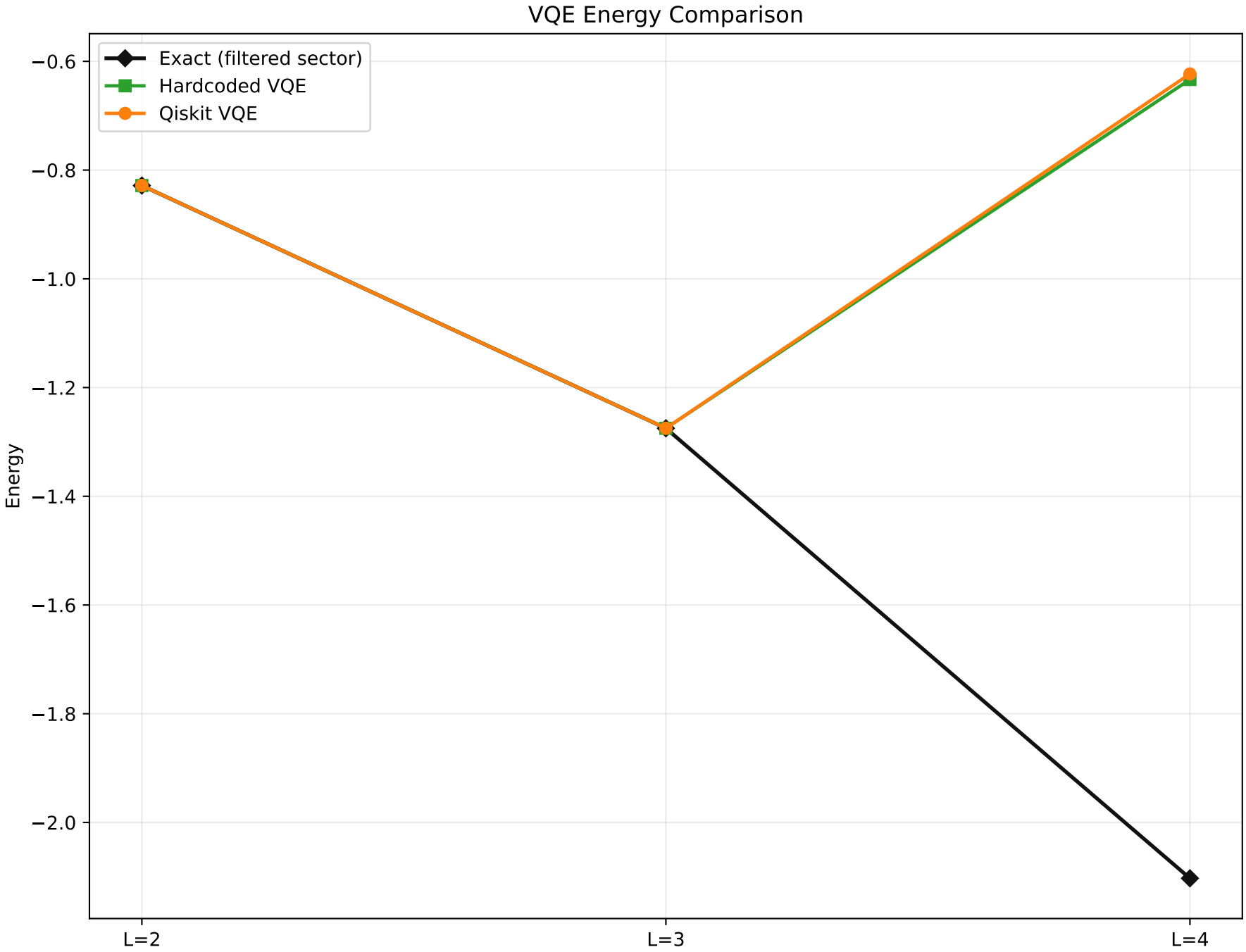
Hardcoded vs Qiskit Pipeline Comparison Summary

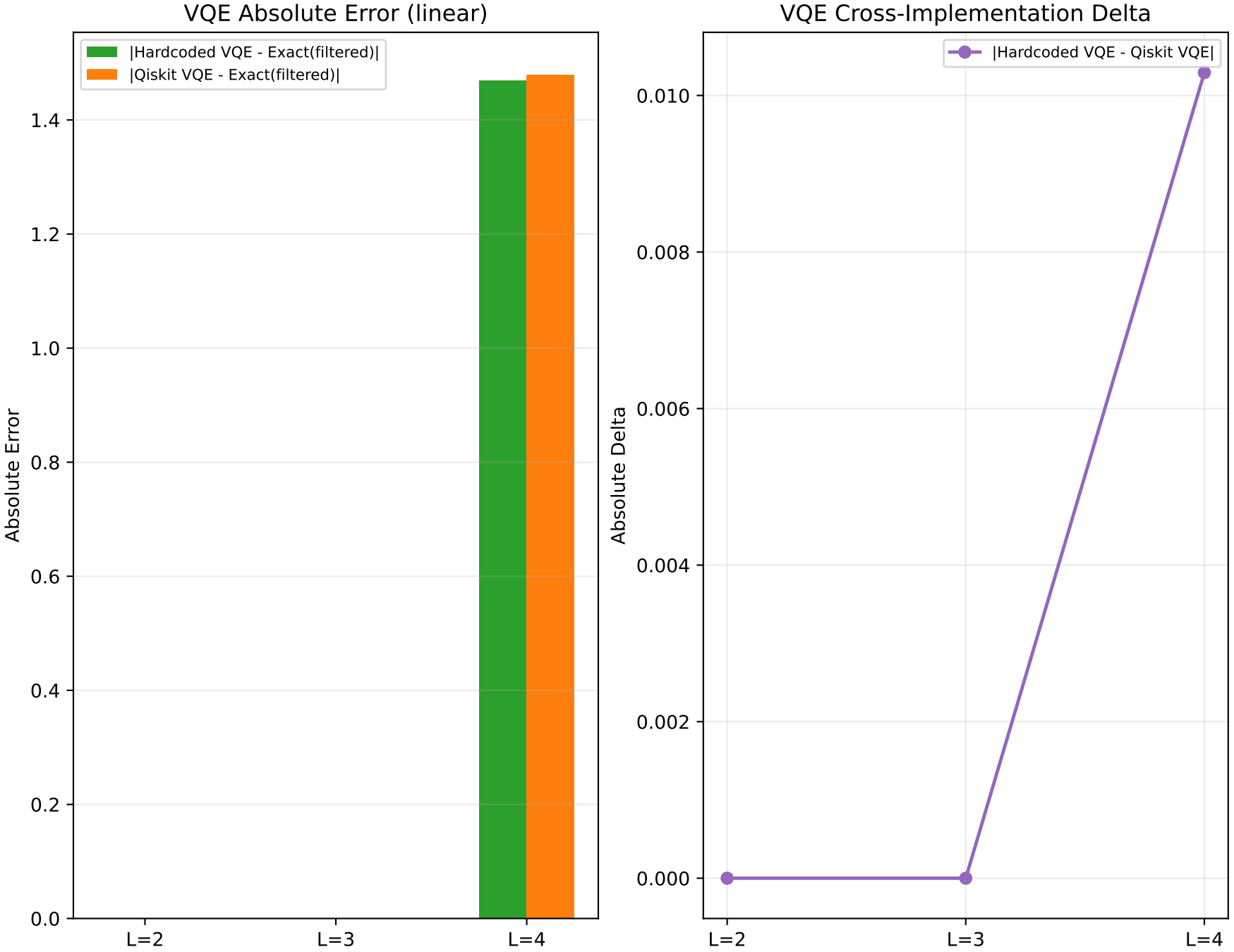
generated_utc: 2026-02-13T16:40:17.717900+00:00
all_pass: True
l_values: [2, 3, 4]

