

Particle wavefunctions

What can the wavefunction tell us about a particle? _____

What do we need to find the wavefunction of the particle?

1. governing equation (called _____ equation)

- equation that tells us _____
- looks similar to the _____ equation
- two different regimes:
 - time "turned on": wavefunction _____
(what type of behavior does it exhibit?)
similar to _____
(which in-class demo(s) exhibited this same behavior?)
 - time "turned off": wavefunction _____
(what type of behavior does it exhibit?)
similar to _____
(which in-class demo(s) exhibited this same behavior?)

2. boundary conditions

- conditions that tell us _____
- examples of boundaries are (draw below):

Let's assume that we have already solved for our wavefunction (which can depend on position and time, or on energy and momentum).

Assume our wavefunction is a function of **position** $\psi = \psi(\mathbf{x})$. The more spread out the wavefunction:

- the more _____ we are of the particle's position
(certain or uncertain?)
- the more _____ we are of the particle's momentum
(certain or uncertain?)

Assume our wavefunction is a function of **momentum** $\psi = \psi(\mathbf{p})$. The more spread out the wavefunction:

- the more _____ we are of the particle's position
(certain or uncertain?)
- the more _____ we are of the particle's momentum
(certain or uncertain?)