Physics 122: Simple Harmonic Motion

Objective: To learn about how different springs affect the motion of a mass attached to it (Refer to Ch. 13 and 13.1 for information and guidance).

Materials: Wiimote, sensor bar, 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, distance and 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 2.0 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.
7. From your graph determine the period of the vibrations (if everything is working properly your distance graph should have a sinusoidal pattern to it as it oscillates about the equilibrium position).
8. Repeat for a stretch length of 4.0 cm.
9. Repeat the above for two springs attached to the wiimote.

Analysis Questions

1. Use your value for the period to calculate the spring constant for each run.
2. Calculate the maxmium velocity of the wiimote for each run.

Summarize your data and calculations in a table.