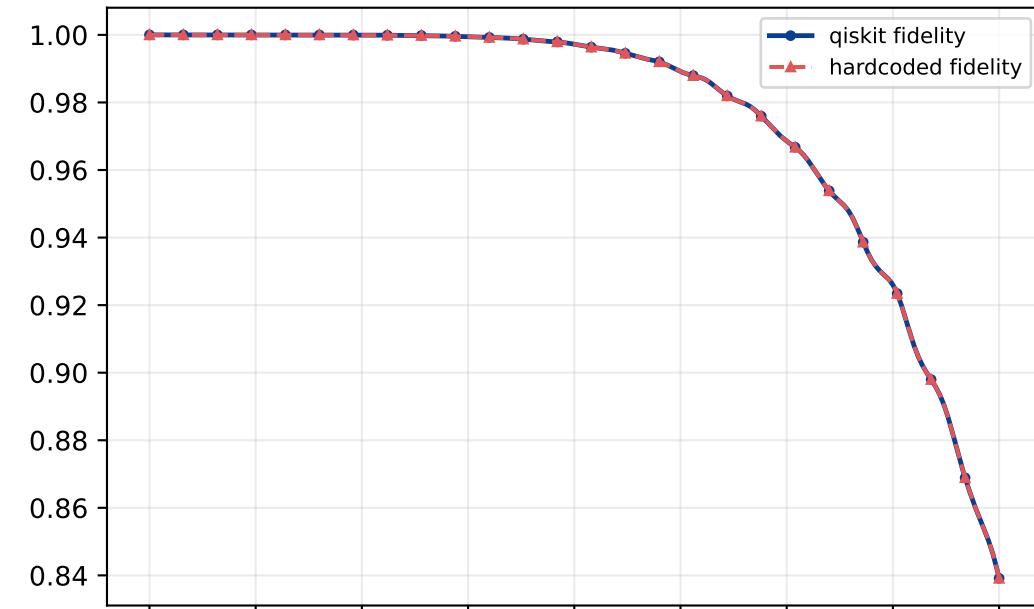
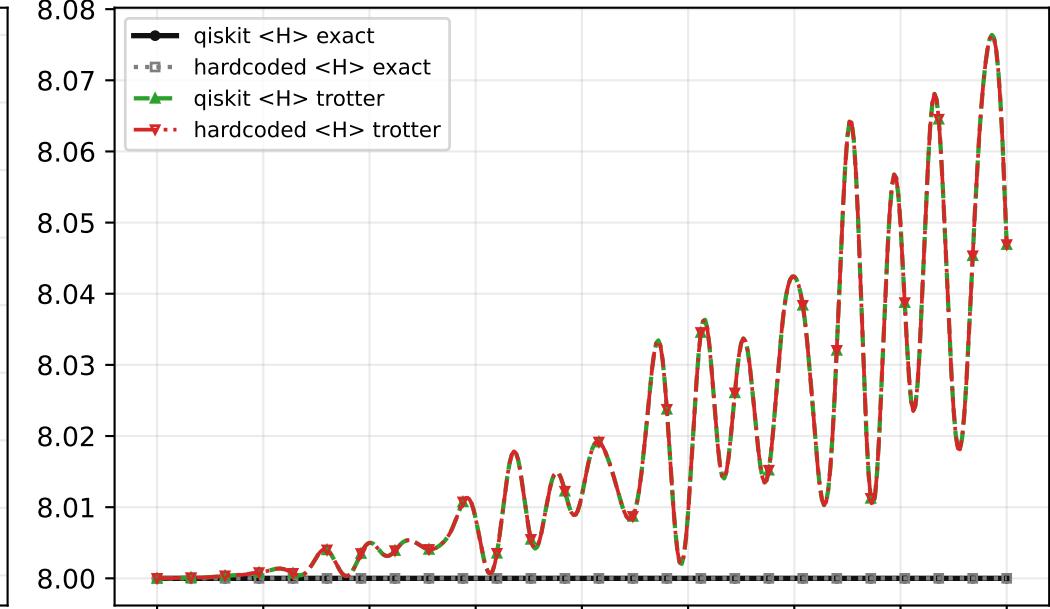


