

Why QEC needed?

- Qubits are fragile.
- Entanglement states are also fragile.
- The channel for communication needed.
- In classical, you can copy and noise if there.
Ex: repetition code.
- Overcoming obstacles: We aren't measuring data qubit but we extract errors through helping qubits.
- In quantum, we have bit-flip noise, phase flip noise, bit-phase flip, Amplitude damping, phase damping, depolarization. Overcome bit flip and phase flip.