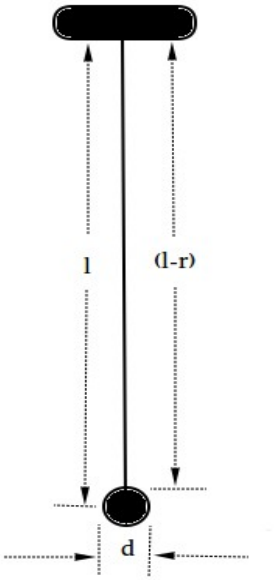
The Simple Pendulum

AIM

1. To determine the Period of a Simple Pendulum with different lengths and to find the acceleration due to gravity at the place
2. To determine the Period of a Simple Pendulum with different lengths and hence to find the acceleration due to gravity at the place by plotting l-T^2 graph

APPARATUS

Simple Pendulum, metre scale, stop clock, vernier calipers etc.



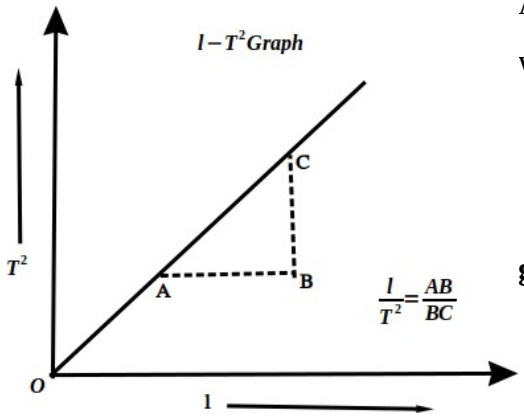
THEORY

(for Aim 1)

Acceleration due to gravity at the place $\mathbf{g = 4\pi^2}\ \frac{l}{T^2}$

Where T is the period of the pendulum with length l

(for Aim 2)



Acceleration due to gravity at the place $\mathbf{g = 4\pi^2}\ \frac{l}{T^2}$

Where T is the period of the pendulum with length l

$\mathbf{g = 4\pi^2}\ \frac{AB}{BC}$

OBSERVATIONS (for Aim 1)

Diameter of the pendulum bob **d** = cm
Radius of the bob **r = d/2** = cm

Trial No	Length of the pendulum (l) cm	(l-r) cm	Time taken for 20 Oscillations			T = $\frac{t}{20}$ s	$\frac{l}{T^2}$ cm/s^2
			1	2	Mean (t) s		
1							
2							
3							
4							
5							
6							

Mean $\frac{l}{T^2}$ = cm / s^2 = cm / s^2

= m/s^2

CALCULATIONS (for Aim 1)

Acceleration due to gravity at the place **g = 4π^2** $\frac{l}{T^2}$ =

= m / s^2

OBSERVATIONS (for Aim 2)

Diameter of the pendulum bob **d** = cm

Radius of the bob **r = d/2** = = cm

Trial No	Length of the pendulum (l) cm	(l-r) cm	Time taken for 20 Oscillations			T = $\frac{t}{20}$ s	T^2 (s^2)
			1	2	Mean (t) s		
1							
2							
3							
4							
5							
6							

CALCULATIONS (for Aim 2)

From the graph $\frac{l}{T^2}$ = $\frac{AB}{BC}$ = cm / s^2 = cm / s^2

= m/s^2

Acceleration due to gravity at the place **g = 4π^2** $\frac{l}{T^2}$ **=4π^2** $\frac{AB}{BC}$ = m/s^2

= m/s^2

RESULTS

1. It is found that l - T^2 graph is a straight line
2. Acceleration due to gravity at the place = m / s^2
3. Acceleration due to gravity at the place (from graph) = m / s^2