GST Report

(Dated: May 28, 2024)

I. SETUP

- Name and date of the experiment: test, 17.01.2024
- Number of sequences: 200.
- Average shots per sequence: 500.
- **Rank: 1.**
- Number of free parameters: 22.
- Gate set:

{0: 'Idle-short', 1: 'Idle-long', 2: 'Rx(pi)', 3: 'Ry(pi)', 4: 'Rx(pi/2)', 5: 'Ry(pi/2)'}

II. ERROR MEASURES

Table I. Gate quality measures

	Average gate Fidelity	Diamond distance
Idle-short	0.9997	0.0430
Idle-long	0.9988	0.0845
Rx(pi)	0.9993	0.0664
Ry(pi)	0.9990	0.0768
Rx(pi/2)	0.9979	0.1132
Ry(pi/2)	0.9991	0.0753

Table II. State and measurement quality measures

Final cost	Mean TVD: estimate - data	Mean TVD: target - data	POVM - diamond dist.	State - trace dist.
0.0031	0.0443	0.0609	0.1598	0.0160

Table III. Normalized rotation axes coefficient.

	Idle-short	Idle-long	Rx(pi)	Ry(pi)	Rx(pi/2)	Ry(pi/2)
α/π	1.986	1.973	0.992	0.987	0.486	0.490
n_X	0.111	0.170	-1.000	0.029	-0.997	-0.038
n_Y	0.726	0.652	-0.016	-0.999	0.054	-0.999
n_Z	-0.679	-0.738	0.026	-0.014	-0.051	0.031

III. GATE AND SPAM PLOTS

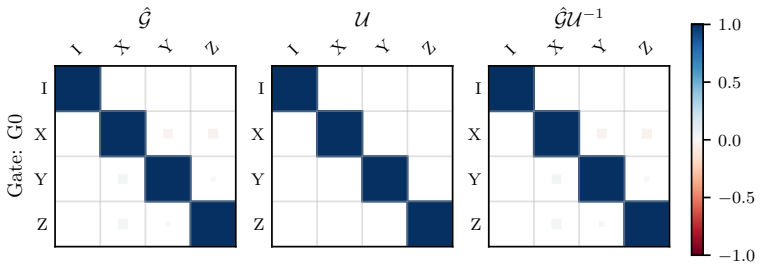

Figure 1. Process matrix in the Pauli basis with entries in $[-1, 1]$. Left side: GST reconstruction, center: ideal gate, right side: error channel (ideally the identity).

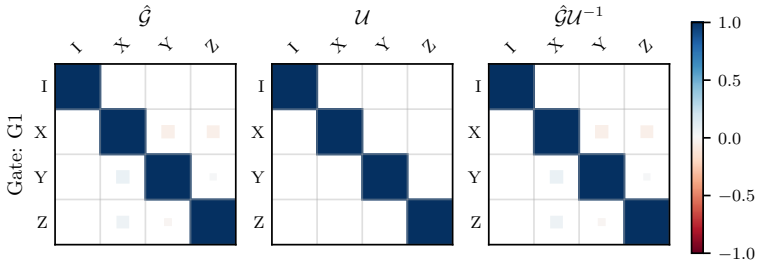

Figure 2. Process matrix in the Pauli basis with entries in $[-1, 1]$. Left side: GST reconstruction, center: ideal gate, right side: error channel (ideally the identity).

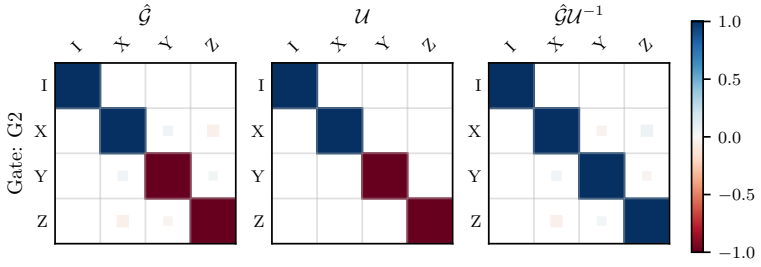

Figure 3. Process matrix in the Pauli basis with entries in $[-1, 1]$. Left side: GST reconstruction, center: ideal gate, right side: error channel (ideally the identity).

