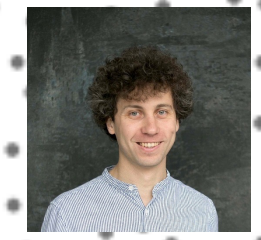
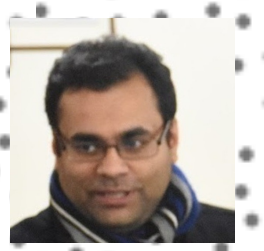
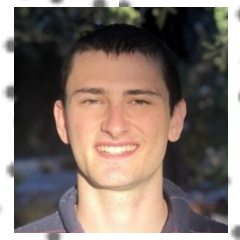
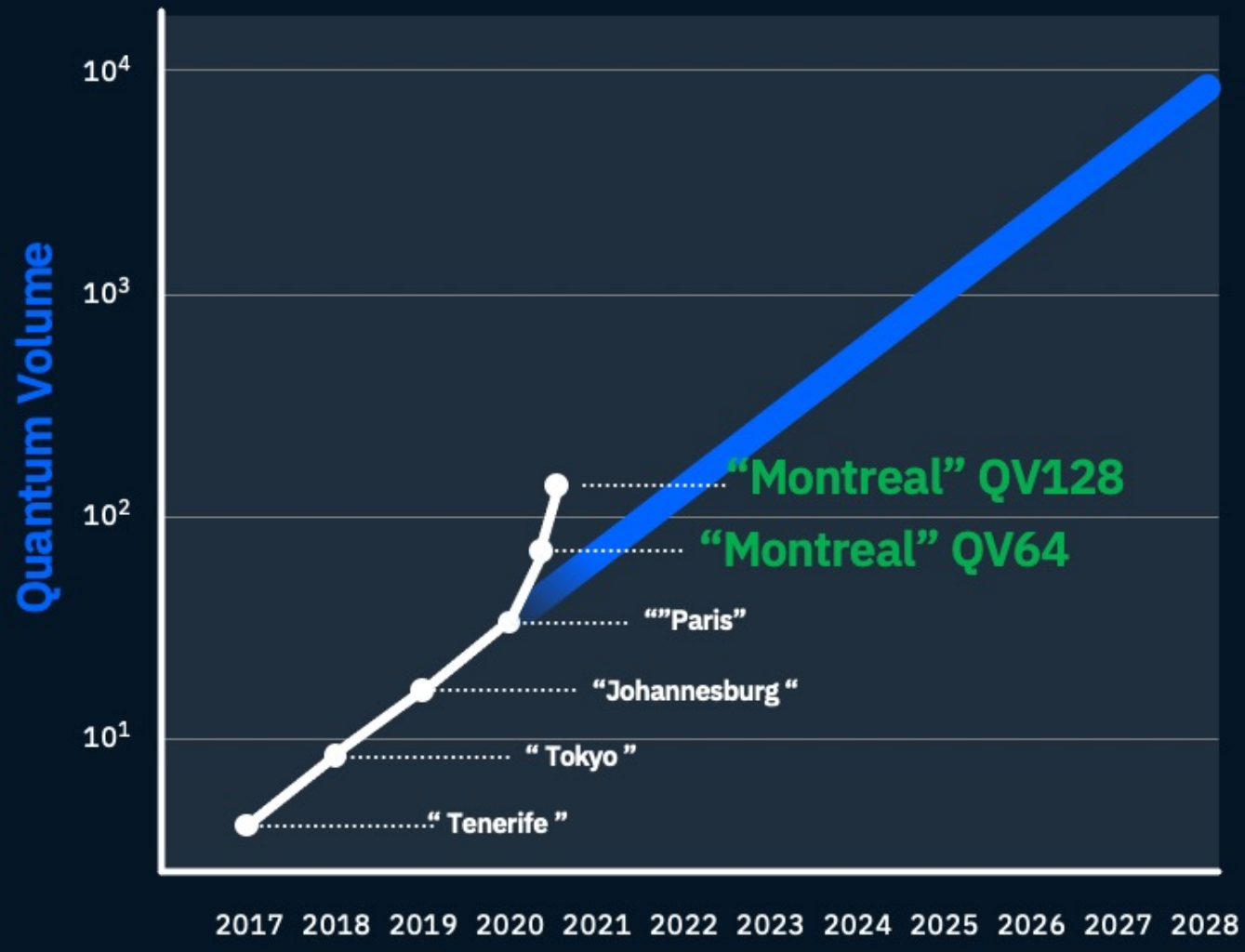
COMPAQT


