Report for fallingSoliton

Simulation constants:

N: 1400	U0: -0.000	a0: 0.000
a0_over_healingLength: 0.000	baseDensity: 10000.000	bohrRadius: 0.000
dispersionLength: -0.000	dispersionLength_over_bohr: -23.300100	
dx: 0.200	g: -0.000	hbar: 0.000
healingLength: 1.518	mass: 0.000	plotFPS: 1000.000
plotPause: 0.001	plotStep: 10	plotYMax: 2
plotYMin: -2	potentialW: 0.394	psi0: 100.000
r: 2.500	tCount: 200	tMax: 20
tMin: 0	velocity: 0.000	x0: 7.000
xCount: 100	xMax: 10	xMin: -10

Wave function:

```
def stillBrightSoliton(x, t, constants):    xi = constants["healingLength"]

phi0 = constants["psi0"]    x0 = constants["x0"]    return jnp.sqrt(2) * phi0

/ jnp.cosh((x - x0) / xi)
```
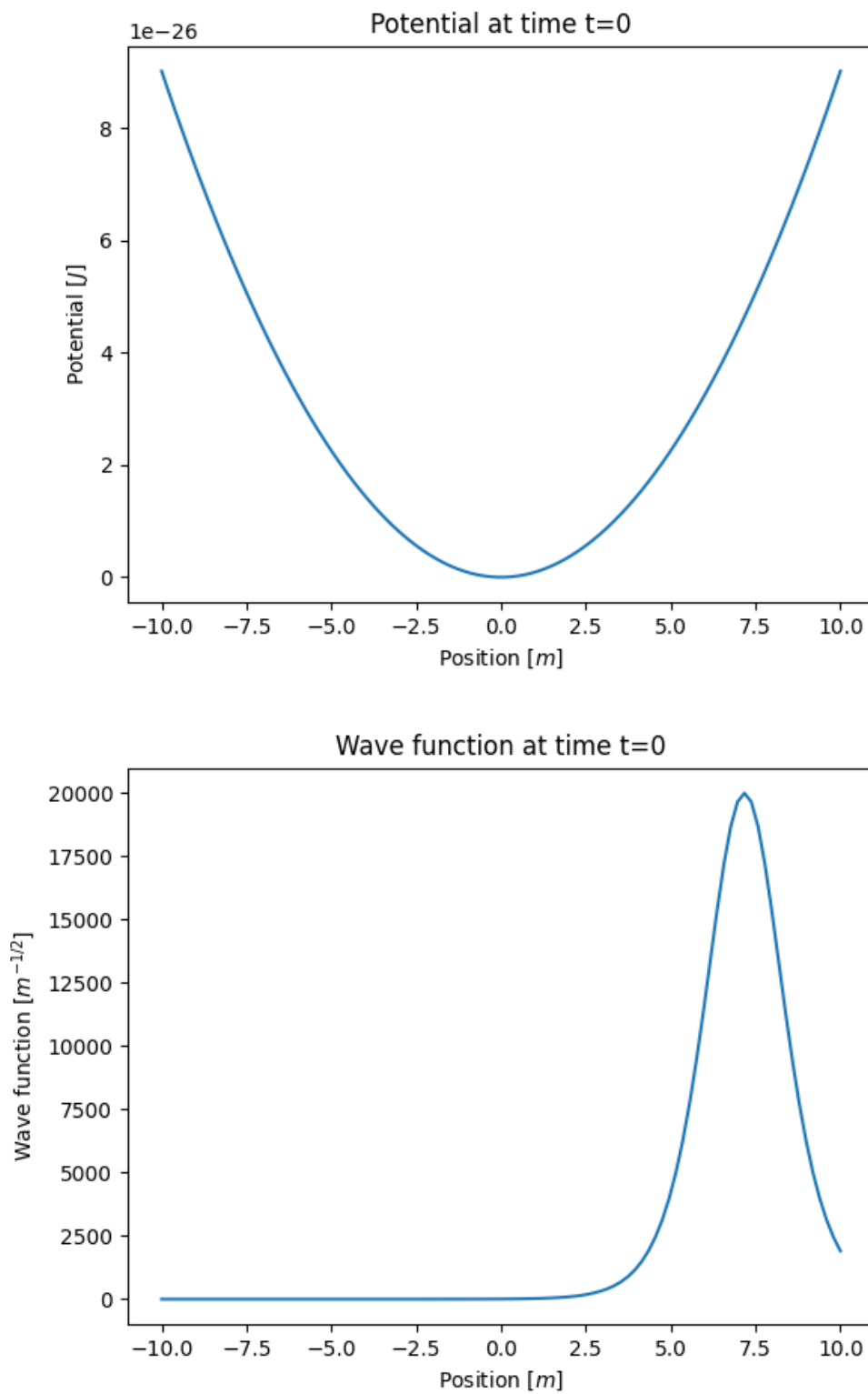
Potential function:

```
def V(x, t, constants):    """    The potential energy function.    """    #

The width of the harmonic oscillator potential.    w = constants["potentialW"]