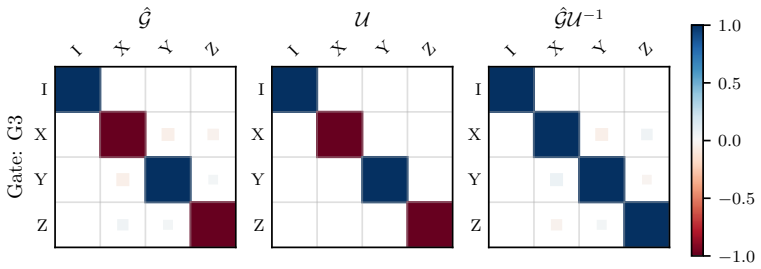

Figure 4. Process matrix in the Pauli basis with entries in $[-1, 1]$. Left side: GST reconstruction, center: ideal gate, right side: error channel (ideally the identity).

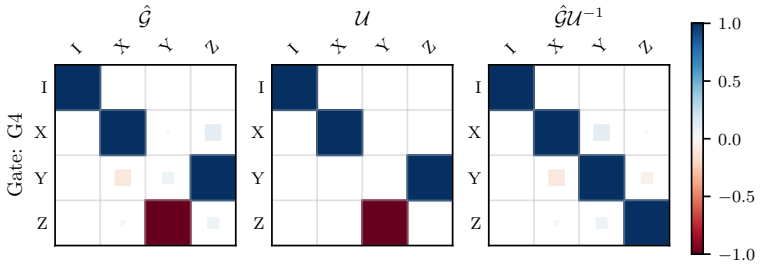

Figure 5. Process matrix in the Pauli basis with entries in $[-1, 1]$. Left side: GST reconstruction, center: ideal gate, right side: error channel (ideally the identity).

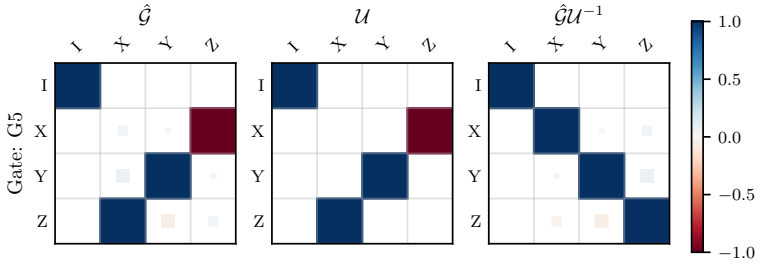

Figure 6. Process matrix in the Pauli basis with entries in $[-1, 1]$. Left side: GST reconstruction, center: ideal gate, right side: error channel (ideally the identity).

