Problem Set 9

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Contents

Problem 1

(a) The banded solver for tridiagonal matrices was copied over to **newman_9.8.py**. See **newman_9.8.py** for the code.

(b) The visual package is deprecated, and instead the vpython package is used in the program. Running the program will upon up a local host where the animation will be displayed. Below are a few screenshots of the wave at various points in time.

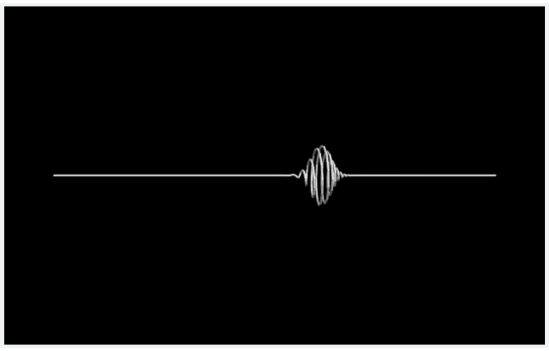

Figure 1: Initial waveform

(c) Initially, the wave function will be centered around $x0$ (midpoint of the domain) and will have a Gaussian shape. As the simulation progresses, the wave spreads out, which is due to the quantum mechanical nature of the particles.

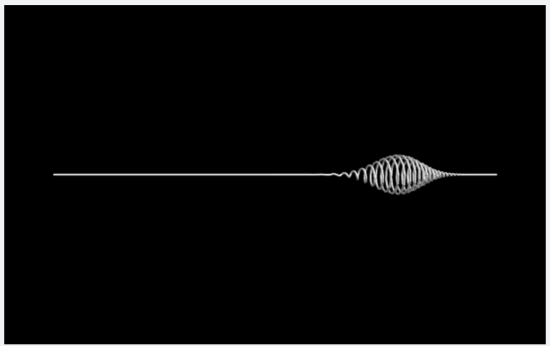

Figure 2: Waveform at t_2

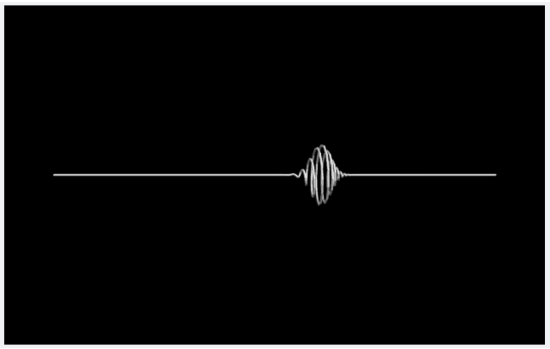

Figure 3: Waveform at t_3

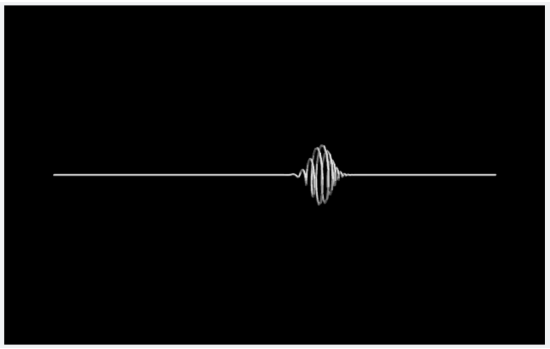

Figure 4: Waveform at t_4