

DataVision Experiment: "Simple Harmonic Motion"

Subject: Physics

Sensor: Light Gate

Overview:

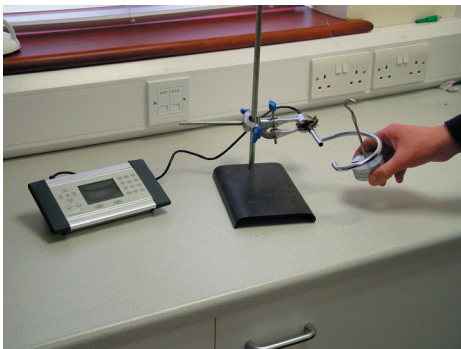
This experiment for the LogIT DataVision datalogger will show how the length of a pendulum affects the Time Period. The Time Period is the time taken for a pendulum to swing from one side to the other and back again.

Equipment required: DataVision CX
1 Light Gate
1 Clamp Stand
Cotton
Pendulum Mass

Hazards:

Care should be taken when using any form of mass.
Supply a method of catching the mass should the string/cotton snap eg. rags or layer of foam rubber.





Setup:



1. Connect the light gate into channel 1 of the DataVision.
2. Mount the light gate as shown in the picture.
3. Attach some cotton (string could also be used) to the top of the stand and hang the Mass at the bottom.

Note: For clarity, the picture shows an angle greater than ideal. Keep the angle small to prevent the oscillations from deteriorating.

Method:

1. Press a key to switch on DataVision.
2. Using the joypad, select  'timing mode'.
3. For the 'Measure' option, use the joypad and select 'S.H.M. Period'.
4. Pull the Mass to the start position and press  to start logging.
5. Release the Mass and gather a set of readings. (More than 5 for accuracy)
6. Press  to stop logging.
7. You can now note your results and calculate the average or save the results for later.
8. Change the length of the Pendulum by a small amount (5 - 10 cm)
9. Press  to start recording again.
10. When finished you can then save your results and then calculate the average time period for each length.

Results:

What do you notice about the time period as the length of the pendulum is changed?
Try and investigate the following to see the effect on the Time Period:
Mass of the Pendulum bob (Name given to the Mass at the end of the pendulum)
Amplitude of the Pendulum. This is the angle the pendulum is at before release.