

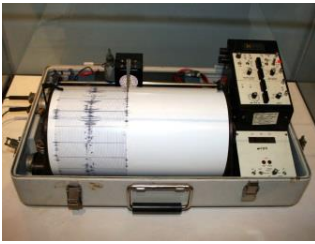
MSET – SMALL ANGLE PENDULUM

Purpose

Verification that a simple pendulum has a frequency of oscillation that is mass independent.

Pendulum

A pendulum is a device with a mass suspended from a pivot point. As the mass is moved to a point away from its' resting place and released it will tend to oscillate for a period of time until it returns to an equilibrium position. Pendulum applications include the use of it in seismic sensors for earthquakes.



Theory

Pendulums with a rigid arm and mass attached will oscillate at a period "T" that is a function of length "L" and gravitational constant "g" as defined as follows:

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

Note that the period of oscillation doesn't vary as the mass at the end of the rod is increased.

Setup



Results

Data of the pivot point rotation connected to a rigid rod will be plotted and the measured period or frequency of oscillation determined at a fixed length for multiple runs at various masses. Data acquired with variable lengths and a fixed mass will then be compared to conclude if the system behaves as a simple small angle pendulum.

