

**Open source
variational quantum
eigensolver (OpenVQE)**

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

**Tutorial: OpenVQE
training session**

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Atos





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.



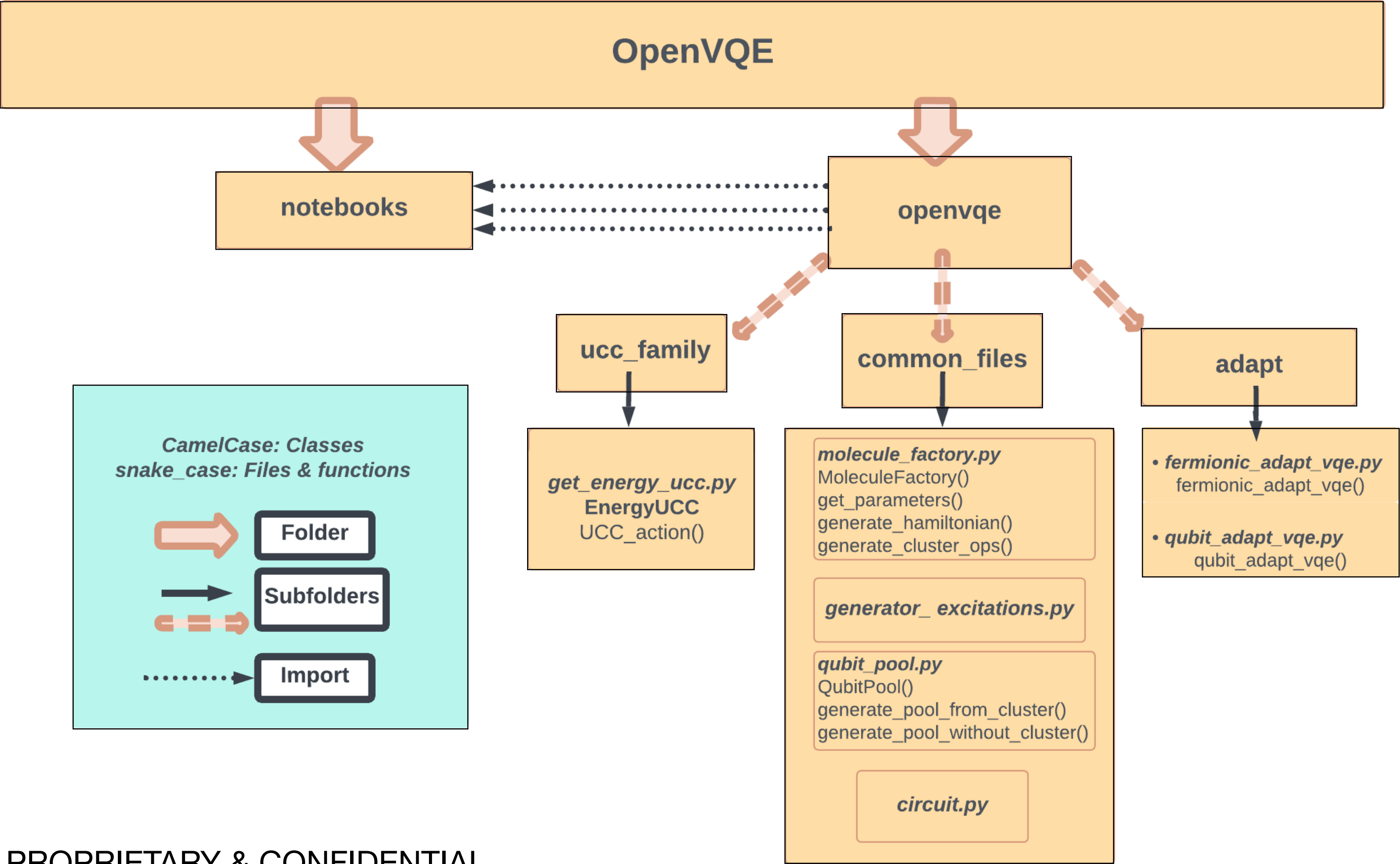
Interoperability packages with MyQLM

MyQLM library provides binders to connect with the other Python-based quantum frameworks: [MyQLM interoperability](#)

