Report for stillBrightSoliton

Simulated with: lib.managers.crankNicolson.dimensionless

Simulation constants:

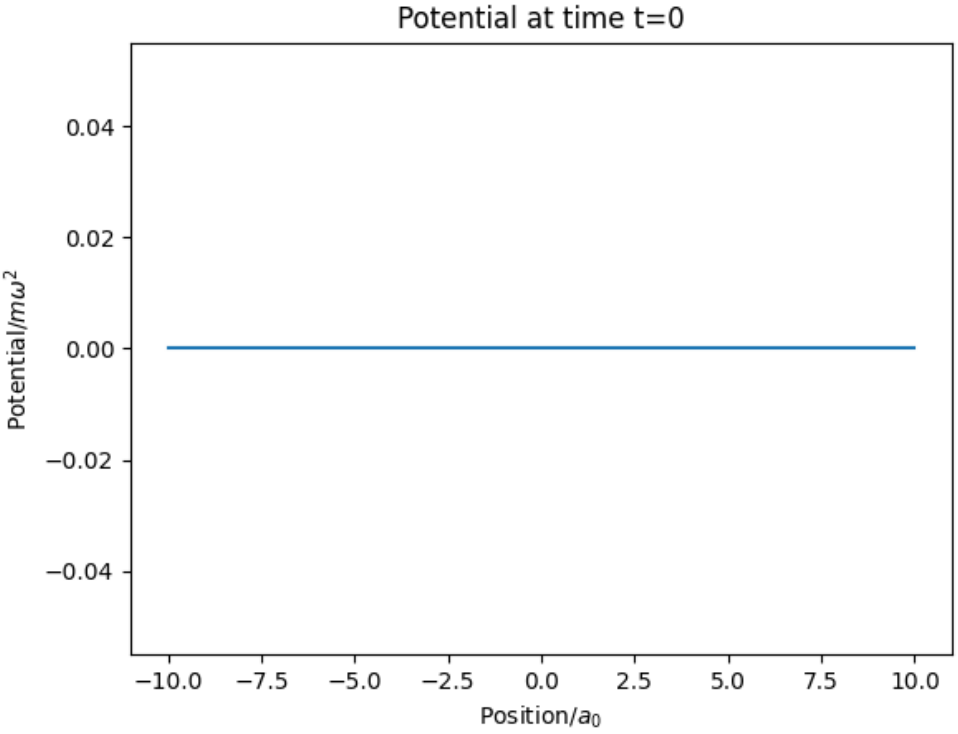
```
baseDensity: 1.000          chemicalPotential: 1.000    dt: 0.005

dx: 0.200                   eta: 1.000                  g: -1.000

hbar: 1.000                 healingLength: 0.707        kappa: 0.000

mass: 1.000                 omega: 0.500                plotFPS: 1000.000

plotPause: 0.001            plotStep: 10                plotYMax: 2

plotYMin: -2                r: 0.125                    tCount: 1000

tMax: 5                     tMin: 0                     v: 0.000

velocity: 0.000             x0: 0.000                   xCount: 100

xMax: 10                    xMin: -10
```

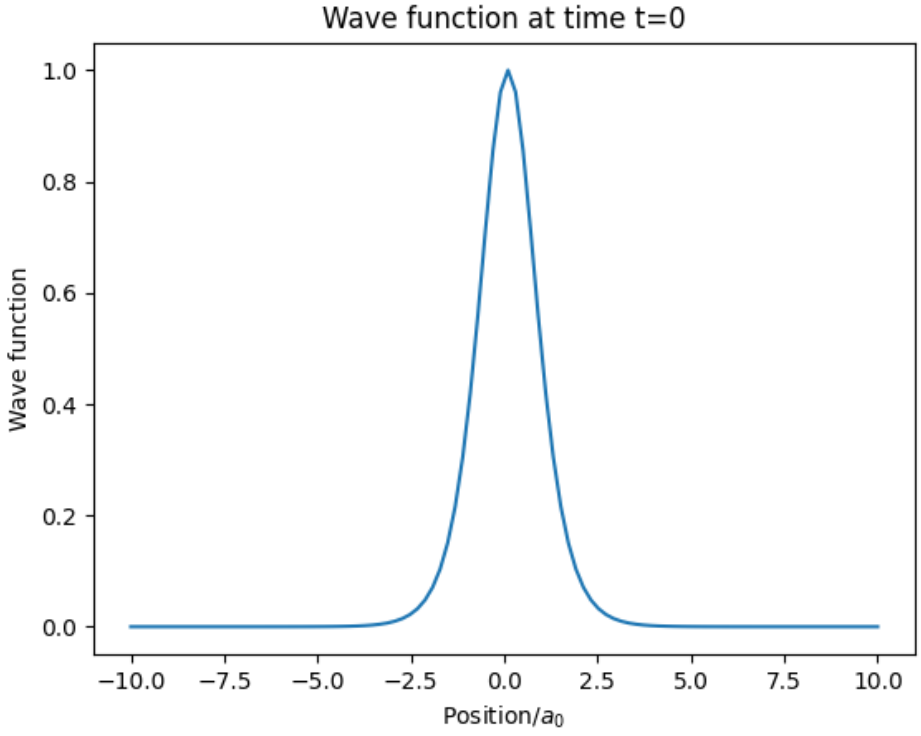
Wave function:

```
def waveFunction(x, t, constants):     kappa = constants["kappa"]     eta =

constants["eta"]     v = constants["v"]     omega = constants["omega"]

return eta * jnp.exp(1j * kappa * x - 1j * omega * t) / jnp.cosh(eta * (x - v *

t))
```

