

Thought-provoking practical physics workshop

فکر انگیز عملی طبیعیات

Lesson: Vibrations on a String

How does a radio tune into different channels? Can a music maestro shatter a crystal glass by beating the tabla with a particular frequency and pitch? How does our ear distinguish between tones in the multitude of sounds we hear every day? Standing or stationary waves are formed when a guitar string is plucked, when a certain radio channel is tuned into, or if a metallic door is accidentally run into.

Objectives

In this experiment, we will use a custom built apparatus to analyze standing/stationary waves and measure the modes of vibrations on a string.

How to conduct the experiment

Apparatus: Custom built string holder, speaker, weights, string.

Software: Frequency Sound Generator Application (Android)

A string is stretched between a rigid support and a speaker. The tension in the string can be changed by changing the mass attached to the string. Use the Frequency Sound Generator application on the phone to generate sound waves of different frequencies.



Exploration Points

1. What happens when you change the tension in the string?
2. Establish a relationship to predict when a certain mode of stationary waves will appear.
- 3.

Safety

Be cautious of the sharpness of the string.