QUANTUM VOLUME IN NISQ DEVICES

QV puts an upper limit to the **depth** of the NISQ circuits.

Too deep circuits are more prone to error and provide unreliable results.



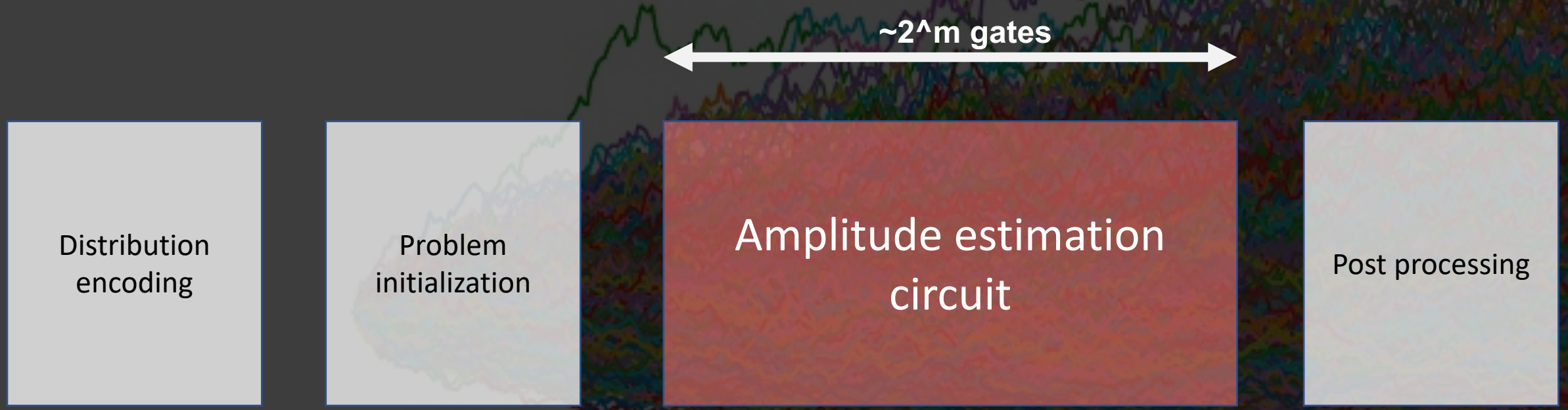
BUSINESS IMPACT EXAMPLE: DERIVATIVES PRICING PROBLEM