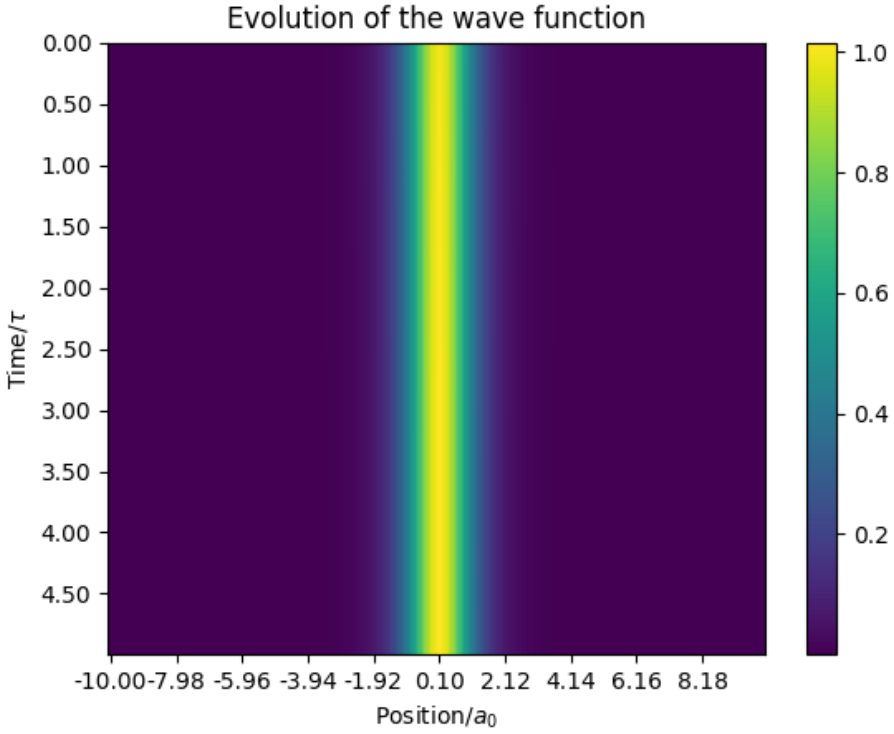
Potential function:

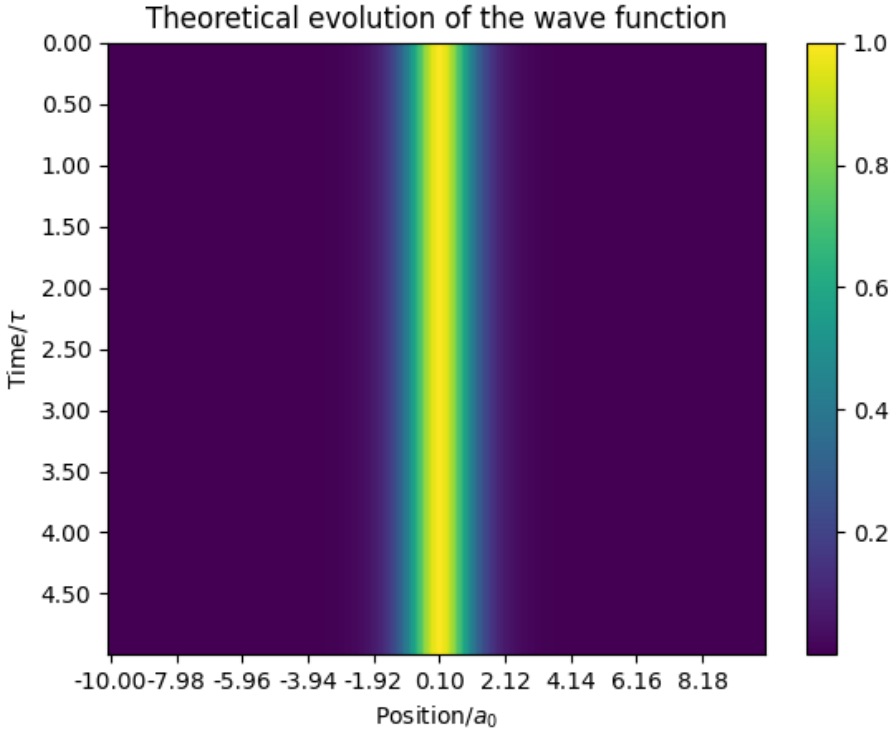
```
def V(x, t, constants):     return jnp.zeros_like(x)
```

