Open source variational quantum eigensolver (OpenVQE)

Extension of the quantum learning machine (QLM) for quantum chemistry

Tutorial: OpenVQE training session

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What is OpenVQE ?

Open Source Variational Quantum Eigensolver package for Quantum Chemistry that based on the tools provided in MyQLM-fermion package.

Why is OpenVQE ?

The combined OpenVQE/ myQLM-fermion libraries facilitate the implementation, testing and development of variational quantum algorithms.

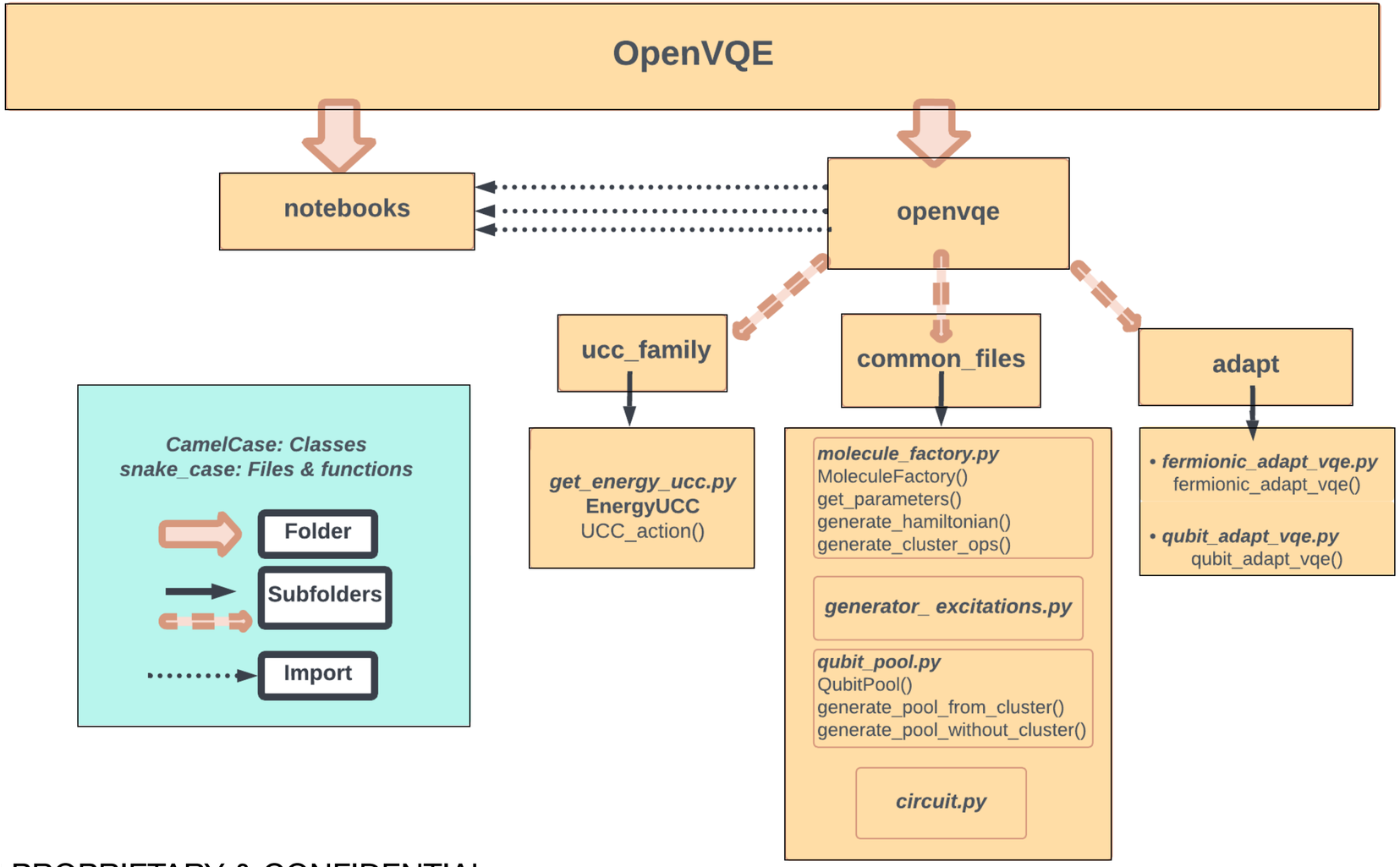
Interoperability packages with MyQLM

MyQLM library provides binders to connect with the other Python-based quantum frameworks: MyQLM_interoperability