L=4 Time Dynamics: hardcoded vs Qiskit

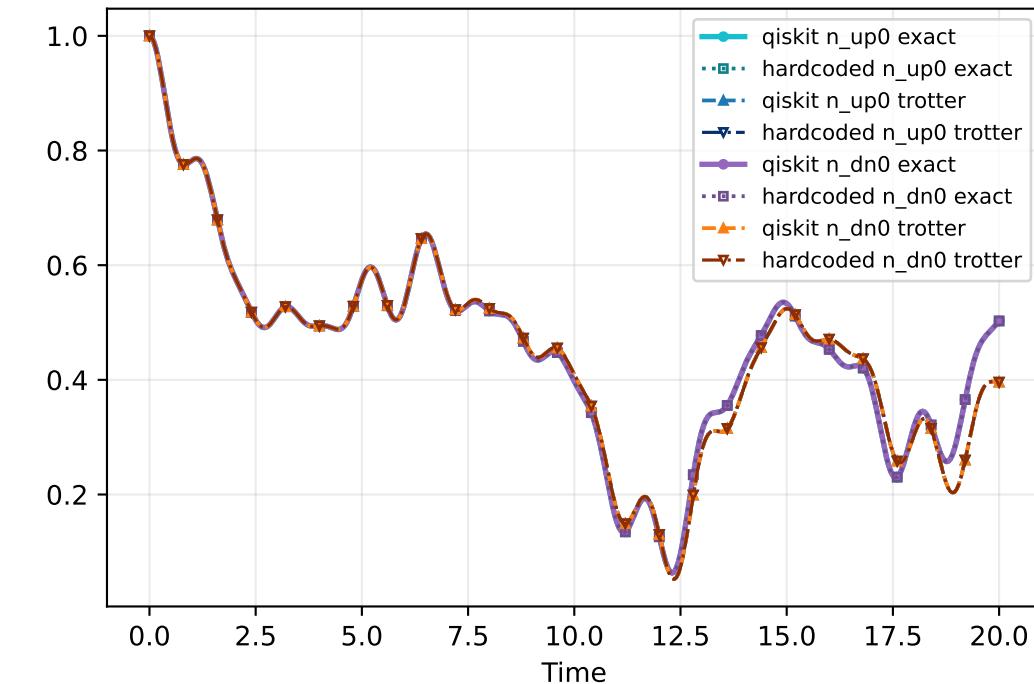
Fidelity(t)



