NEATH PORT TALBOT COLLEGE
COLEG CASTELL NEDD PORT TALBOT

School of Maths & Science
Science Practical

Bifilar Suspension

◆ Aim

To investigate the ratio of the period of oscillation of a rod in a horizontal plane to those in a vertical plane and how they depend on the distance between the two suspension points.

◆ Introduction

A metal rod will be suspended from two points. It will oscillate in both the horizontal and vertical plane and the time period determined in each case. The distance between the two suspension points will be altered and the effect on the time period of each kind of oscillation investigated.

◆ Safety

Control Measures

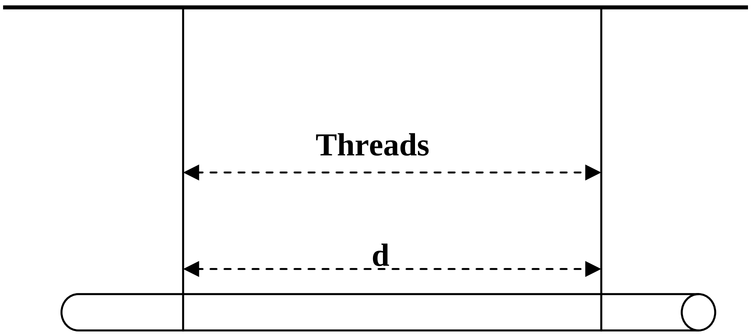
- You are reminded of the need of good laboratory practice in order to maintain a safe working environment.
- **Goggles must be worn at all times.**

Hazards

General Danger	Make sure that the retort stand is securely fastened to the bench using a G – clamp

◆ Apparatus Required

Rigid metal rod about 75 cm long (e.g.. a rod unscrewed from a retort stand); about 1.5 m of thread ; two retort stands with bosses and clamps to enable the rod to be suspended horizontally by two vertical threads ; metre rule; stopwatch; spirit level ; scissors.



suspended rod

◆ Procedure

1. Suspend the rod symmetrically using two threads as shown above. Make sure that the rod is horizontal, the threads are vertical and of equal length in the range 40 - 50 cm. Measure the distance 'd' .

2. Now set the rod oscillating in a vertical plane by giving it a gentle push along its length and measure the period 'T_o' of small oscillations.

3. Next set the rod oscillating in a horizontal plane so that it turns about a vertical axis through its centre. Measure the period 'T' of these small oscillations. Repeat the measurement of 'T' for seven more values of 'd' , keeping the length of the threads constant.

d	**1/d**	**T_1 / s**	**T_2 /s**	**T_{av} / s**	**T_{av} /s (one oscillation)**	**T/ T_o**

4. Plot a graph of (T/ T_o) on the y - axis against (1/d) on the x - axis . Determine the gradient of the graph.