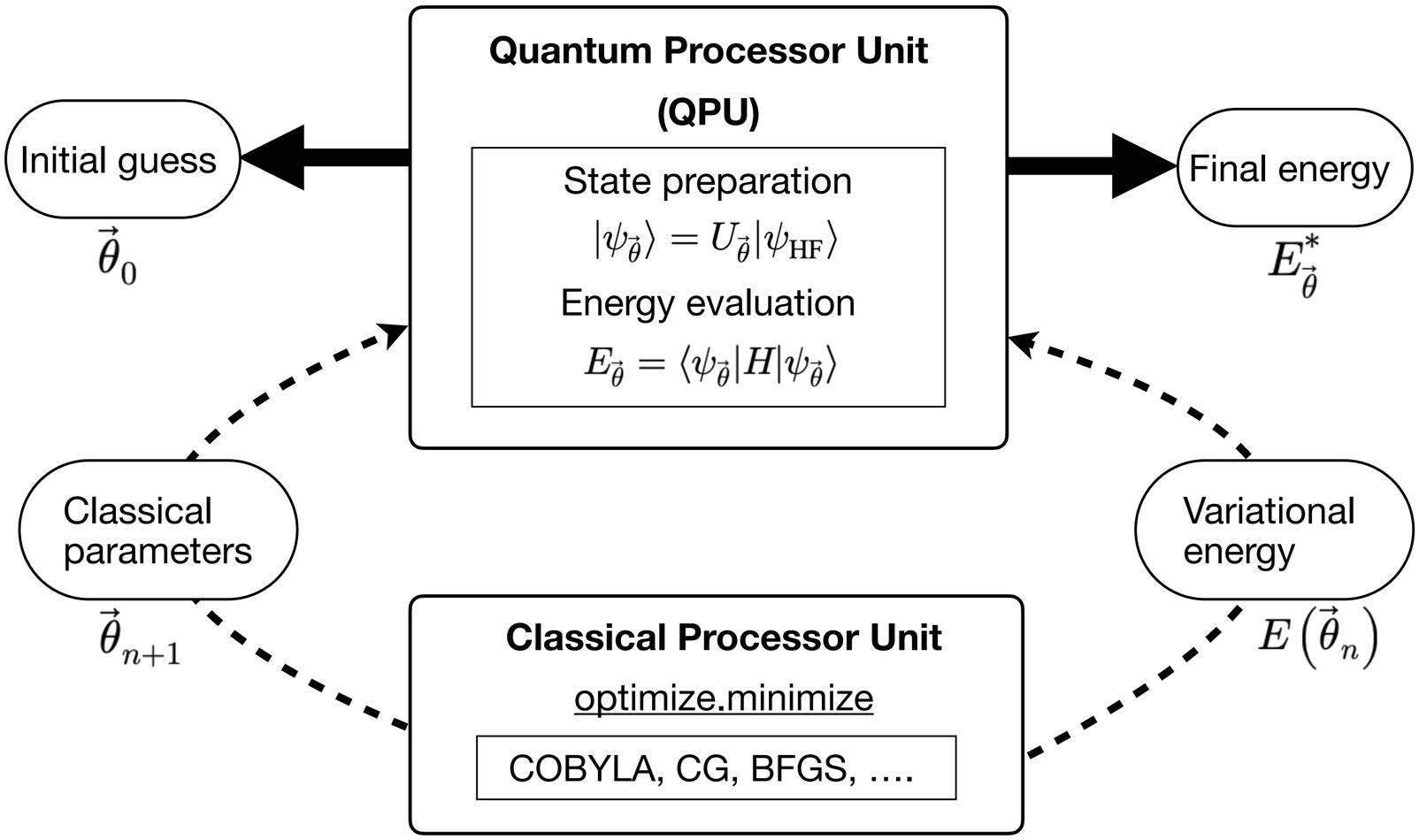
FrameWork		Qiskit	OpenQasm	PyQuit(no py 3.6)	Project Q	Cirq
Circuit translation	to QLM	Yes	Yes	Yes	Yes	Yes
	From QLM	Yes	No	Yes	No	Yes
QPU connection	to QLM	Yes	N/A	Yes	No	No
	From QLM	Yes		No	No	No