Given an asset today, what should be the best **price of a future contract?**

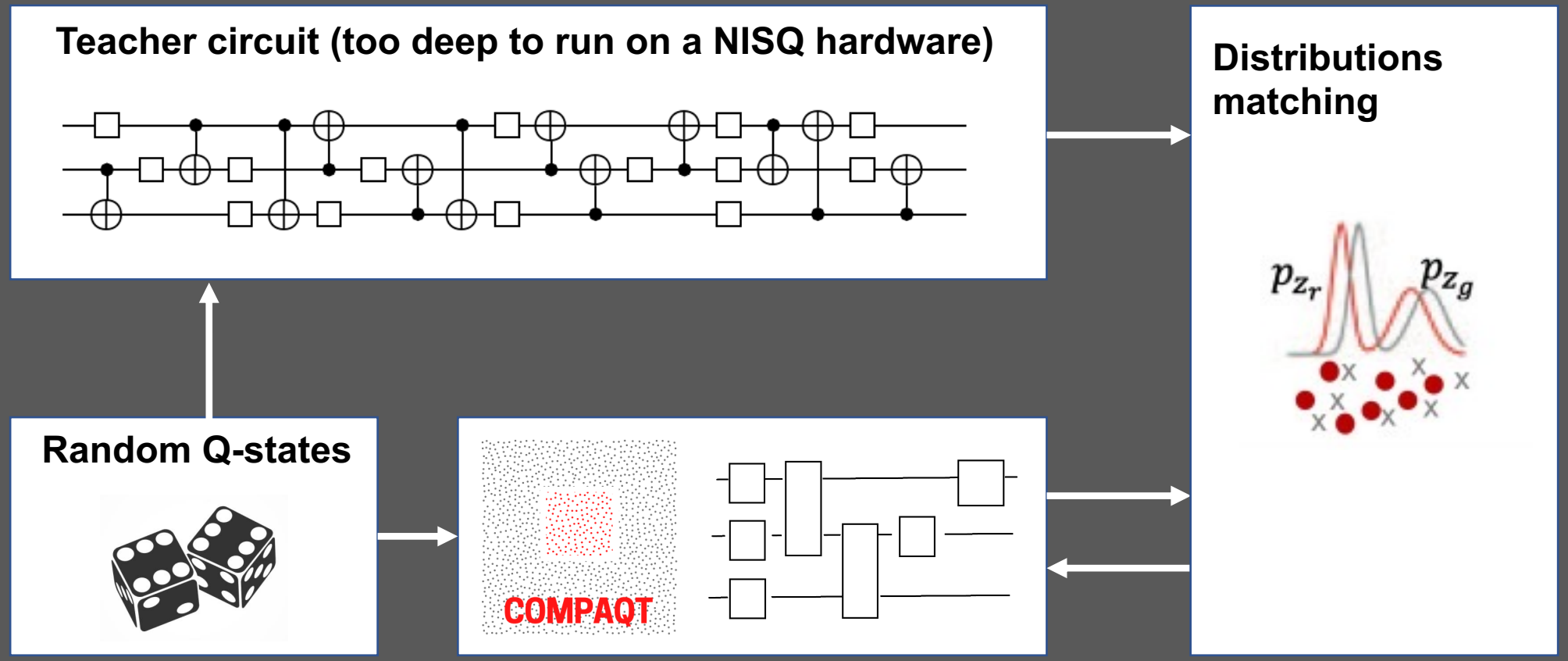
Classical solution relies on heavy **Monte-Carlo simulations**.

BUSINESS IMPACT EXAMPLE: DERIVATIVES PRICING PROBLEM

Quantum Solution requires deep **Amplitude Estimation** circuits. Not suitable for NISQ devices.