# The mass of the particle.    m = constants["mass"]    # The potential energy

at the given position and time.    return m * w**2 * x**2 / 2
```
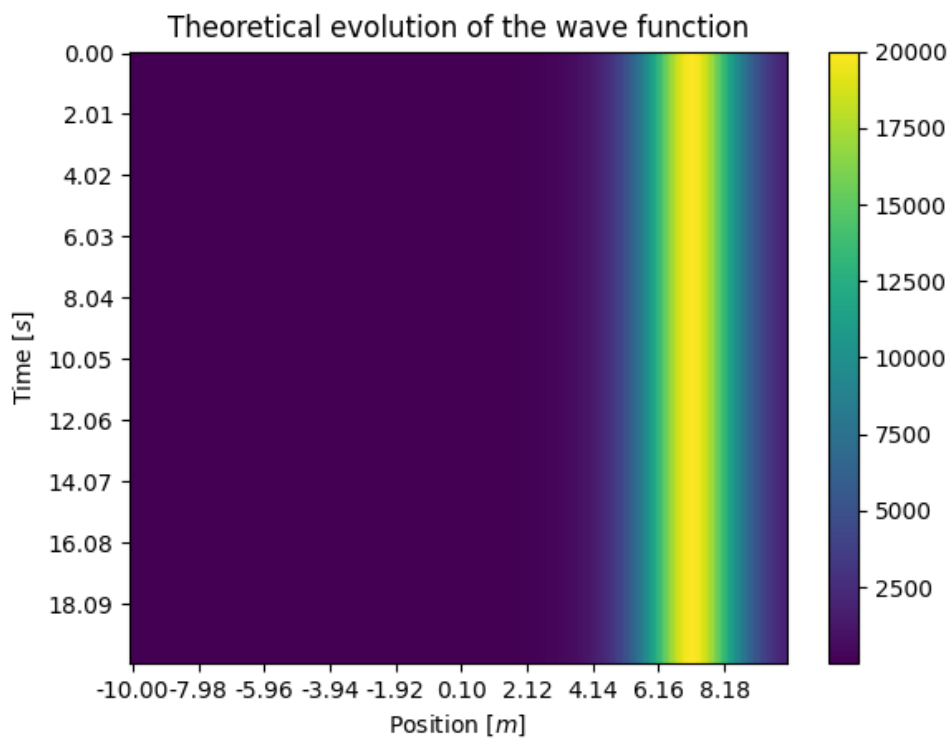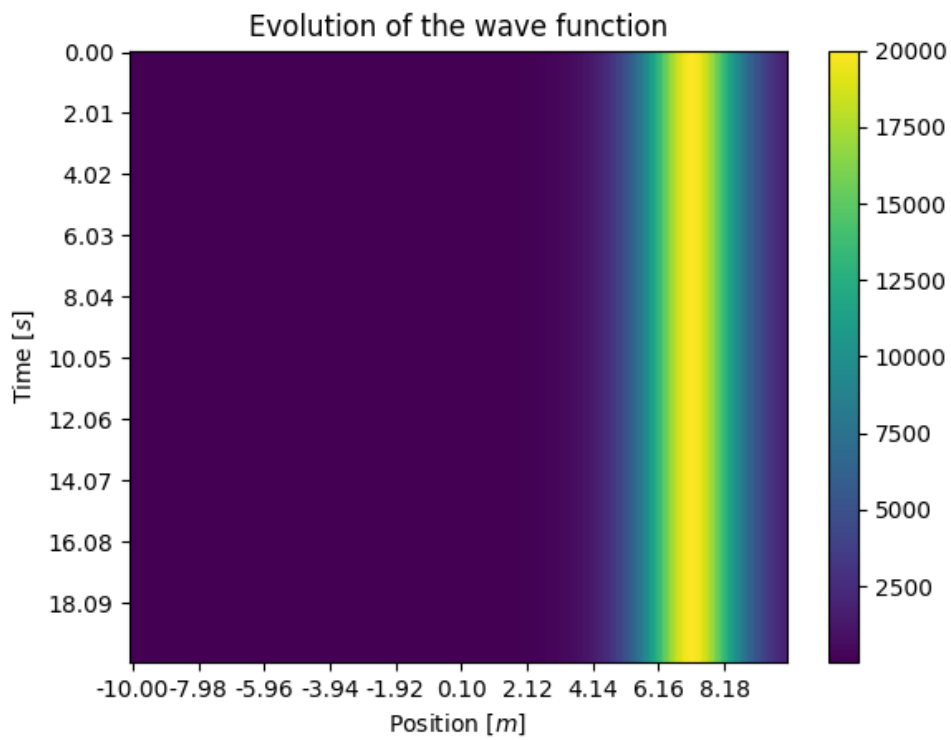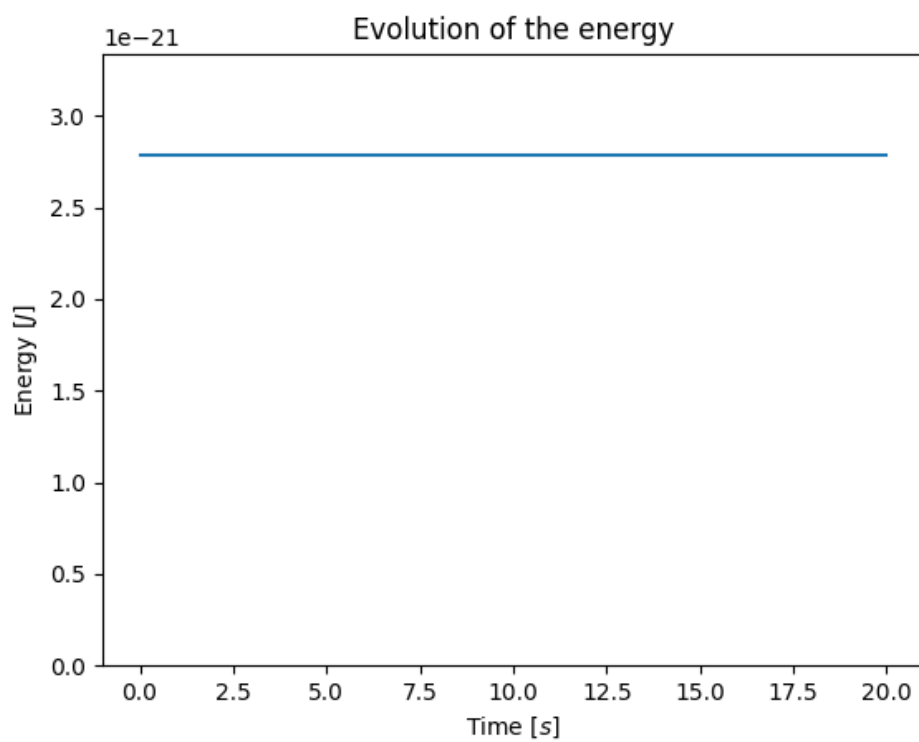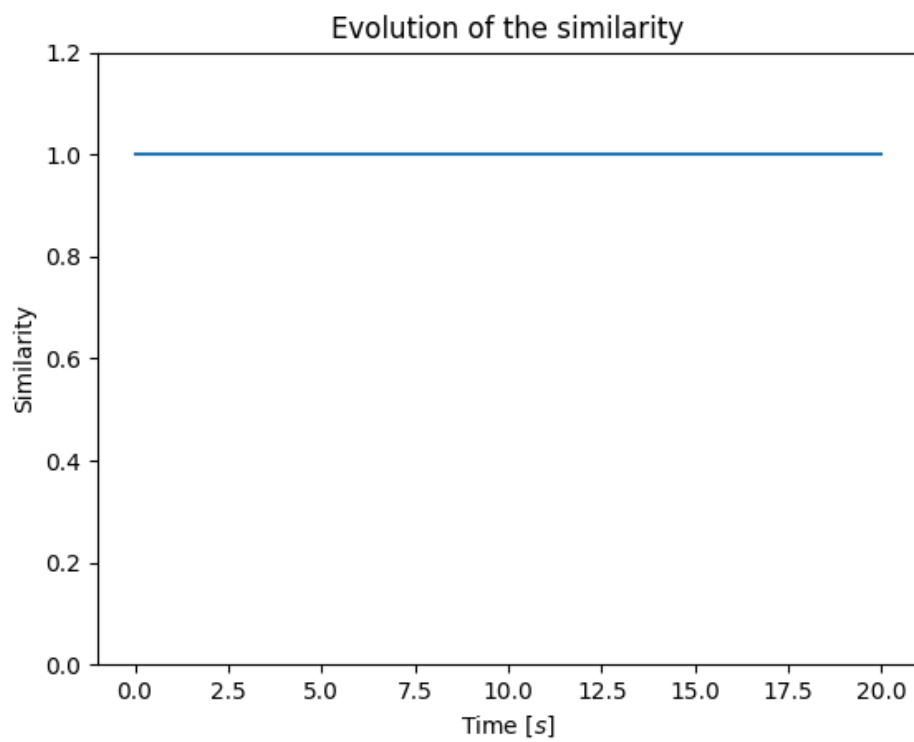
Potential at time t=0

Wave function at time t=0

Results

Evolution of the wave function

Theoretical evolution of the wave function

Evolution of the similarity

Evolution of the energy

Evolution of the norm