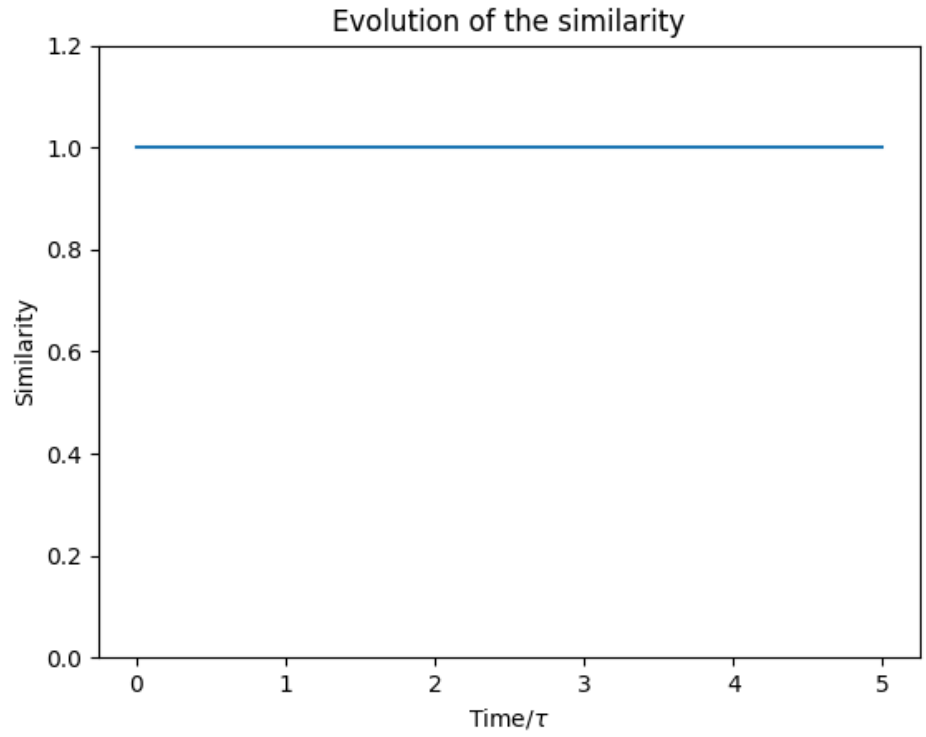

Potential at time t=0
0.04
0.02
0.00
−0.02
−0.04
Potential/$m\omega^2$
−10.0
−7.5
−5.0
−2.5
0.0
2.5
5.0
7.5
10.0
Position/a_0

