Changing Velocity

Software

- VPython, Python and the graphical user interface (GUI) IDLE (or VIDLE)

Objective

Gain experience writing VPython programs

- Create and use graphics windows to plot variables

Learn how to animate an object with non-constant velocity
Learn how to effectively search for help in tutorials and reference manuals

Group

Model a cart (the green lab cart) on a track (2 meters long).

- Start your cart on an end with no initial velocity
- Determine the direction and magnitude acceleration needed to make your cart travel the length of the track in 5 seconds
- Create a graphics window to plot the cart's position as a function of time

NOTE: Use your code from last week as a starting point. Make sure to keep your old program.

Individual

This week you will model the cart on the horizontal track with a finite force (constant acceleration).

Complete Computational Problem 2.P.70

- Note 1: Create two graphics windows so you can display x(t) and $v_x(t)$
- Note 2: Use your comments to answer questions as well as explain what you are doing.
- Note 3: Clearly indicate how to change initial conditions to answer both part (b) and (d)

Advanced

Create a program of your own choosing to model a physical event.

- Model an object thrown into the air
- Model a mass on a spring
- Model a gravitational interaction – for instance an object in "orbit"

NOTE: You only need to complete one A-level lab exploration – either a computer model or an analog lab investigation.

You can always modify (correct) programs you have received feedback on prior to the programming due date.