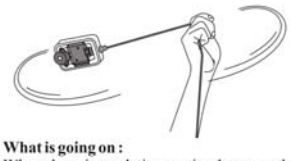

What is going on :
When there is a relative motion between the source of sound and an observer, the apparent pitch of the sound heard by an observer is different from the actual one. This effect was first detected by Austrian Physicist J.C.Doppler in 1842 and after his name it is known as Doppler Effect.

When the source of the wave is moving towards the observer, each successive wave crest emitted from a position closer to the observer than the previous wave. Therefore apparent frequency is slightly greater than previous. This results in increase in pitch.

When the source of the wave is moving away from the observer, each successive wave is emitted from a position farther from the observer than the previous wave. So the apparent frequency decreases. This results in reduction of the pitch.

Cristian Doppler

Born : 29 November 1803, Salzburg, Austria.
Died : 17 March 1853 (aged 49), Venice, Italy.
Nationality : Austrian.
Institutions : Prague Polytechnic, University of Vienna.
Known for : Doppler effect.

THE WAY TOWARDS PRACTICAL SCIENCE

DOPPLER EFFECT

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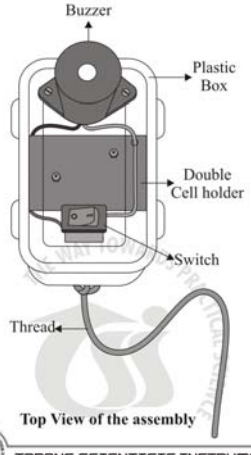
DOPPLER EFFECT
Swing the Source of sound on a string and observe the Doppler Effect.

Assembly : Consists of a plastic box of size 110X70X30 mm. The plastic box has a lid which can be locked. An electric buzzer and a switch are fixed on the top surface of the lid and a double cell holder is fixed to the lower surface of the lid. All the three i.e. cell holder, buzzer and switch are connected in series as per the circuit diagram shown below. A nylon thread of around 2m in length is fixed on one side of the plastic box.



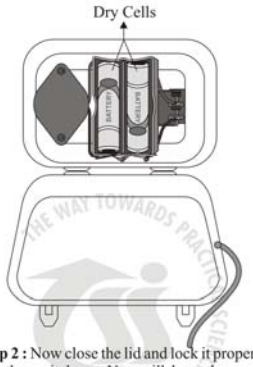
Top View of the assembly

When the box is open

Circuit diagram

To do and observe

Step 1: Open the lid of the plastic box and insert two dry cells in the cell holder.



Step 2 : Now close the lid and lock it properly. Put the switch on. You will hear the sound from the buzzer.

Step 3 : Hold the thread in your hand and start swinging the whole assembly of the plastic box, (as shown below) in horizontal plane. Take care that the assembly swings by making as much bigger circle as possible. While swinging you will observe that as the buzzer swings towards you, the pitch of the sound as heard by you increases slightly. As the buzzer swings away from you the pitch of the sound as heard by you decreases slightly.