a) Algorithm traditional IPMA

CX(1,2); CX(0,2); m = 0; for _ in [0..meas_count]: m += MEASURE(2); if m ≥ [meas_count/2]: X(0);

b) Algorithm IPMA1

CX(1,2);
CX(0,2);
m = 0;
for _ in [0..meas_count]:
 m += MEASURE(2);
if m < [meas_count/2]:
 X(0);</pre>

c) Algorithm IPMA2

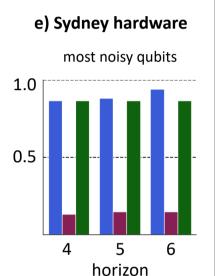
CX(1,2);
CX(0,2);
m = 0;
for _ in [0..meas_count]:
 m += MEASURE(2);
if m == meas_count:
 X(0);

d) IPMA instruction set

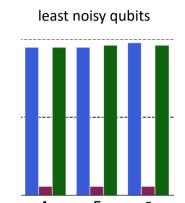
 $\begin{array}{ccc}
0 & X & \to & X(0) \\
\hline
0 & & & & \\
\hline
2 & X & \to & \\
\hline
1 & & & \\
\hline
2 & X & \to & \\
\hline
2 & X & \to & \\
\hline
MEASURE(2)$

g) Cambridge hardware

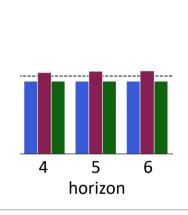
most noisy qubits



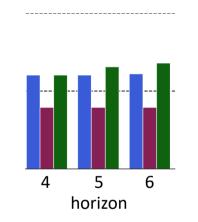
accuracy



horizon

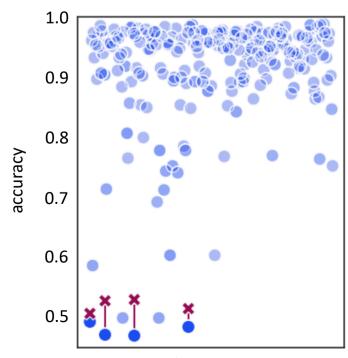


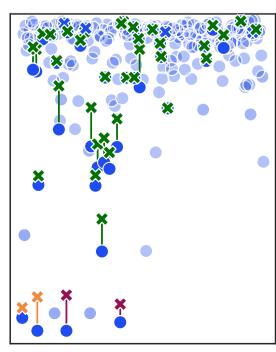
most noisy qubits

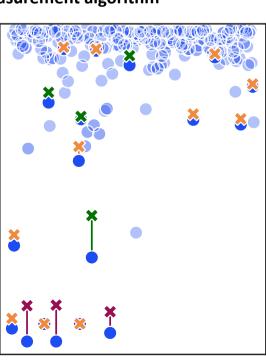


h) Traditional IPMA vs. hardware-optimal indirect parity measurement algorithm

f) Manhattan hardware







horizon 4

horizon 5

horizon 6