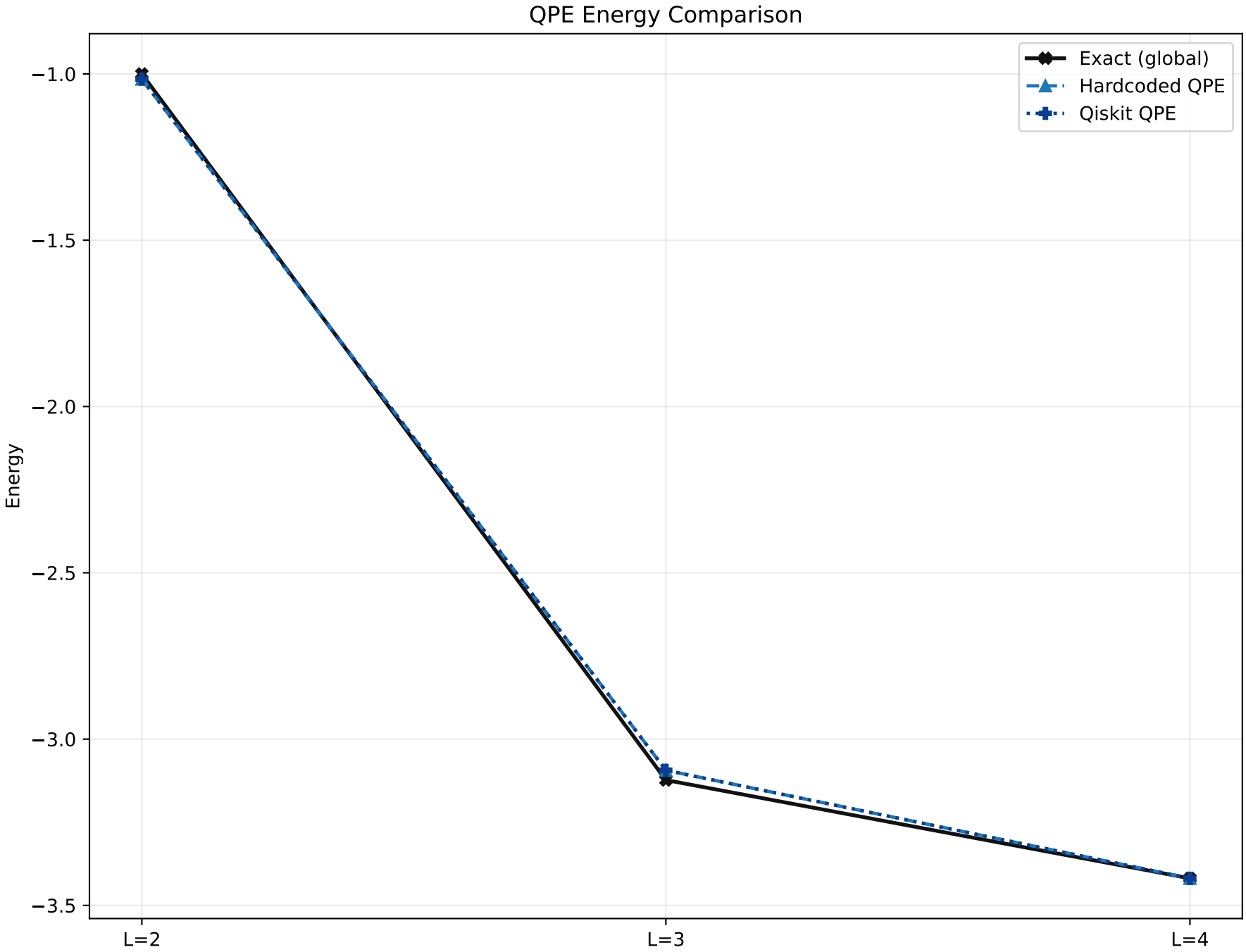
thresholds: {"ground_state_energy_abs_delta": 1e-08, "fidelity_max_abs_delta": 0.0001, "energy_trotter_max_abs_delta": 0.001,

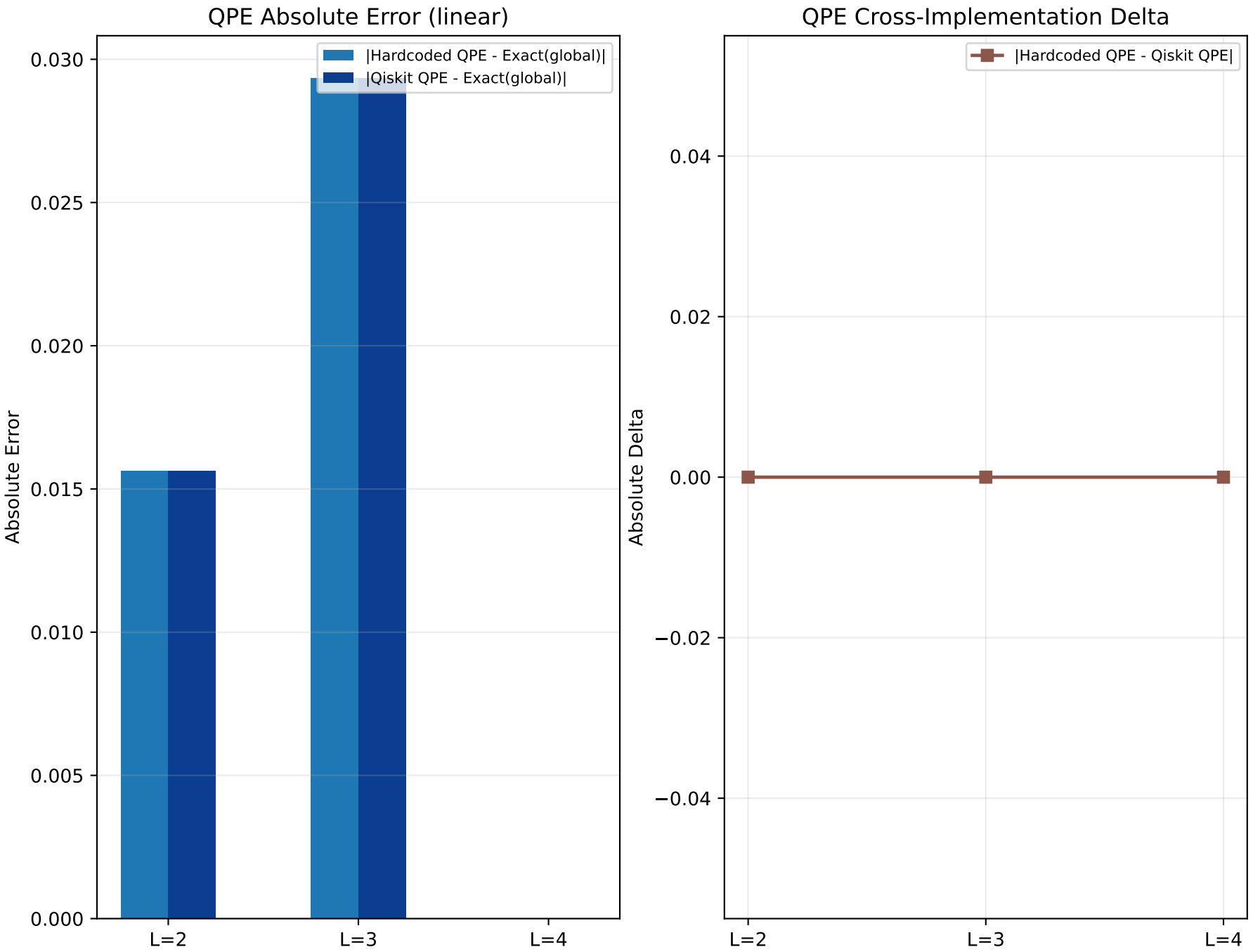
hardcoded_qiskit_import_isolation: {'pass': True, 'qpe_adapter_range': {'start_line': 299, 'end_line': 416}, 'qiskit_imports':