QUANTUM* KNOWLEDGE DISTILLATION

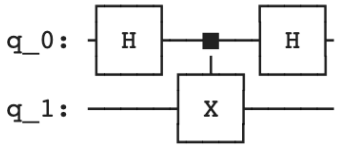


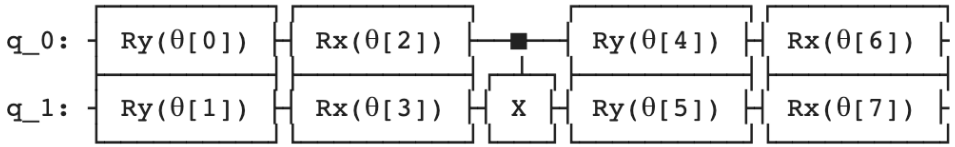
QKD BENCHMARKING

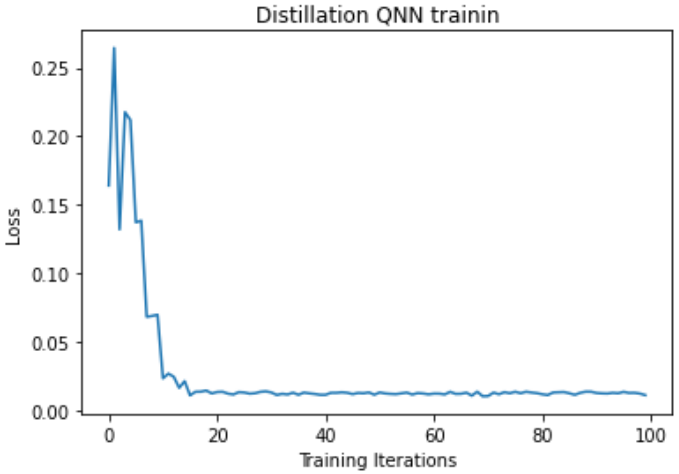
1. **Toy example of 2 qubits circuit. Exact recovery of Teacher circuit.**

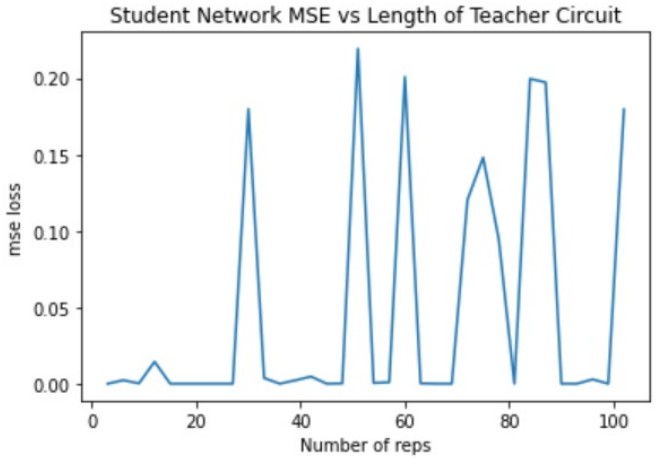
2. **Experiment for generic 2-3-4 qubits circuits**

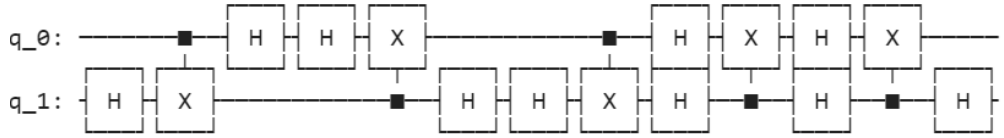
3. **Checked scaling with depth for 2 and 3-qubit circuits.**