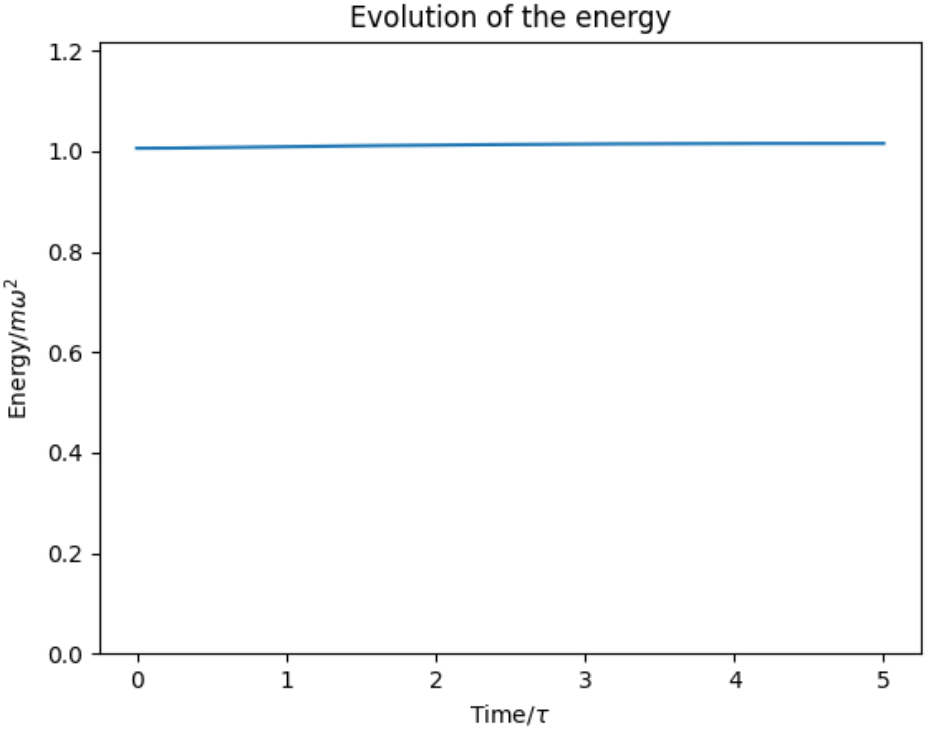

Wave function at time t=0
1.0
0.8
0.6
0.4
0.2
0.0
Wave function
−10.0
−7.5
−5.0
−2.5
0.0
2.5
5.0
7.5
10.0
Position/a_0

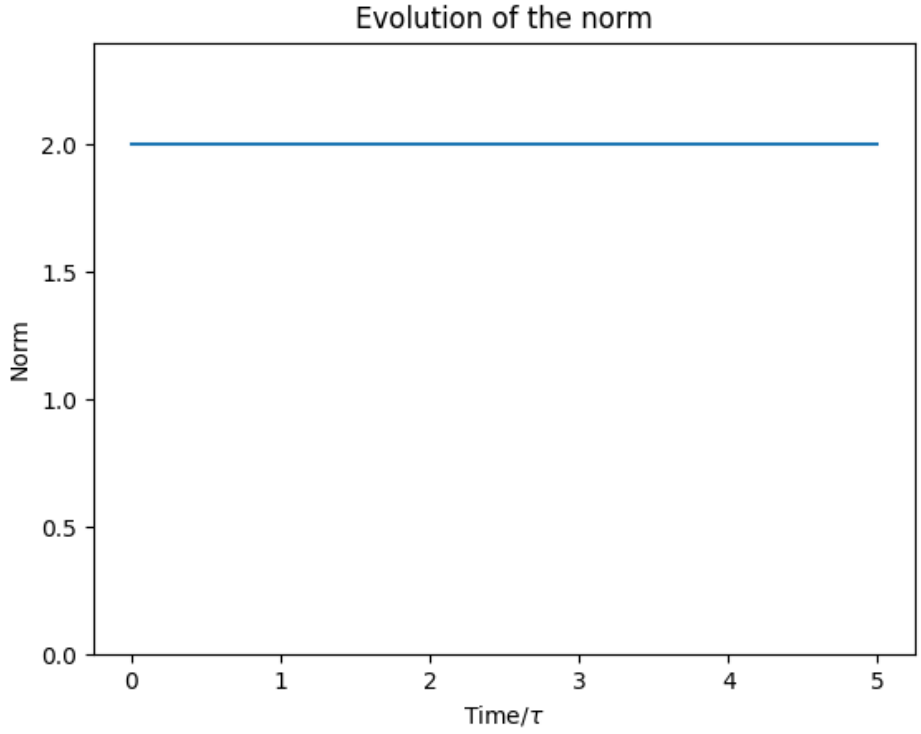
Results


Evolution of the wave function
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
Time/τ
-10.00 -7.98 -5.96 -3.94 -1.92 0.10 2.12 4.14 6.16 8.18
Position/a_0
1.0
0.8
0.6
0.4
0.2


Theoretical evolution of the wave function
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
Time/τ
-10.00 -7.98 -5.96 -3.94 -1.92 0.10 2.12 4.14 6.16 8.18
Position/a_0
1.0
0.8
0.6
0.4
0.2


Evolution of the similarity
Similarity
Time/τ
0.0
0.2
0.4
0.6
0.8
1.0
1.2
0
1
2
3
4
5


Evolution of the energy
Energy/mω²
Time/τ
0.0
0.2
0.4
0.6
0.8
1.0
1.2
0
1
2
3
4
5


Evolution of the norm
Norm
2.0
1.5
1.0
0.5
0.0
0
1
2
3
4
5
Time/τ