Per-L pass flags:
L=2 pass=True metrics_json=Tests/artifacts/hardcoded_vs_qiskit_pipeline_L2_metrics.json
L=3 pass=True metrics_json=Tests/artifacts/hardcoded_vs_qiskit_pipeline_L3_metrics.json
L=4 pass=True metrics_json=Tests/artifacts/hardcoded_vs_qiskit_pipeline_L4_metrics.json

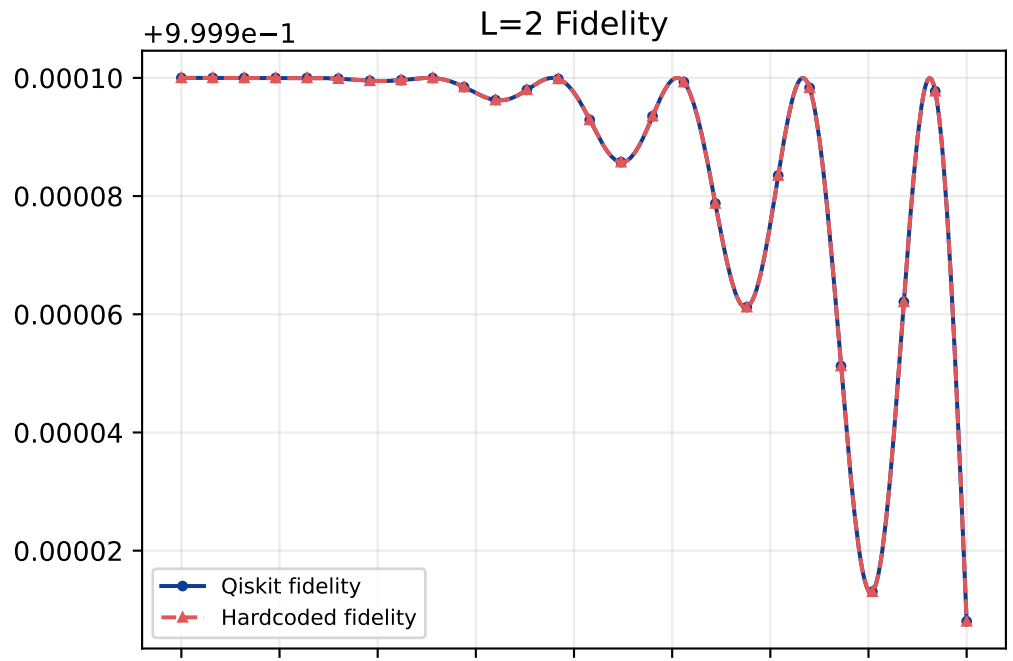

VQE Energy Comparison
Exact (filtered sector)
Hardcoded VQE
Qiskit VQE
Energy
−0.6
−0.8
−1.0
−1.2
−1.4
−1.6
−1.8
−2.0
L=2
L=3
L=4

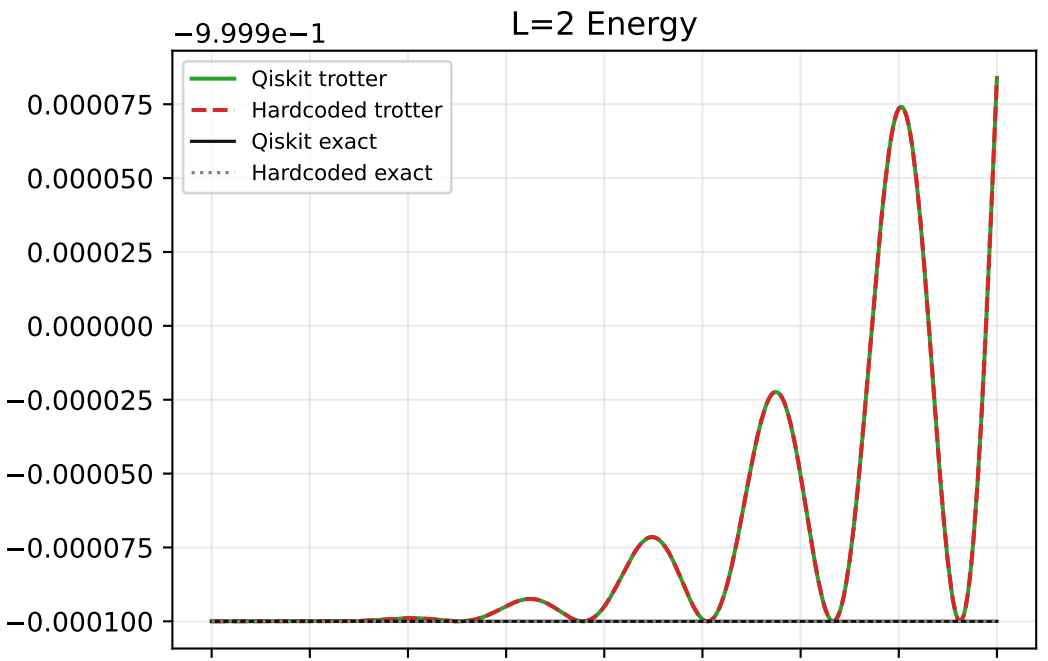

VQE Absolute Error (linear)
|Hardcoded VQE - Exact(filtered)|
|Qiskit VQE - Exact(filtered)|
Absolute Error
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
L=2
L=3
L=4
VQE Cross-Implementation Delta
|Hardcoded VQE - Qiskit VQE|
Absolute Delta
0.000
0.002
0.004
0.006
0.008
0.010
L=2
L=3
L=4

