

Simple Pendulum



General Aim

Determination of acceleration of gravity (g).

Method

Periodic motion (simple harmonic motion)

Learning Objectives (ILOs)

- Understand the motion of a simple pendulum under small angle approximation.
- Introduce the simple harmonic motion as an example for periodic motion.
- Appreciate the possible complications of analysis in a simple physical scenario.
- Understand the source of experimental error for a real pendulum.

Theoretical Background/Context

Gravity exerts a force on every object. This force is proportional to the mass of the object. The proportionality constant is the acceleration of gravity "g". A simple pendulum is made of a long string and a tiny metal sphere, steel or preferably lead (higher density). The period of oscillation of a simple pendulum may be found by the formula:

$$T=2\pi\sqrt{L/g}$$

Principle of Work

Measuring the period of oscillations of a simple pendulum under the action of gravitational force at a small angular displacement .