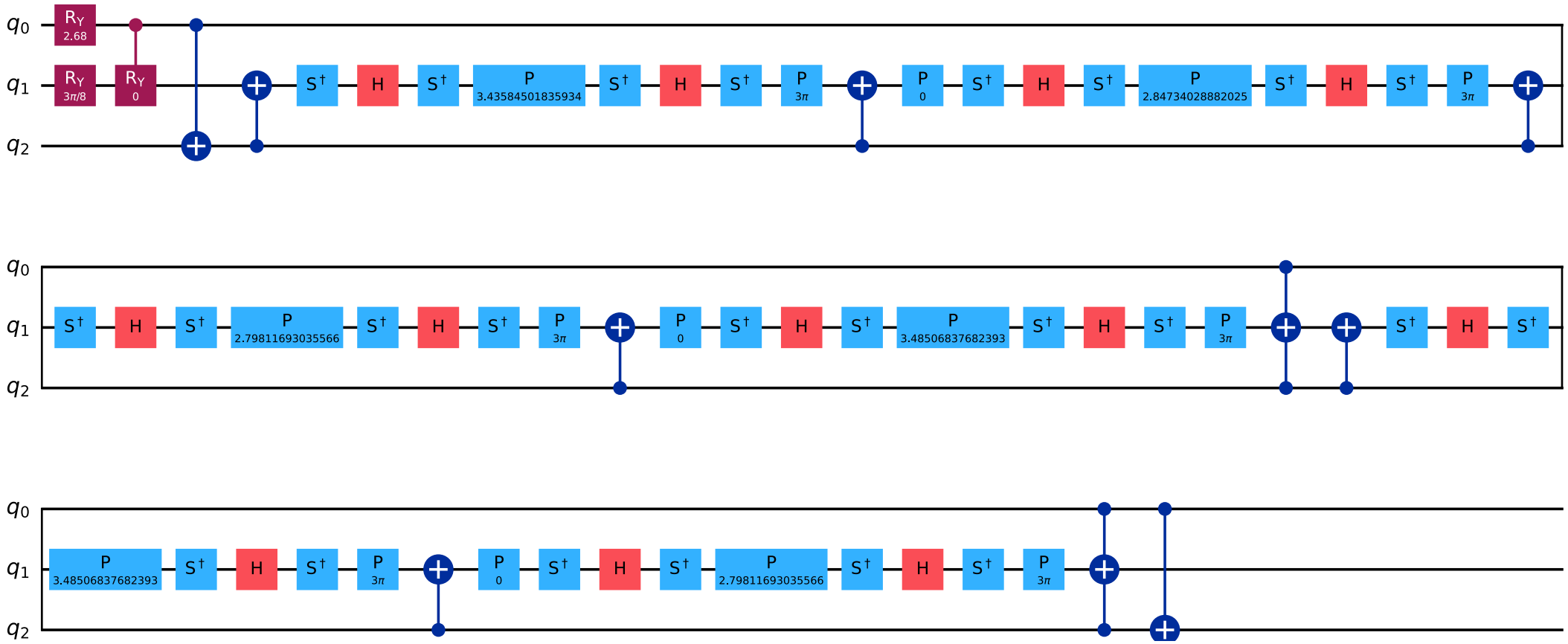






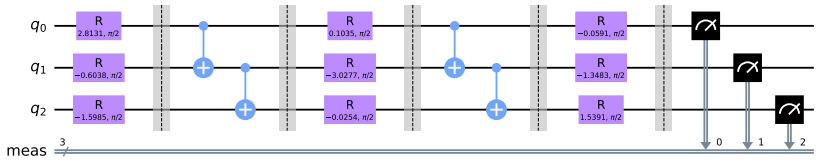


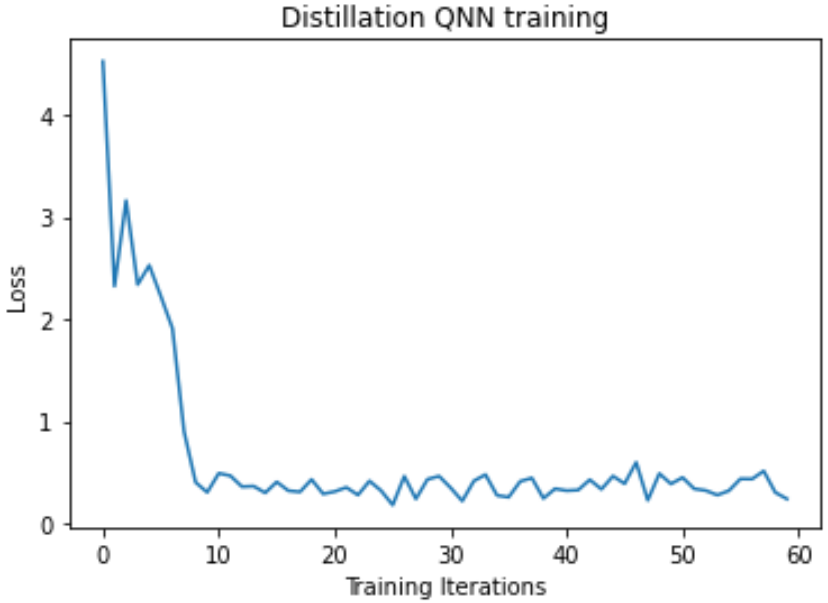
EUROPEAN CALL OPTION QAE CIRCUIT (depth - 65)



EUROPEAN CALL OPTION QAE CIRCUIT

CompaQt circuit (depth - 7)