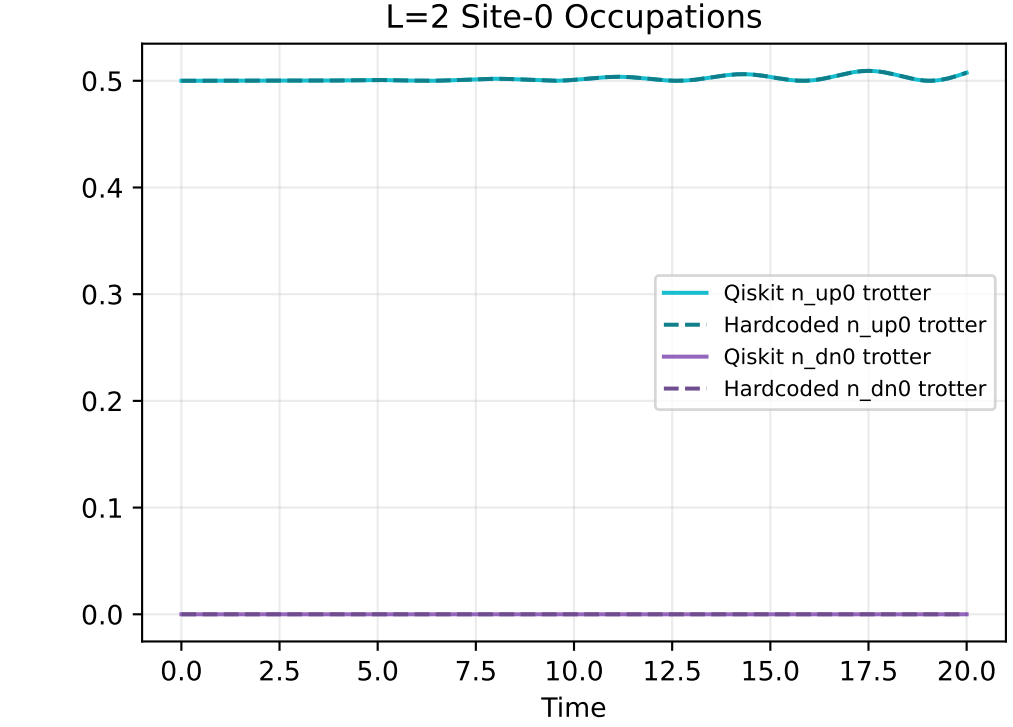

QPE Energy Comparison
Exact (global)
Hardcoded QPE
Qiskit QPE
Energy
−1.0
−1.5
−2.0
−2.5
−3.0
−3.5
L=2
L=3
L=4

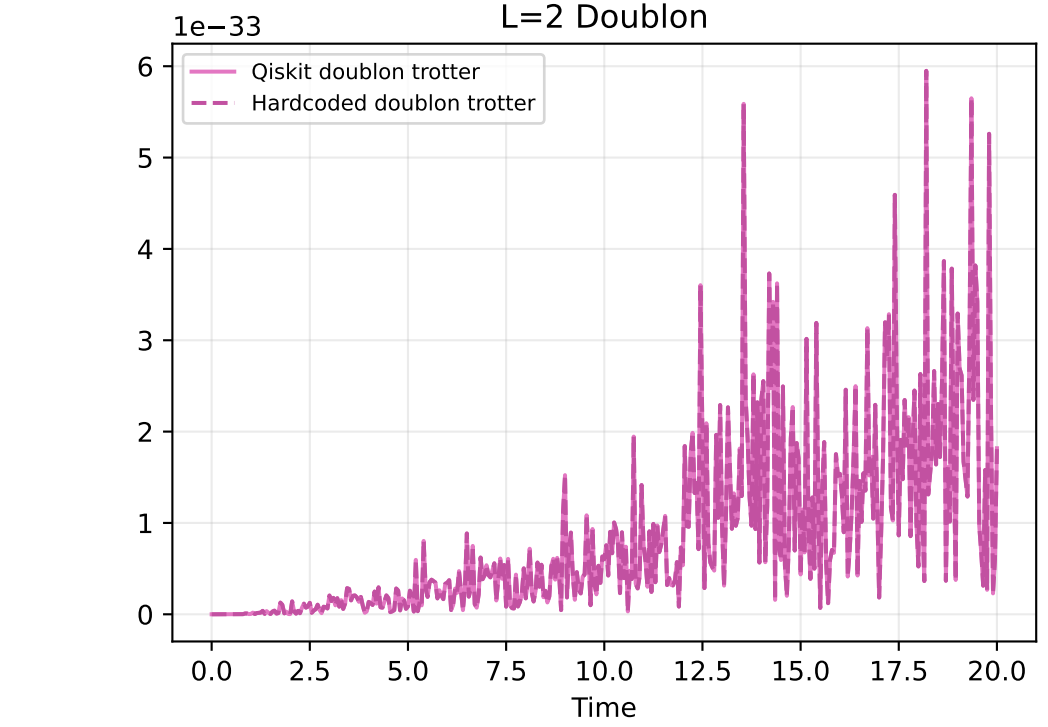

QPE Absolute Error (linear)
|Hardcoded QPE - Exact(global)|
|Qiskit QPE - Exact(global)|
Absolute Error
0.030
0.025
0.020
0.015
0.010
0.005
0.000
L=2
L=3
L=4
QPE Cross-Implementation Delta
|Hardcoded QPE - Qiskit QPE|
Absolute Delta
0.04
0.02
0.00
−0.02
−0.04
L=2
L=3
L=4

