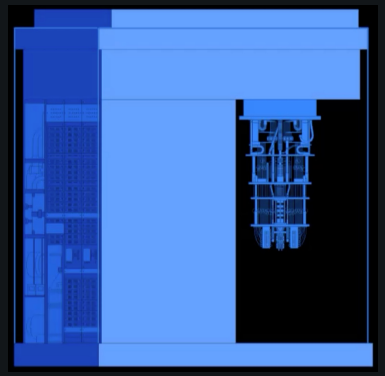
Qiskit

Molecular Hamiltonian (physics) → Map to qubits (quantum circuit) → Variational quantum chemistry (VQE) → Molecular properties (ground state energy)

Update parameters θ with classical optimizers

Propose circuit parameters for trial state $|\psi(\theta)\rangle$

$E(\theta)$



Prepare trial state on quantum computer and measure Hamiltonian terms

θ

Estimate energy $E(\theta)$ of trial state