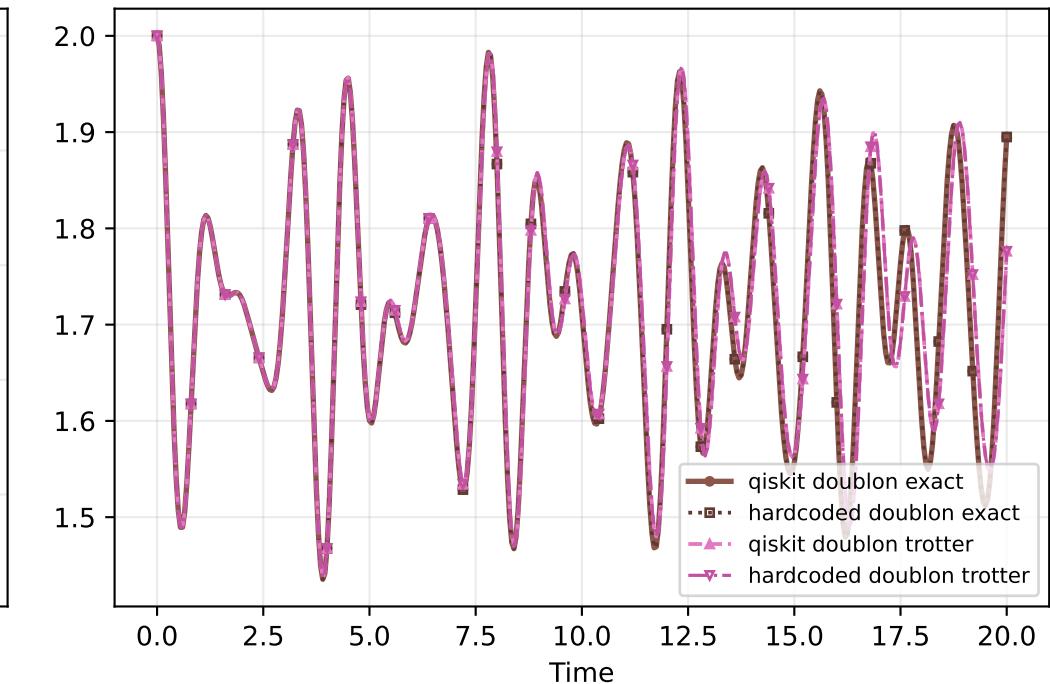
Energy with Exact Overlays



Site-0 Occupations with Exact Overlays

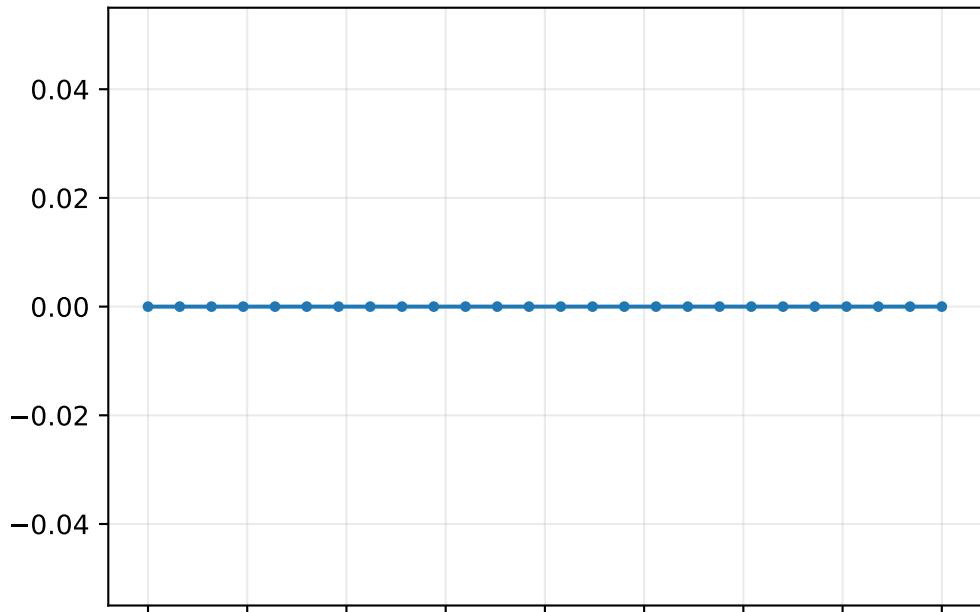


Total Doublon with Exact Overlays

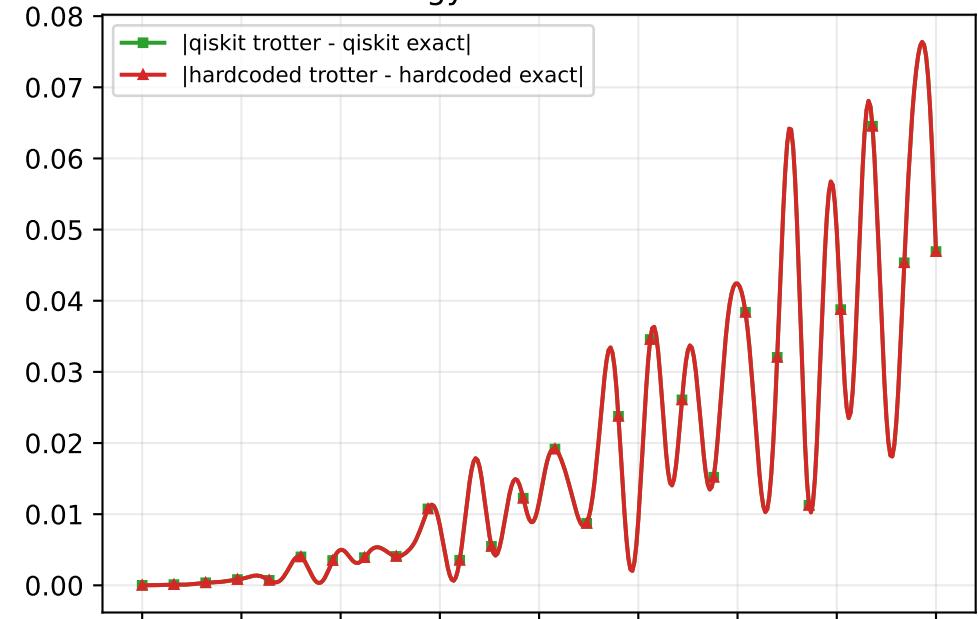


L=4 Delta Diagnostics

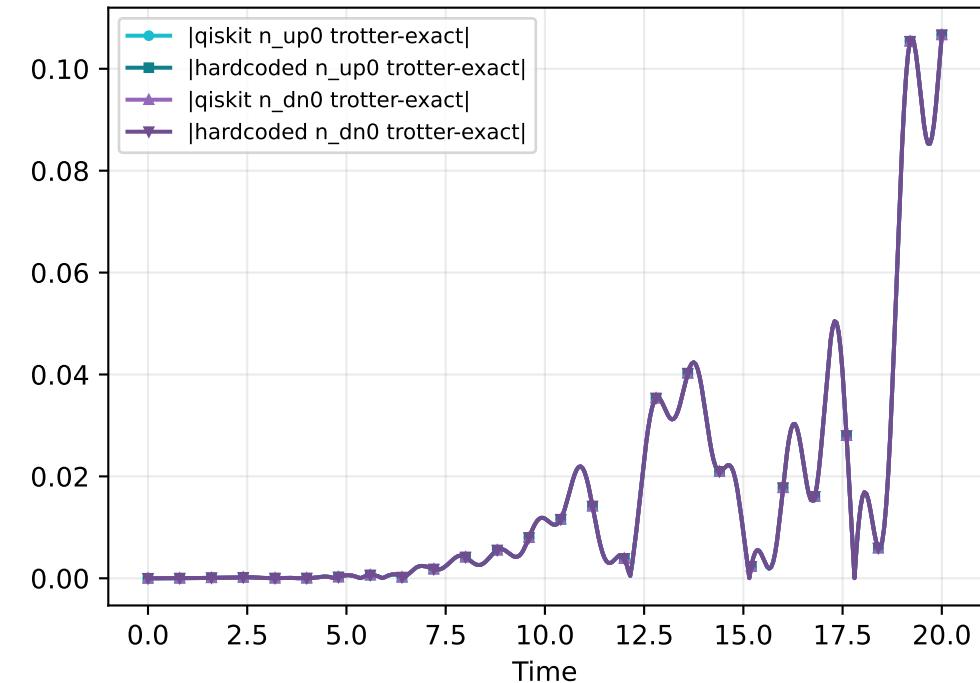
$|\delta \text{ fidelity}|$



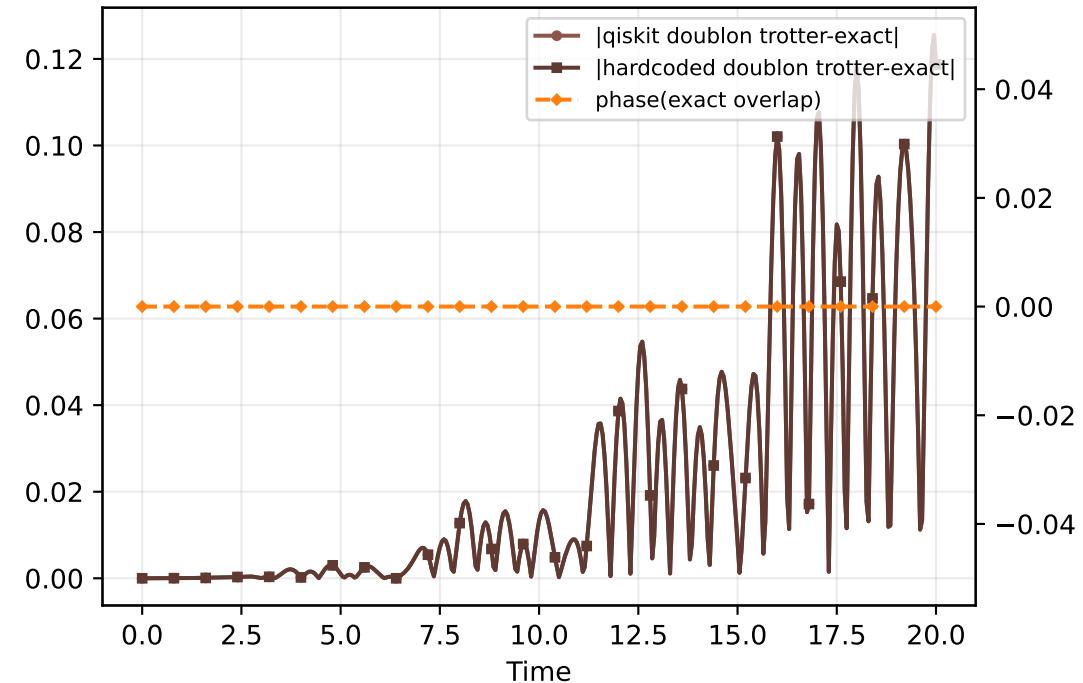
Energy Trotter-vs-Exact



Occupation Trotter-vs-Exact



Doublon Trotter-vs-Exact + Phase



L=4 validation summary

```
ground_state_energy_abs_delta = 0.000000000000e+00
fidelity max/mean/final delta = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
energy_trotter max/mean/final delta = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
n_up_site0_trotter max/mean/final delta = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
n_dn_site0_trotter max/mean/final delta = 0.000000000000e+00 / 0.000000000000e+00 / 0.000000000000e+00
doublon_trotter max/mean/final delta = 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_si
PASS: True
```

Locked settings:

```
{
    "hopping_t": 1.0,
    "onsite_u": 4.0,
    "dv": 0.0,
    "boundary": "periodic",
    "ordering": "blocked",
    "t_final": 20.0,
    "num_times": 401,
    "suzuki_order": 2,
    "trotter_steps": 128
}
```