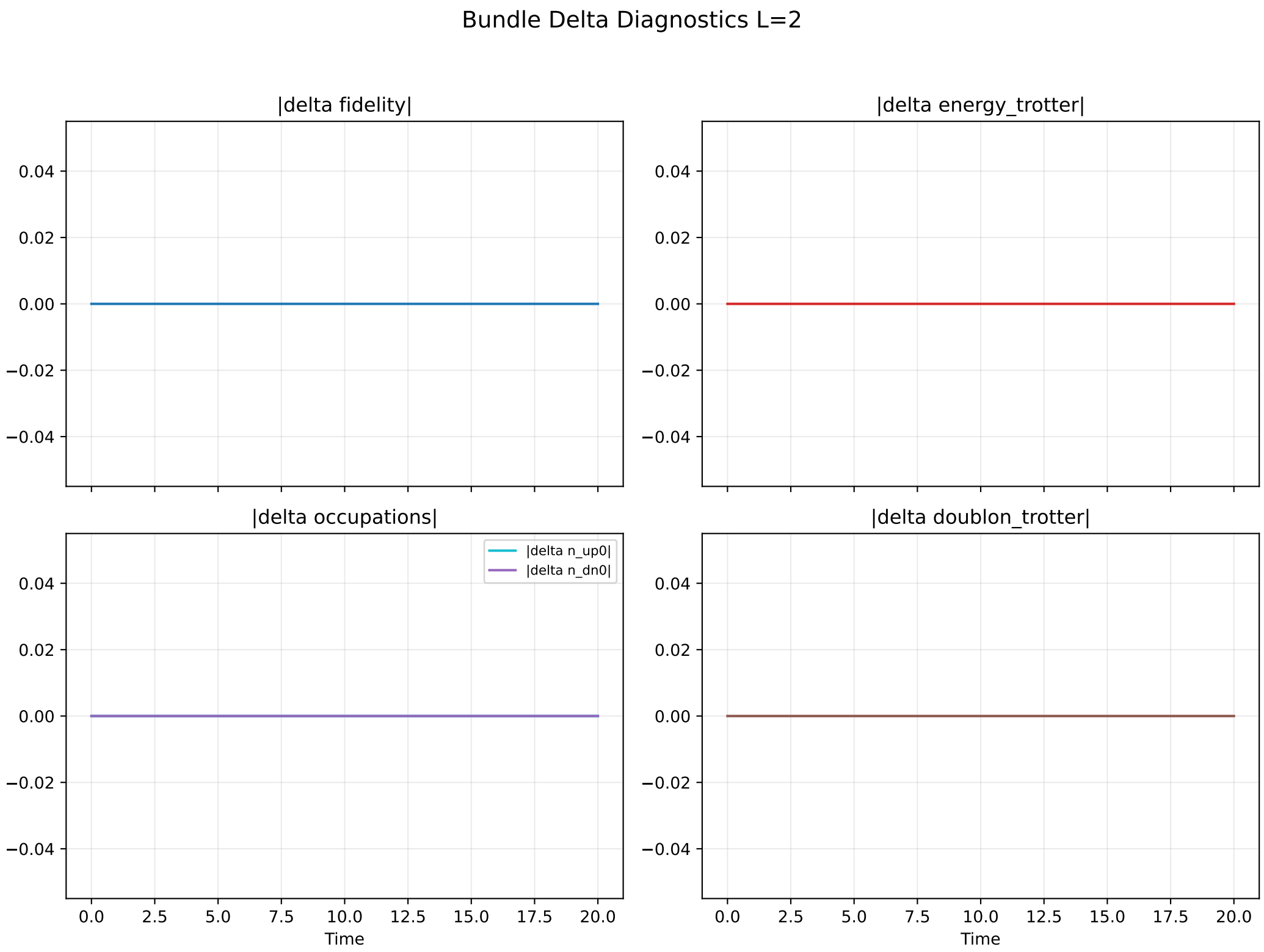
Bundle Page: L=2 Trajectory Comparison





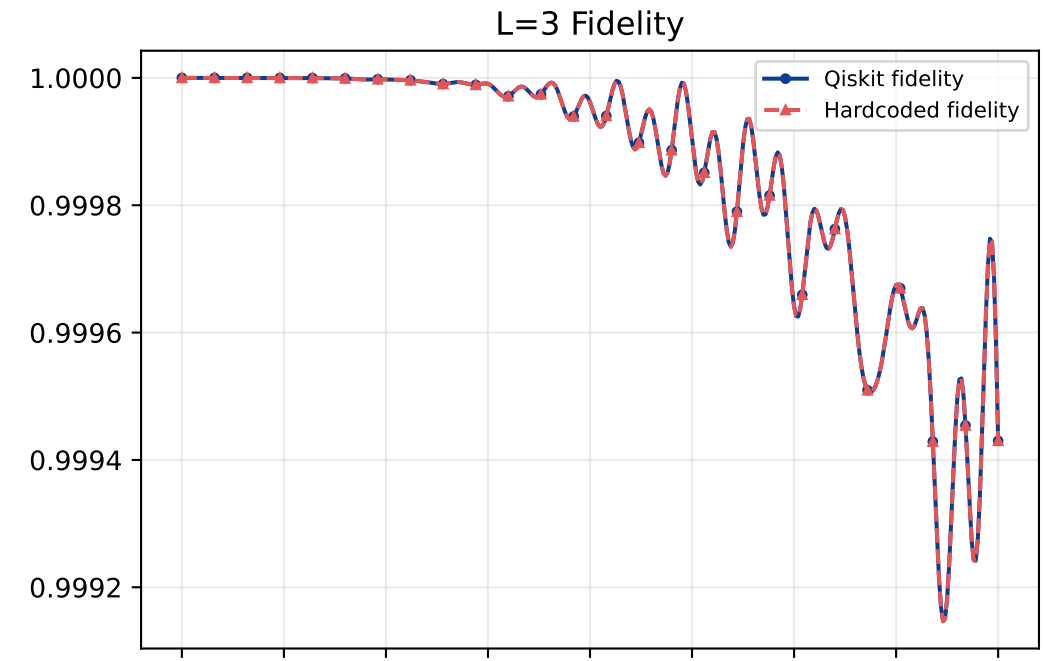


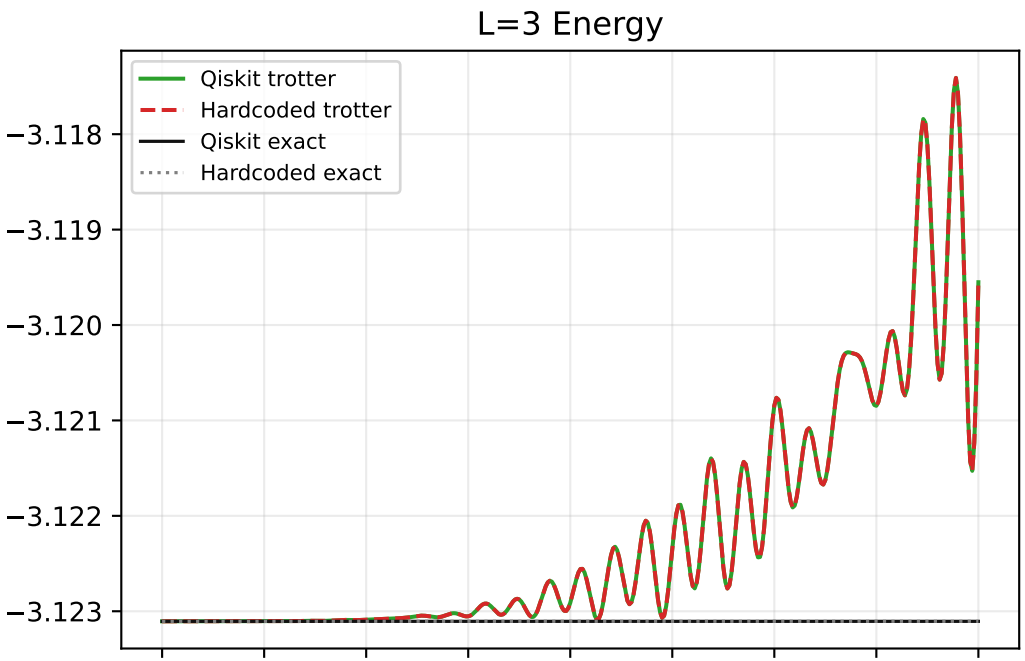


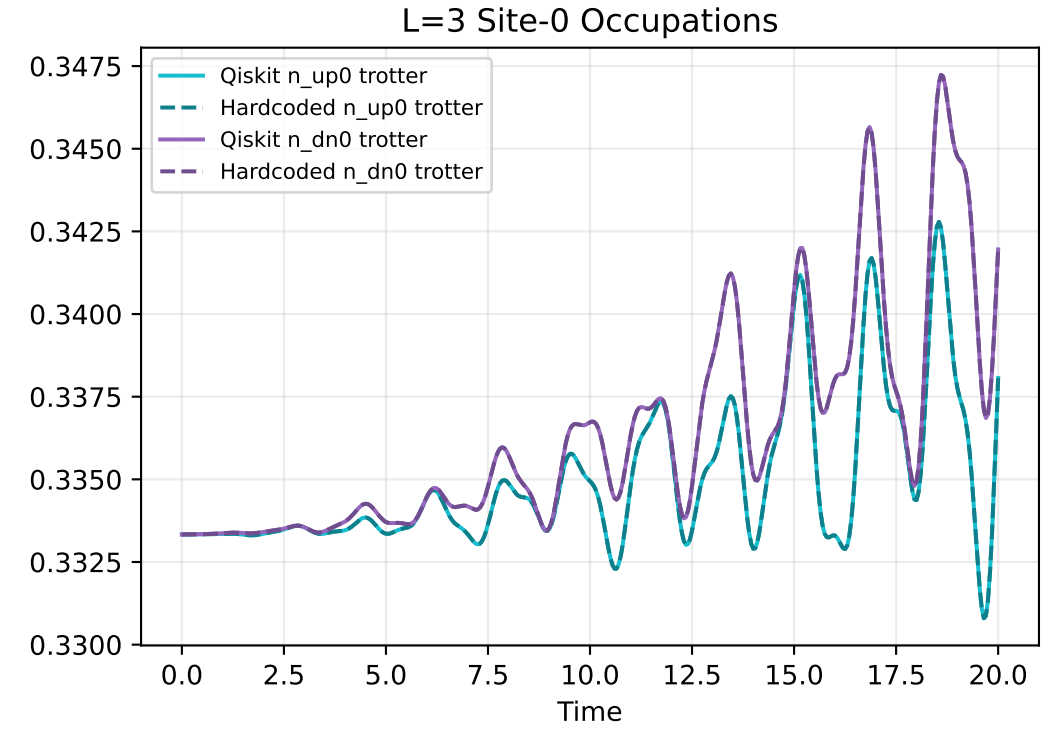

Bundle Delta Diagnostics L=2
|delta fidelity|
|delta energy_trotter|
|delta occupations|
|delta doublon_trotter|
|delta n_up0|
|delta n_dn0|
0.04
0.02
0.00
−0.02
−0.04
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
Time