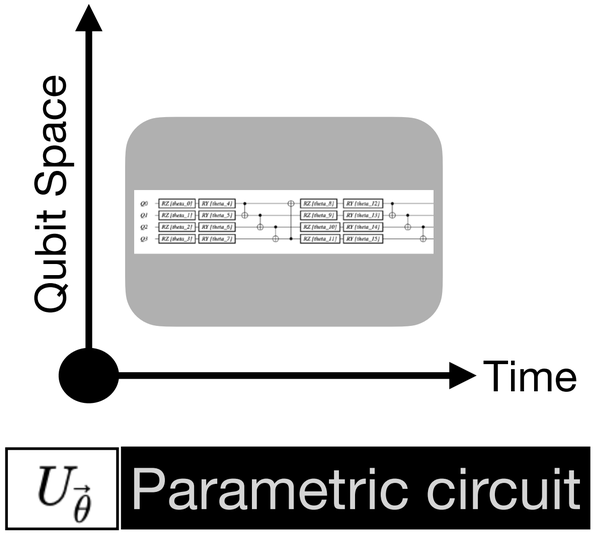
Flowchart of the OpenVQE Package

The code is given in our Github repository and documentation

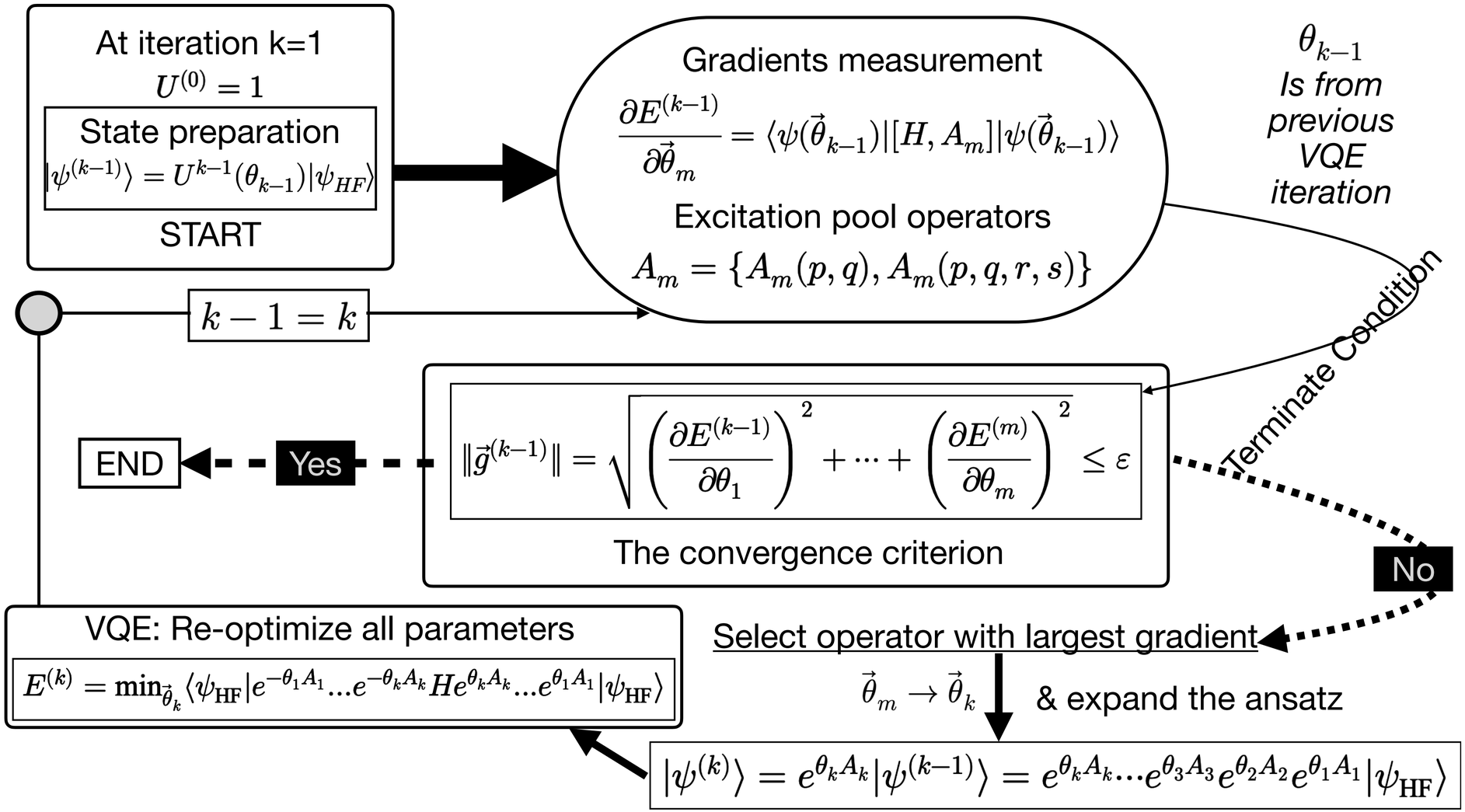


Flowchart of the VQE algorithm





Flowchart of the ADAPT VQE algorithm



State of the art

Empowering impactful projects via OpenVQE.

- More than **35** contributors from different countries: Europe, US, Asia
- Noiseless Schrödinger-style dense simulator can reach up to **41** qubits for any circuit
- **13** citations from the published paper
- Non-profit organisation, aim for education

Wiley review https://doi.org/10.1002/wcms.1664