

# IBM Mentorship Program 2022

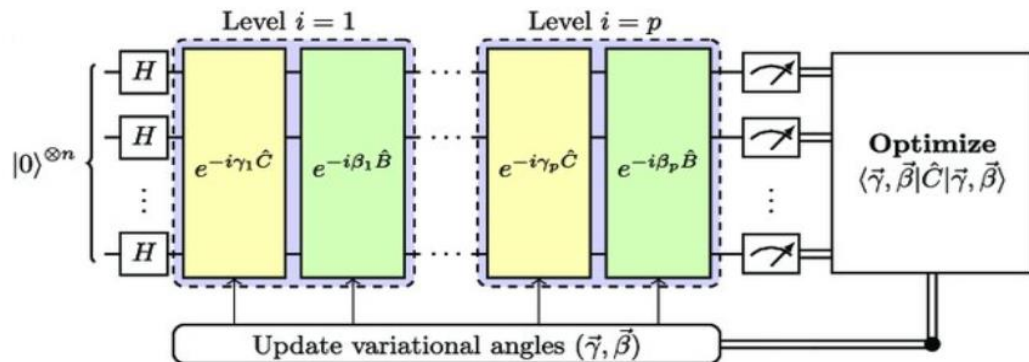
VQE optimization with dynamic shot scheduling

Checkpoint 1 : April 2022

# VQE optimization with dynamic shot scheduling

In current near term quantum era, variational algorithms (like VQE) can be useful, but:

- Shots are expensive in a real quantum computer
- Noise is a problem



Approaches to maximize performance:

- Ansatz
- Cost function
- Gradient and other optimization methods
- Adaptive number of shots

We will implement adaptive number of shots method  
⇒ More noise, more shots

Kubler et al. [1], cites adaptive shots is the most efficient optimizer, looking at the total number of shots

## Team:

Mentee: Arnaldo Gunzi



Mentor: Julien Gacon



## Deliverables:

- iCANS as new subclass of VQE in Qiskit
- Tutorial on the new optimizer