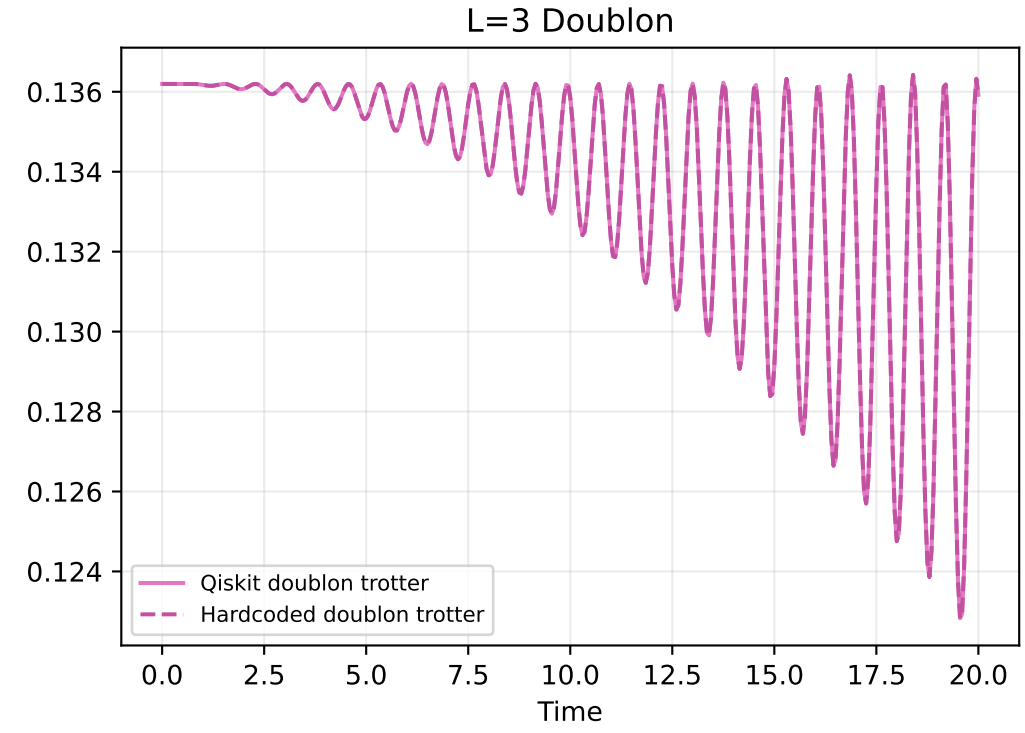
```
Bundle metrics page L=2

Trotterization comparison uses each path's configured initial state.
For VQE-init runs, both exact(t) and trotter(t) start from the VQE ansatz state.

ground_state_energy_abs_delta = 0.000000000000e+00
fidelity max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
energy_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
n_up_site0_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
n_dn_site0_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
doublon_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00

checks = {'ground_state_energy_abs_delta': True, 'fidelity_max_abs_delta': True, 'energy_trotter_max_abs_delta': True, 'n_up_s
PASS = True
```

