Physics 112: Oscillations – Wiimote on a Spring

Objective: To learn about how different springs affect the motion of a mass attached to it.

Materials: Wiimote, springs, ruler (or metre stick).

Be careful to not overstretch the spring!

Procedure:

1. Connect the Wii remote to the PC (click on the CPU Devices shortcut on the desktop then click add a device)
2. Start *Wii Physics* and change the collection mode to measure the 1D motion, y-acceleration only.
3. Right click on the blank Wii Physics screen and select *Show Point Values*.
4. Attach the wiimote to the spring and let it hang so it is not moving. This is its equilibrium position.
5. Stretch the spring 5 .0 cm past equilibrium position and let it oscillate.
6. Collecting data by pressing ctrl+F5. Let the program run for about 8 to 10 seconds (you should see about 10 peaks).
7. Right-click on the graph and save it as an image file.
8. Repeat for a stretch length of 10.0 cm.
9. Repeat the above for two springs attached to the wiimote.

Analysis Questions

1. From your graph determine the period and frequency of the vibrations.
2. For all parts of the lab calculate the average speed of the wiimote as it oscillates. Remember: $V_{sp} = \frac{distance}{Time}$
3. What affect did stretching the spring have on its period, frequency, and average velocity?
4. What affect did adding a second spring have on its period, frequency, and average velocity?

Summarize all your data and calculations in a table.