

## Practical 3 – Topic 4

### The bifilar pendulum

This practical can also be a design lab if you give no further information other than listing some of the materials to be used.

#### Criteria assessed

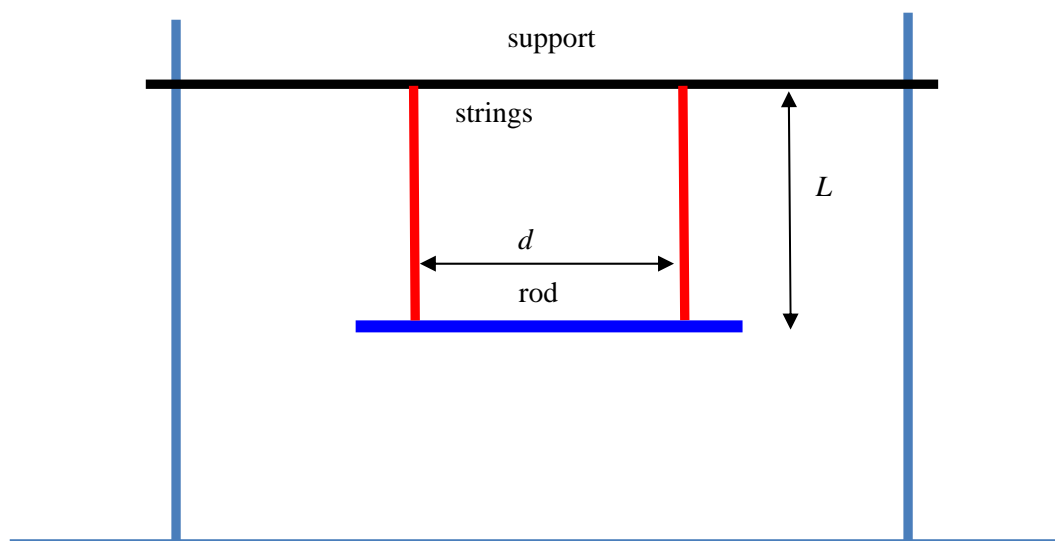
- DCP
- CE

#### Materials needed

- Support stands
- Clamps
- Uniform metallic rod
- String
- Stopwatch or light gate connected to timer
- Ruler/tape measure

#### What to do

A rod is suspended horizontally from two strings of equal length  $L$  that are a distance  $d$  apart.



When the rod is displaced slightly and then released, it performs oscillations in a horizontal plane. In the sketch above, for example, the right-hand end of the rod is pulled out of the plane of the paper and the left-hand end is pushed into the plane of the paper.

Theory predicts that the period of oscillation  $T$  depends on both  $L$  and  $d$  through a power relation  $T \propto L^p d^q$ .

- Design an experiment to verify this law and to determine the values of the constants  $p$  and  $q$ .
- First decide what the control variables are going to be and then choose the independent variable.