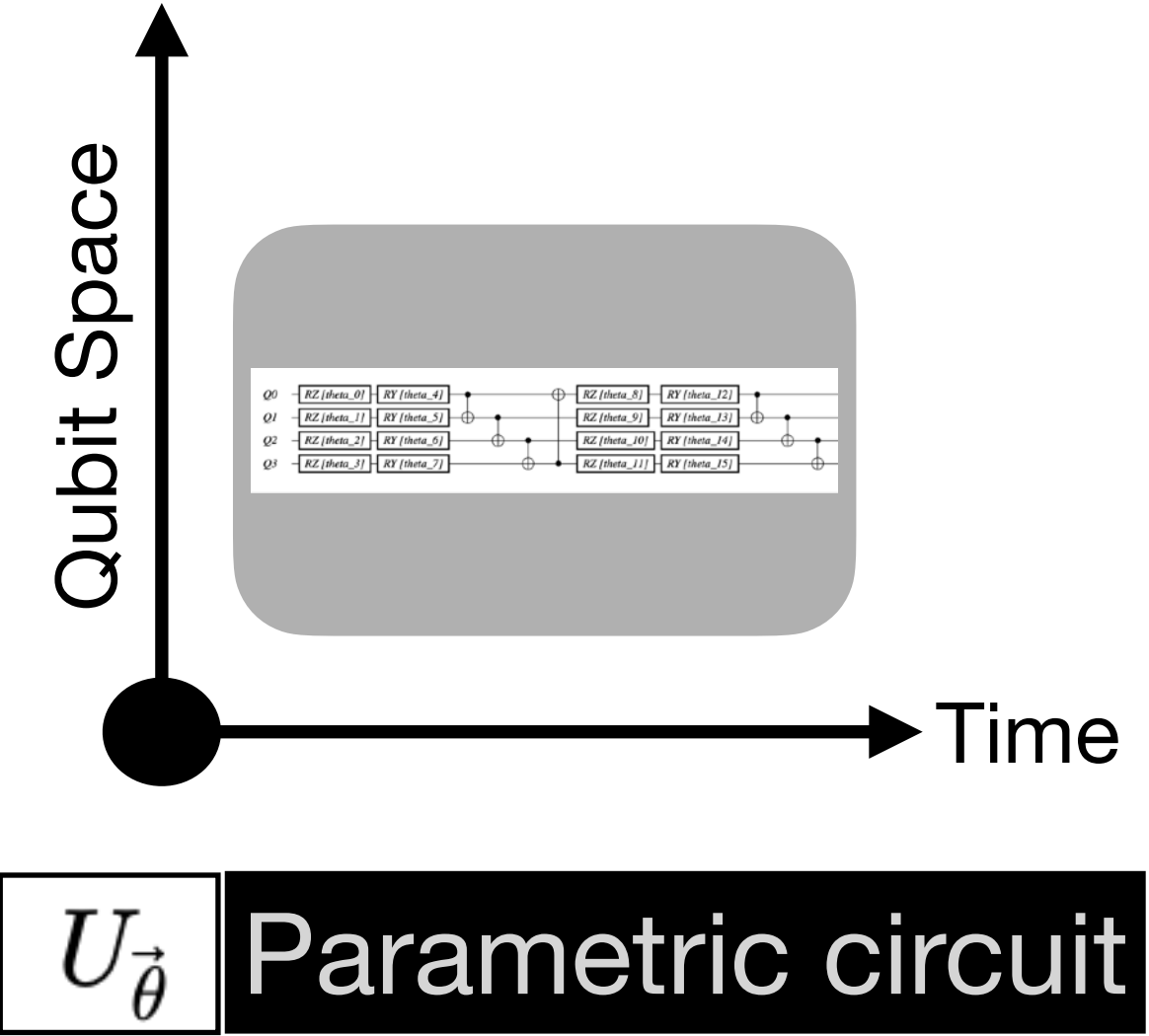
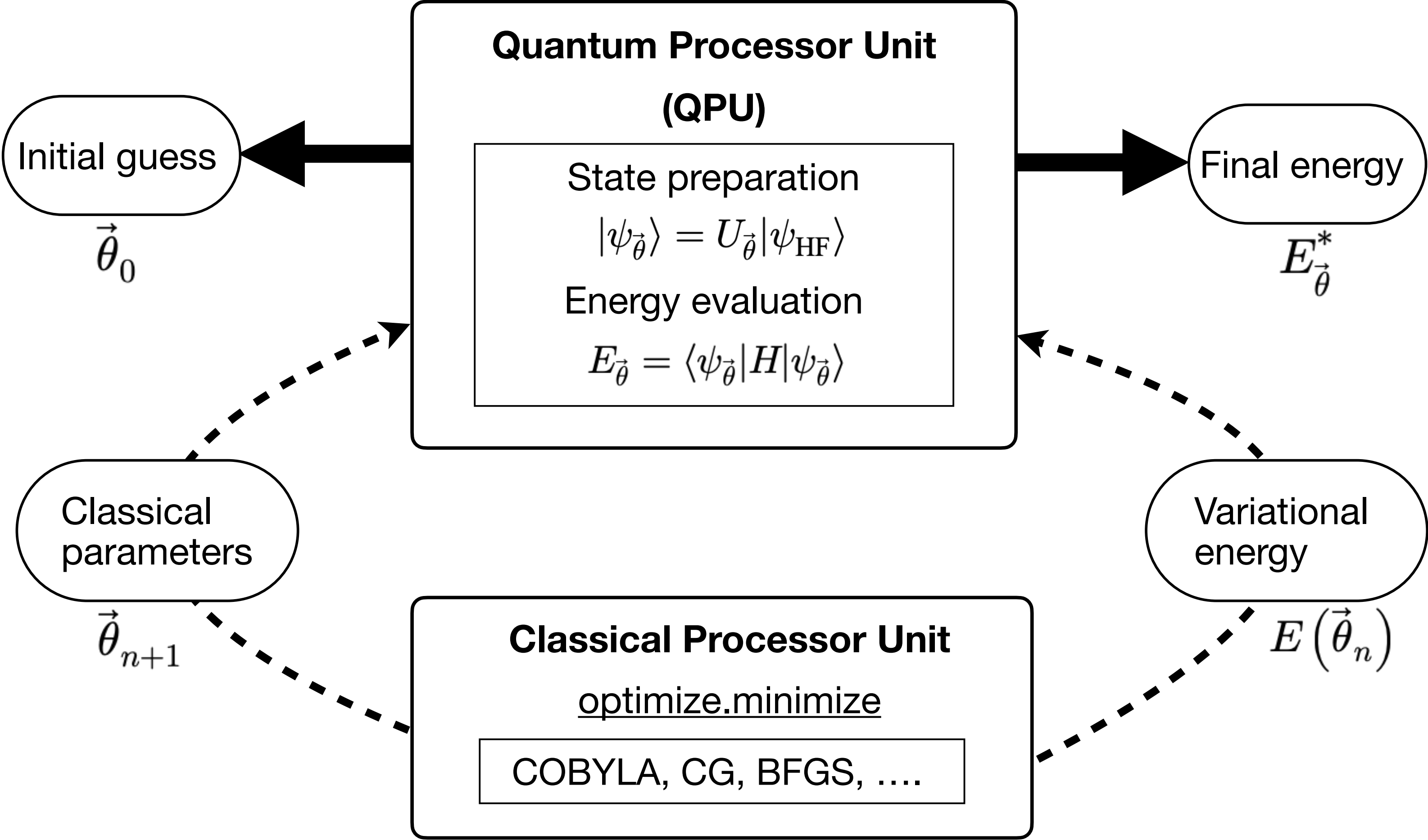
FrameWork		Qiskit	OpenQasm	PyQuit(no py 3.6)	Project Q	Cirq
Circuit translation	to QLM	Yes	Yes	Yes	Yes	Yes
	From QLM	Yes	No	Yes	No	Yes
QPU connection	to QLM	Yes	N/A	Yes	No	No
	From QLM	Yes		No	No	No