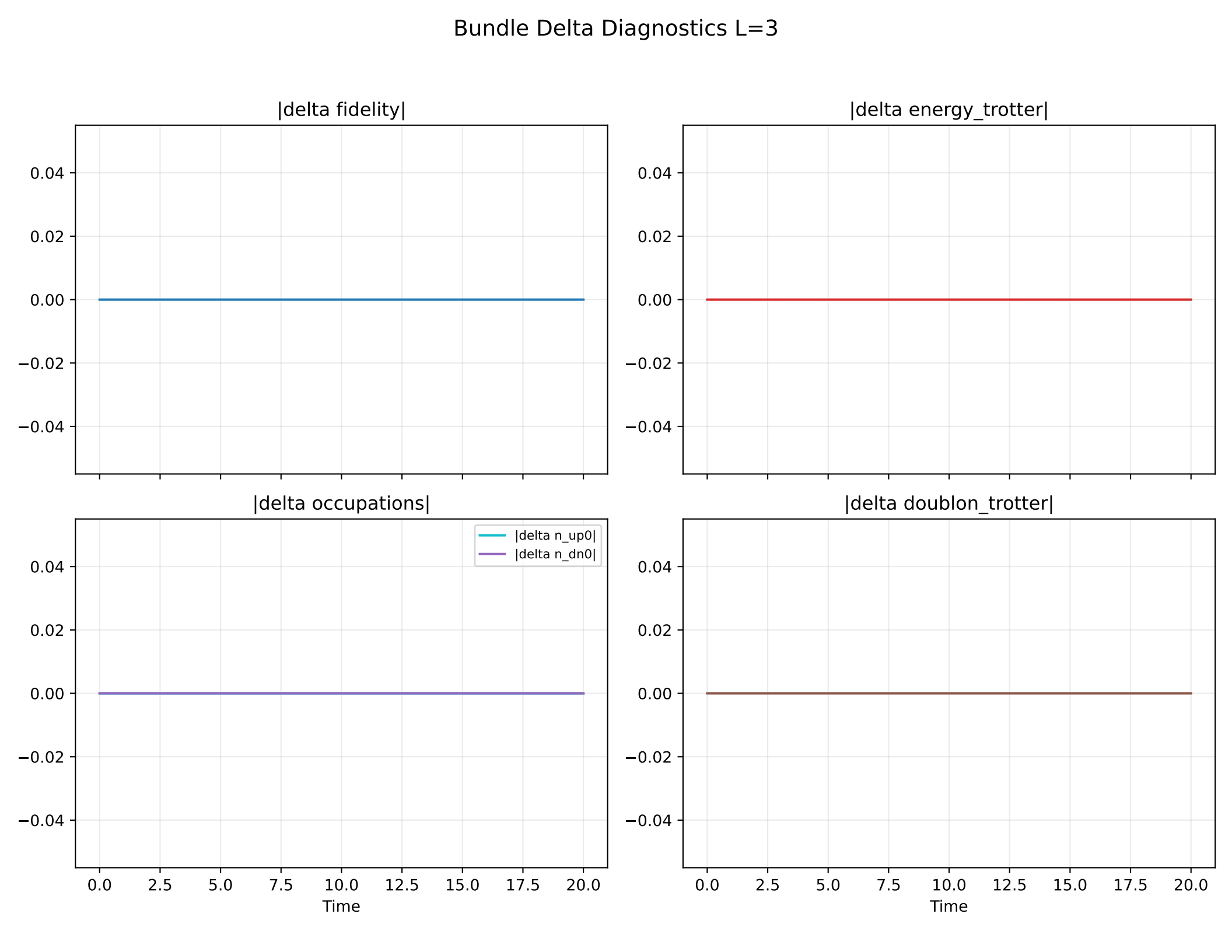
Bundle Page: L=3 Trajectory Comparison





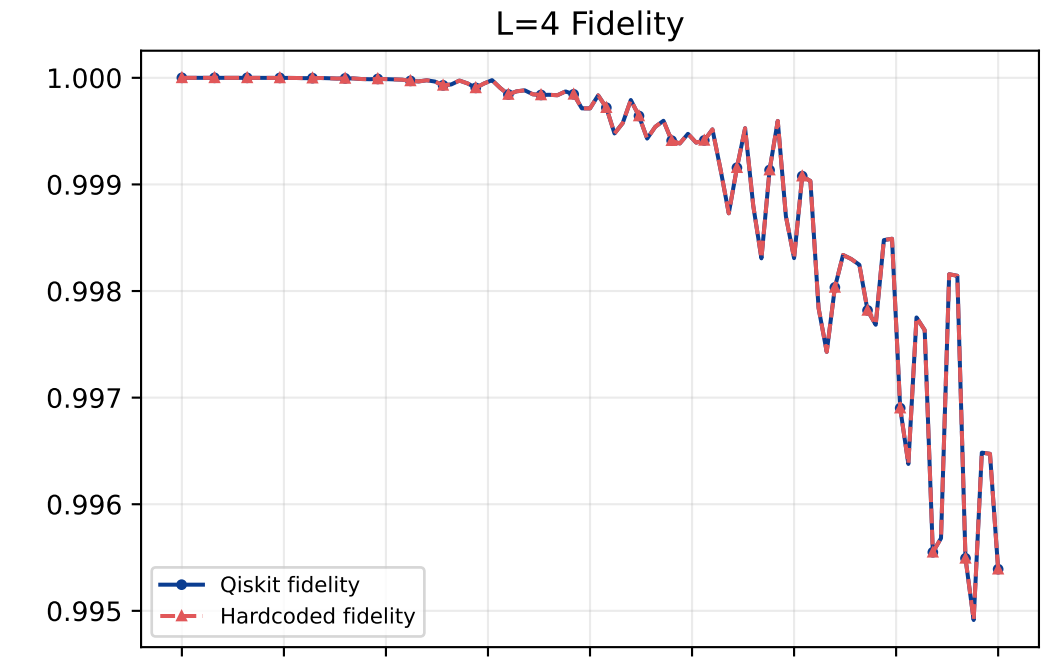


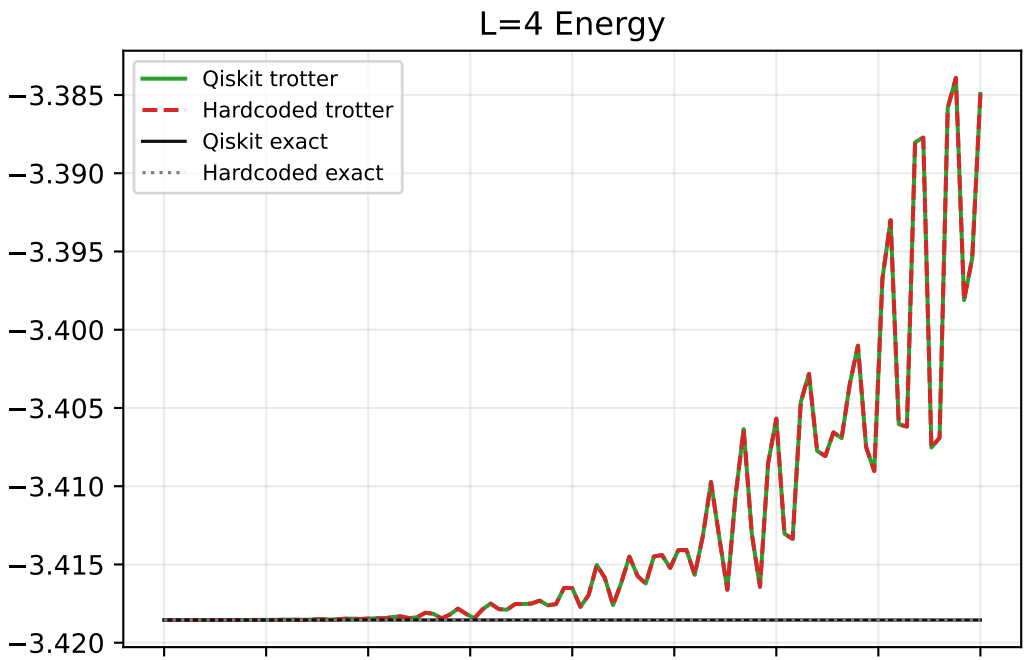


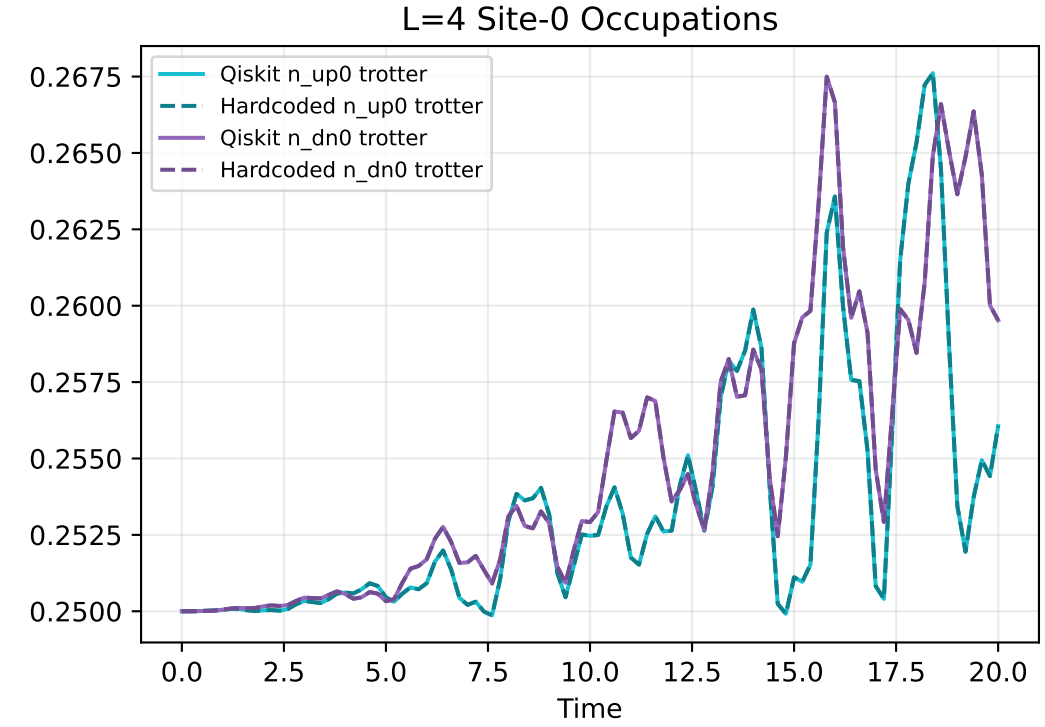

Bundle Delta Diagnostics L=3
|delta fidelity|
|delta energy_trotter|
|delta occupations|
|delta doublon_trotter|
|delta n_up0|
|delta n_dn0|
0.04
0.02
0.00
−0.02
−0.04
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
Time

