Rolling Uphill with DynaKar

You will need :

- a Dynakar
- a laptop (with the data-logging software installed)
- a long flat table
- some blocks (or books) to raise one end of the table
- a short release ramp

Investigate the motion of a car rolling up and down a slope

1. Prop up one end of the table using blocks to make a gentle slope.

2. Release the Dynakar down a short ramp so that it rolls up the slope and returns.

3. What do the graphs for displacement-time and velocity-time tell you about the motion of the car?

4. Using the data recorded find suitable functions for displacement and velocity as a function of time.

5. Interpret the equations you have found and comment on their validity.

Further investigations

How does the height or the angle of the slope affect :

- the maximum distance up the slope the car travels;
- the time taken to reach the maximum distance;
- the acceleration of the car ?

What is the effect of increasing the mass of the car?

What is the effect of increasing the drag of the car, by adding some card to act as a sail?