Flowchart of the OpenVQE Package

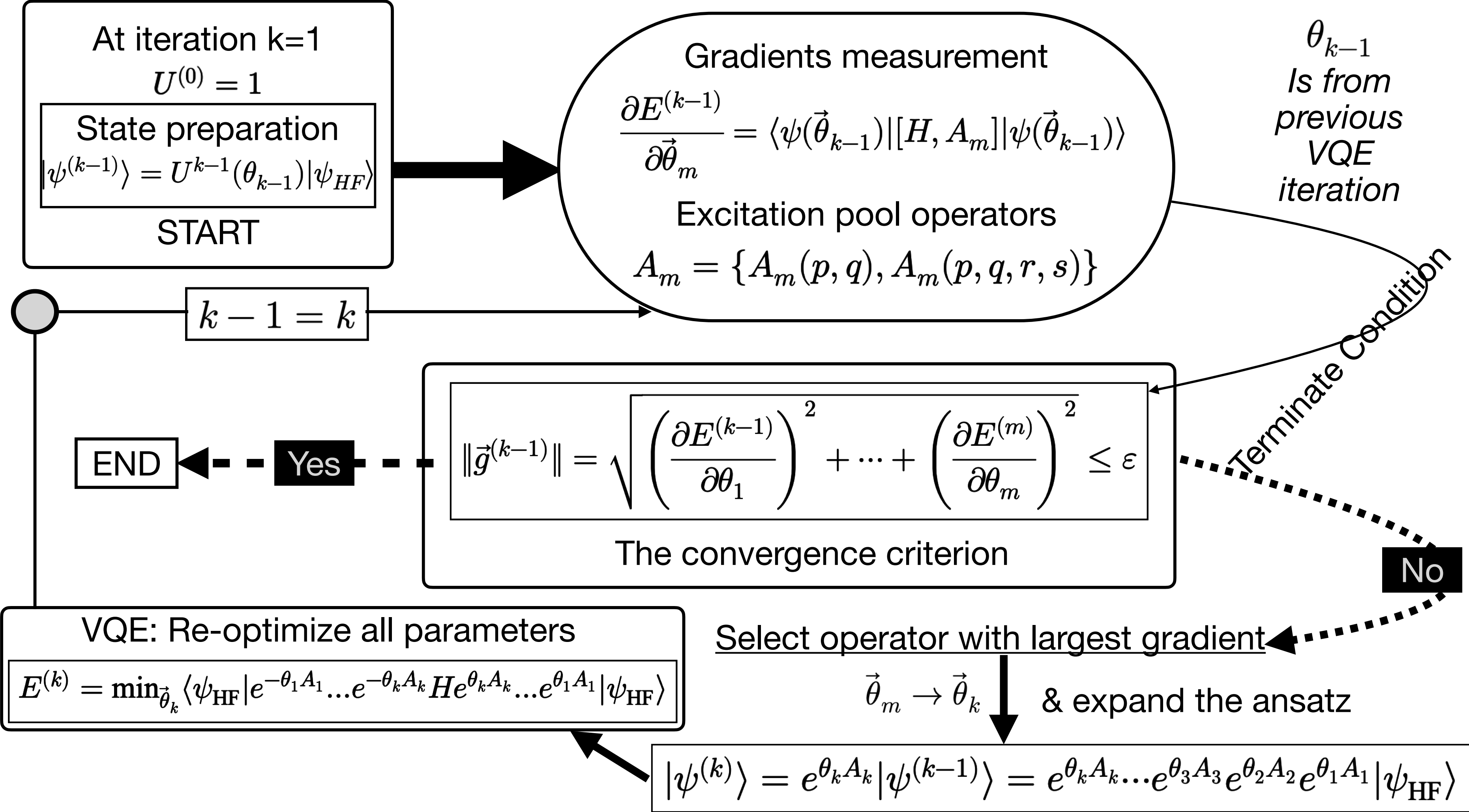
The code is given in our Github repository and documentation



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
- **4** published papers from the author
- Non-profit organisation, aim for education



Wiley review

<https://doi.org/10.1002/wcms.1664>