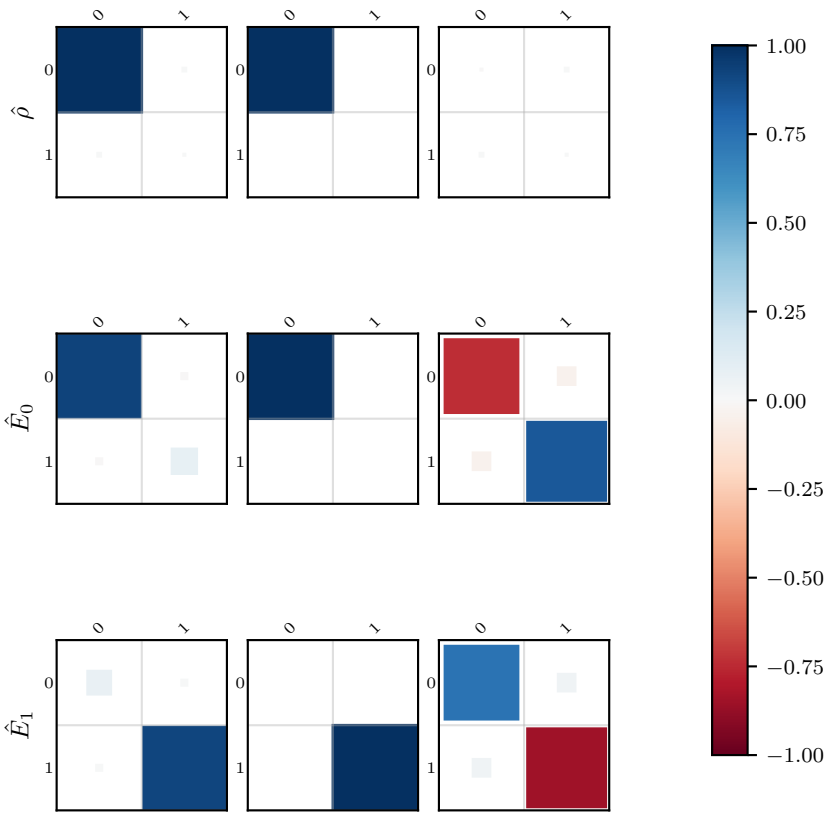

Figure 7. Left column: real part of state and measurement in standard basis, right column: magnified errors to ideal implementation $10 \cdot (\hat{\rho} - \rho_{\text{ideal}})$ and $10 \cdot (\hat{E}_i - E_{i,\text{ideal}})$.

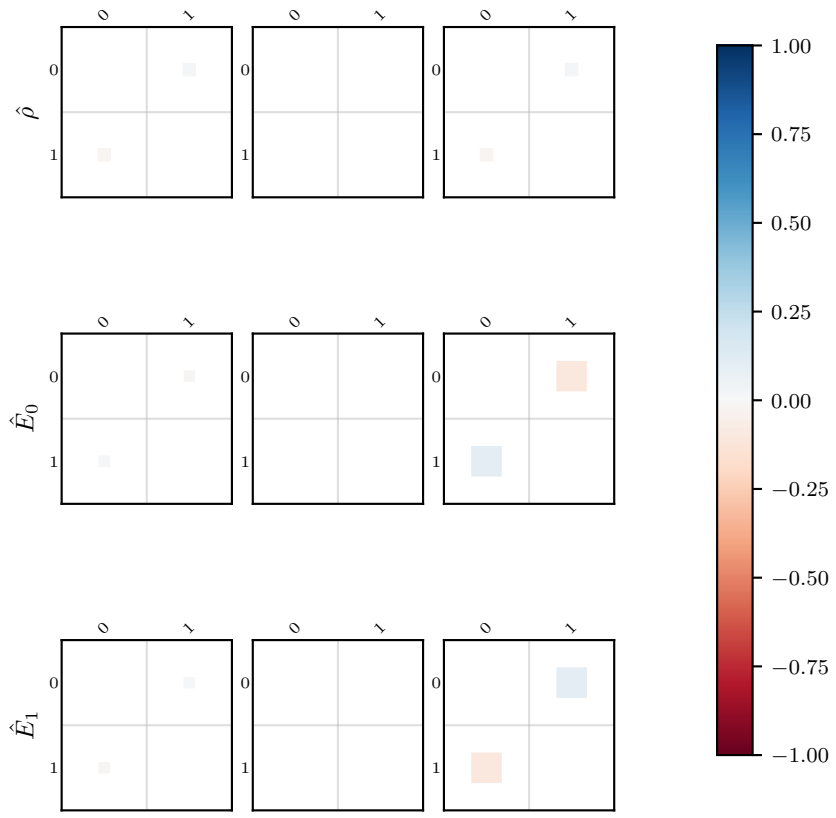

Figure 8. Left column: imaginary part of state and measurement in standard basis, right column: magnified errors to ideal implementation $10 \cdot (\hat{\rho} - \rho_{\text{ideal}})$ and $10 \cdot (\hat{E}_i - E_{i,\text{ideal}})$.