Quantum Contracts

An On-chain Quantum Emulator on Polygon

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Is Web3 Quantum-Ready?

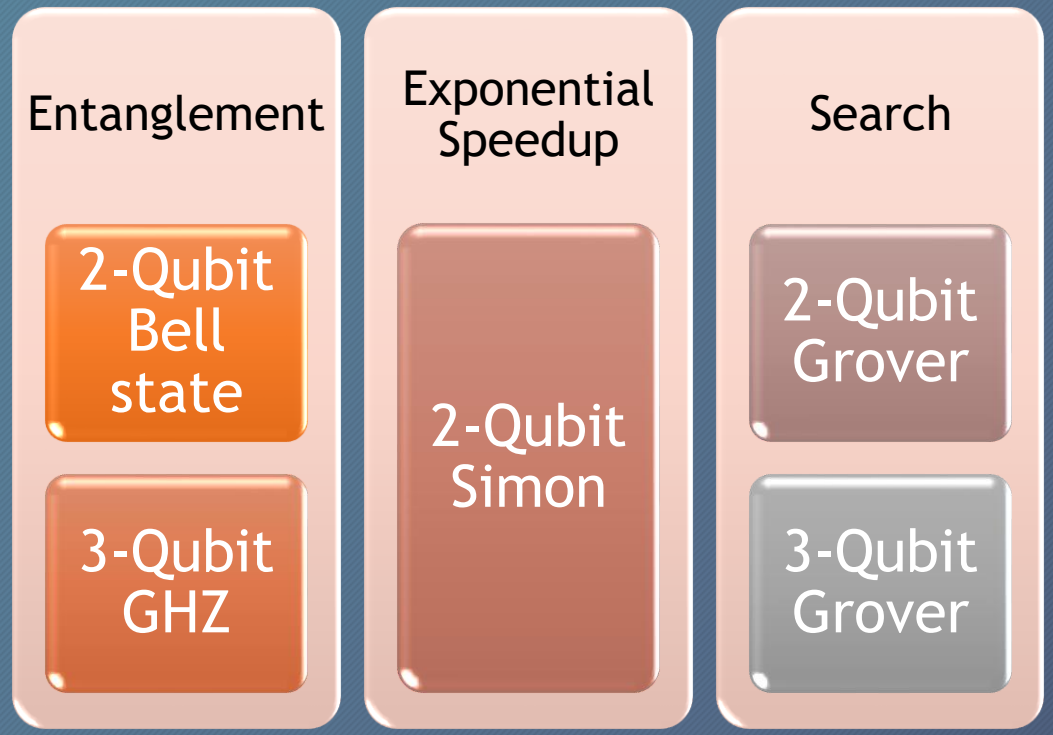
Quantum computing is being used in simulations, optimizations and machine-learning in other industries

Platforms from IBM, Microsoft, AWS, Regetti are already providing quantum tools and services on the cloud

But do we know of quantum use-cases in Web3?

Do Web3 programmers even know where to start?

Recall Last Week



- v0.1 Features
  - Supports up to 4 Qubits
  - Supports the following gates:
    - I = Identity Gate
    - X = Not Gate
    - H = Hadamard Gate
    - CN = Control-Not Gate
    - CCN = Toffoli Gate
  - Quantum circuit is interpreted (not compiled)

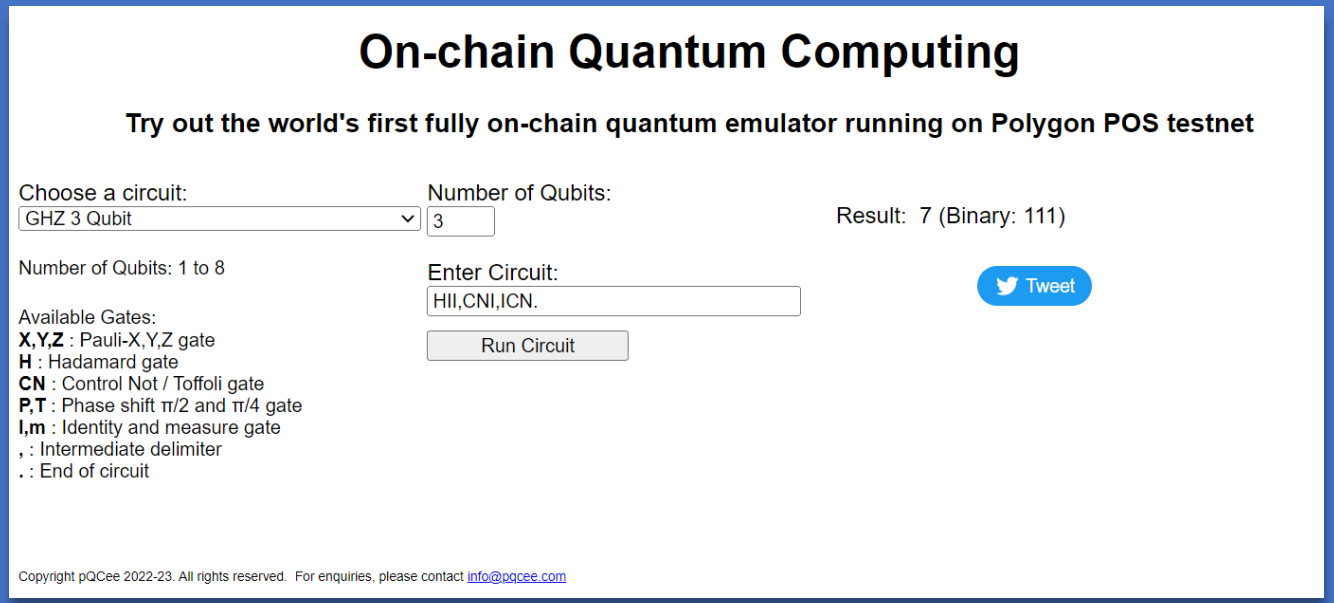
This Week

- A on-chain quantum emulator running in a smartcontract
- runQScript API:
  - Input : Number of Qubits + Quantum circuit
  - Output : Computation result
- On Mumbai testnet
  - Written in solidity as a view function (no gas needed)
  - Source on Github

- v0.2 Features
  - Supports up to 8 Qubits
  - Universal Quantum Computer
    - I,X,H,CN,CCN
    - Pauli-Y,Z Gates
    - Phase shift P $\frac{\pi}{4}$ and T $\frac{\pi}{8}$ Gates
  - Able to run Shor's Algorithm
  - DApp hosted on github to support user testing
  - Subscription Business Model

Demo

tanteikg.github.io/QC



Proposed Business Model

- Freemium Subscription Model
  - No charge for 4(?) qubits or less
  - Subscription is based on X MATIC per timeblock.
- Value Added Services
  - Design and consultancy of Quantum circuits for optimization and entanglement use-cases
  - Connection to real quantum computer
- Next Steps
  - More testing and code validation
  - Launch + other support from Jump/Polygon?

Comments/Questions

- Please contact:
  - Teik Guan Tan
  - teikguan@pqcee.com
  - Linkedin.com/in/teikguan
  - @tanteikg