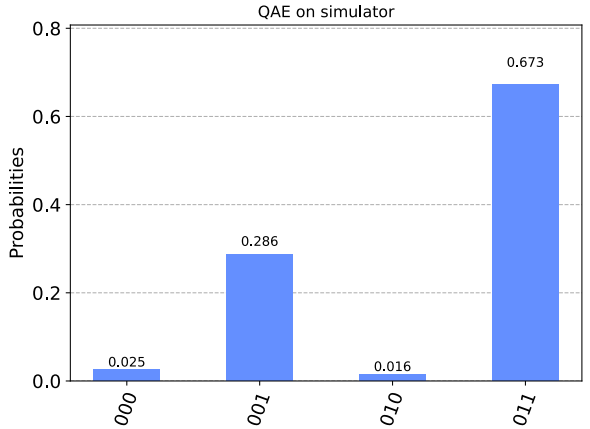


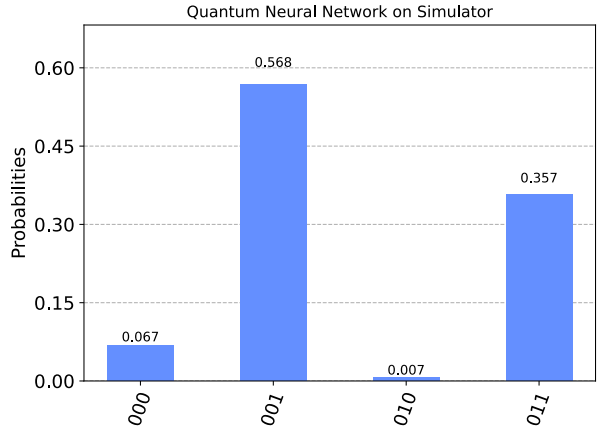


QAE

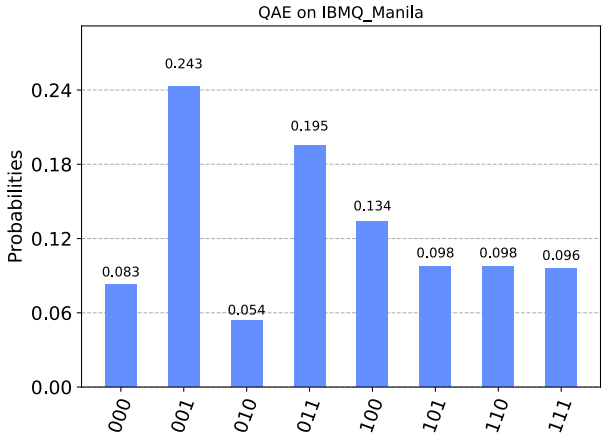
QNN

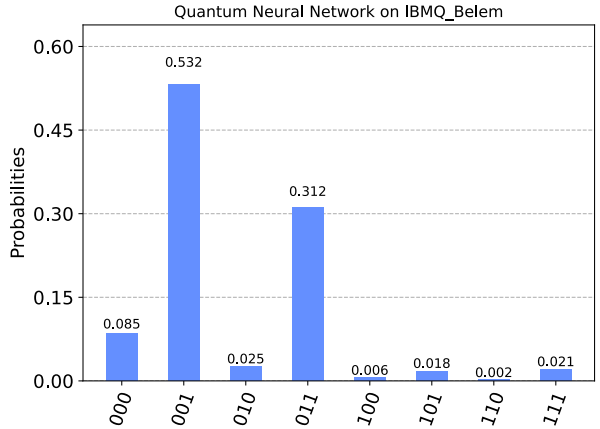
Simulator





IBM QPU





OUTLOOK

- $1.8T+ is lost annually to the classical inefficiencies of classical financial optimization algorithms
- We will help first-movers like JPMorgan Chase, and HSBC reduce the size of their quantum models for nearer-term benefit
- We will work on qubit-width reduction and address problems in the chemical simulation industry of ~200 qubits

COMPAQT