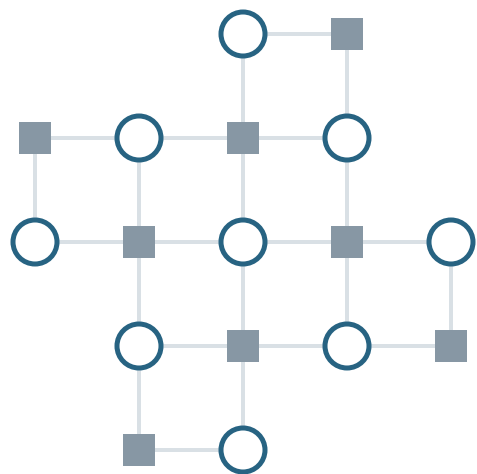


Recover a logical bit from noisy quantum measurements

Repeated stabilizer checks reveal error patterns; a decoder infers whether the stored logical observable flipped.

A Quantum memory

Sycamore · distance 3 · Z basis

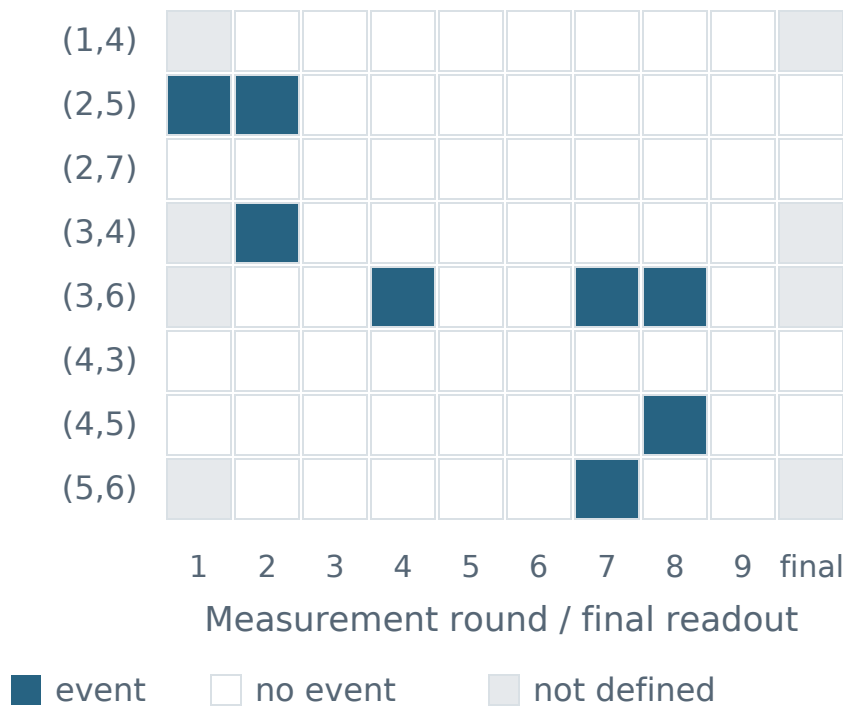


○ 9 data qubits ■ 8 checks

Checks probe parity without revealing the stored quantum information.

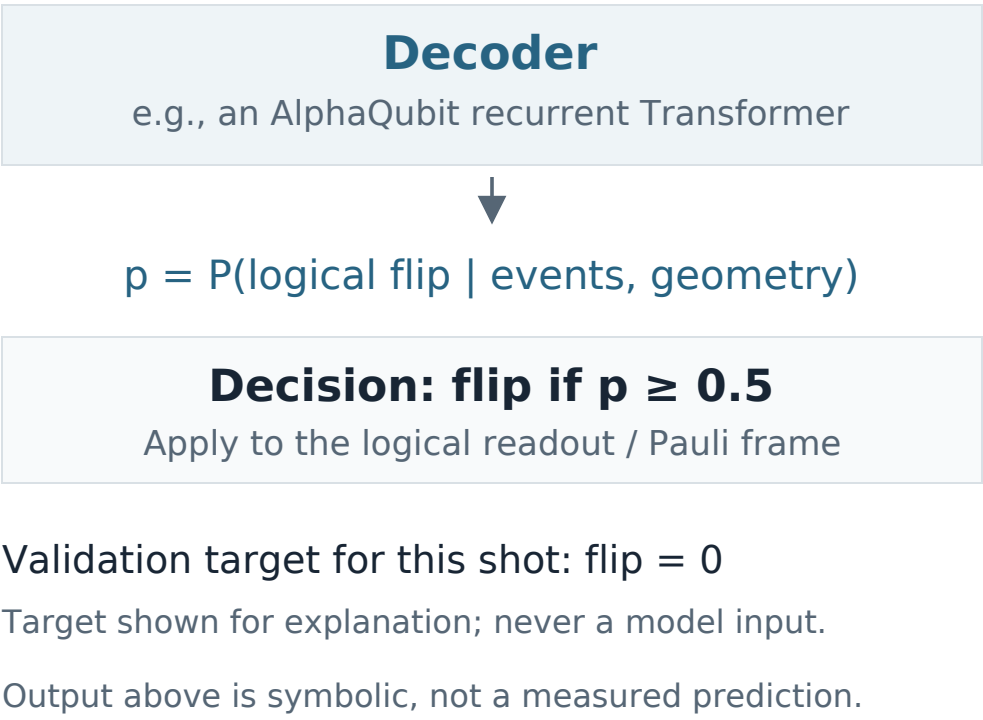
B Detection-event input

One real shot, measured over 9 rounds



C Logical decoding

Model input: events + known geometry



Scientific value

Better decoding reduces logical readout errors, a bottleneck for reliable quantum memory and fault-tolerant computation.

Benchmark scope: real hard-readout Sycamore data, distances 3 and 5; score held-out logical-flip decisions.

Example: d3 / Z / center (3,5) / 9 rounds / source shot 39760 (validation). Source: Google Quantum AI, Zenodo 6804040, CC BY 4.0.