

Speed of Sound Using Open Columns



General Aim

To determine the speed of sound in air at room temperature

Method

Open Air column

Learning Objectives (ILOs)

- Explain the resonance phenomena in an open air column.
- Set up an experiment to determine the speed of sound in air using an open air column.

Theoretical Background/Context

When a sound source (wave generator) is held at one end of the open-air column (tube), standing waves are generated inside the columns. Resonance (loudest sound) occurs, when the frequency of the air column is the same as the frequency of the source.

Principle of Work

By determining the resonance' position and correlating the relation between the wavelength of the fundamental tone formed and the frequency of the source, the speed of sound in air at room temperature can be estimated.