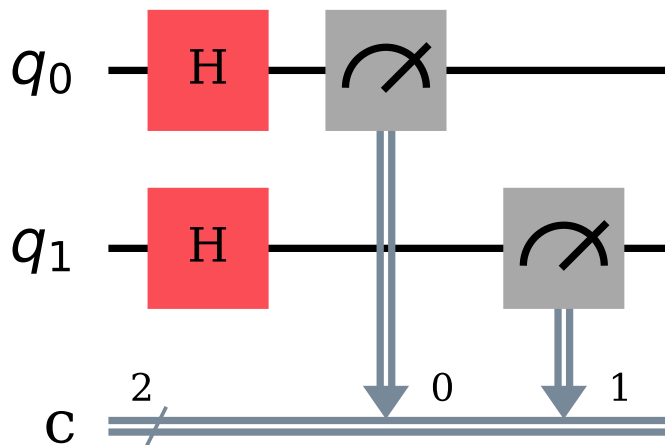
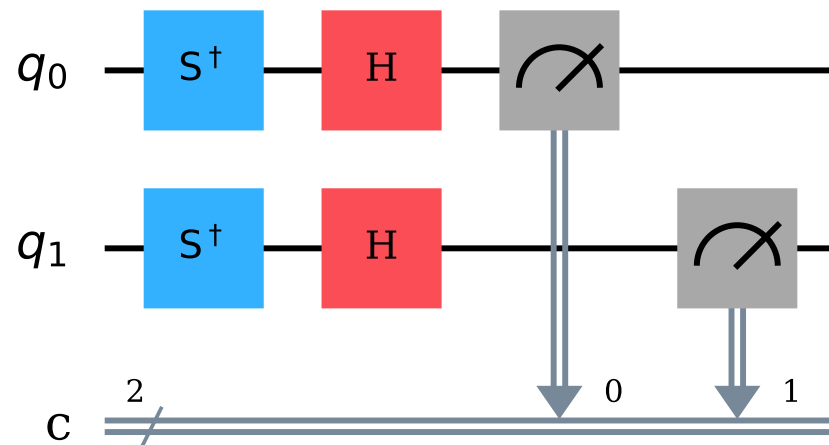


Quantum Circuits for Entanglement Witness Measurement

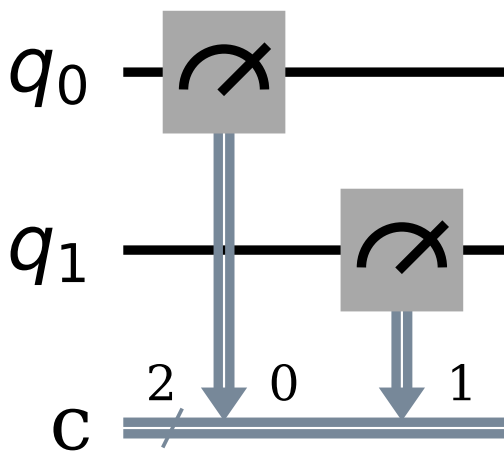
XX Measurement



YY Measurement



ZZ Measurement



Experimental Protocol:

1. Prepare GHZ state
2. Apply Context transformation
3. Trace out qubit C
4. Measure XX, YY, ZZ on qubits A,B
5. Calculate witness:
$$\langle W \rangle = 0.5 - 0.25(\langle XX \rangle + \langle YY \rangle + \langle ZZ \rangle + 1)$$

Result Interpretation:

- $\langle W \rangle < 0 \rightarrow$ Entangled
- $\langle W \rangle \geq 0 \rightarrow$ Separable

Context C: $\langle W \rangle = -0.5$ (Maximally entangled!)