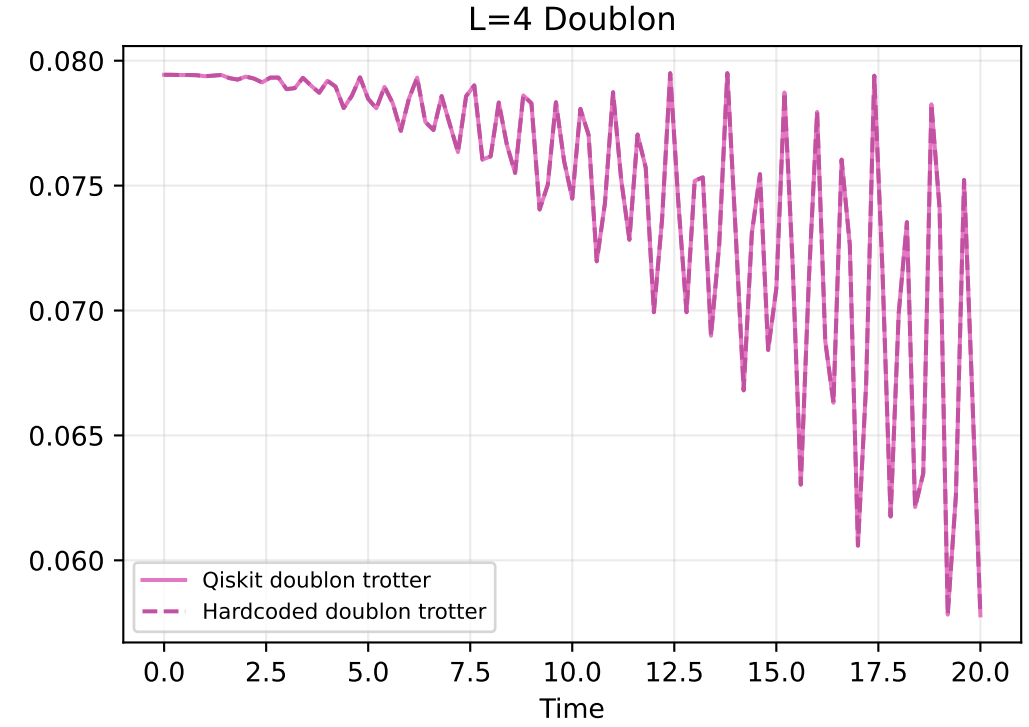
```
Bundle metrics page L=3

Trotterization comparison uses each path's configured initial state.
For VQE-init runs, both exact(t) and trotter(t) start from the VQE ansatz state.

ground_state_energy_abs_delta = 0.000000000000e+00
fidelity max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
energy_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
n_up_site0_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
n_dn_site0_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
doublon_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00

checks = {'ground_state_energy_abs_delta': True, 'fidelity_max_abs_delta': True, 'energy_trotter_max_abs_delta': True, 'n_up_s
PASS = True
```

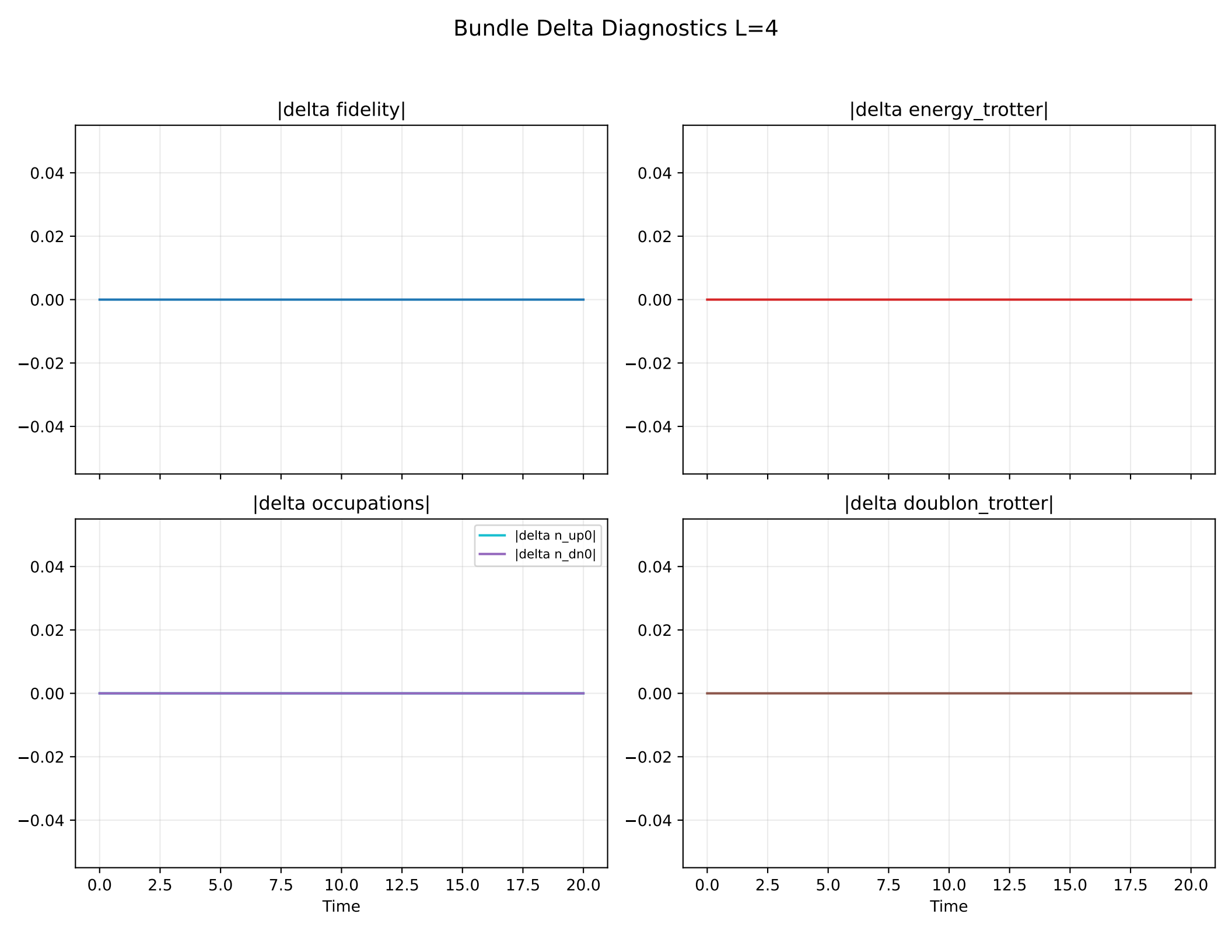
Bundle Page: L=4 Trajectory Comparison










Bundle Delta Diagnostics L=4
|delta fidelity|
|delta energy_trotter|
|delta occupations|
|delta doublon_trotter|
|delta n_up0|
|delta n_dn0|
0.04
0.02
0.00
−0.02
−0.04
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
Time

```
Bundle metrics page L=4

Trotterization comparison uses each path's configured initial state.
For VQE-init runs, both exact(t) and trotter(t) start from the VQE ansatz state.

ground_state_energy_abs_delta = 0.000000000000e+00
fidelity max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
energy_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
n_up_site0_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
n_dn_site0_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
doublon_trotter max/mean/final = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00

checks = {'ground_state_energy_abs_delta': True, 'fidelity_max_abs_delta': True, 'energy_trotter_max_abs_delta': True, 'n_up_s
PASS = True
```