

# Physics Experiment Manual: Simple Pendulum

## 1. precise Purpose

To determine the acceleration due to gravity (g) using a simple pendulum.

We will measure the period of oscillation for different lengths.

## 2. Theory

The period T of a simple pendulum is given by  $T = 2 * \pi * \sqrt{L/g}$ .

Squaring both sides gives  $T^2 = 4 * \pi^2 * (L/g)$ .

Thus, a plot of  $T^2$  vs L should yield a straight line with slope  $4\pi^2/g$ .

## 3. Error Analysis Guide

Common sources of error include:

- Air resistance: Damps the oscillation.
- Reaction time: Delay in starting/stopping the stopwatch.
- Angle of release: Should be small (< 10 degrees).