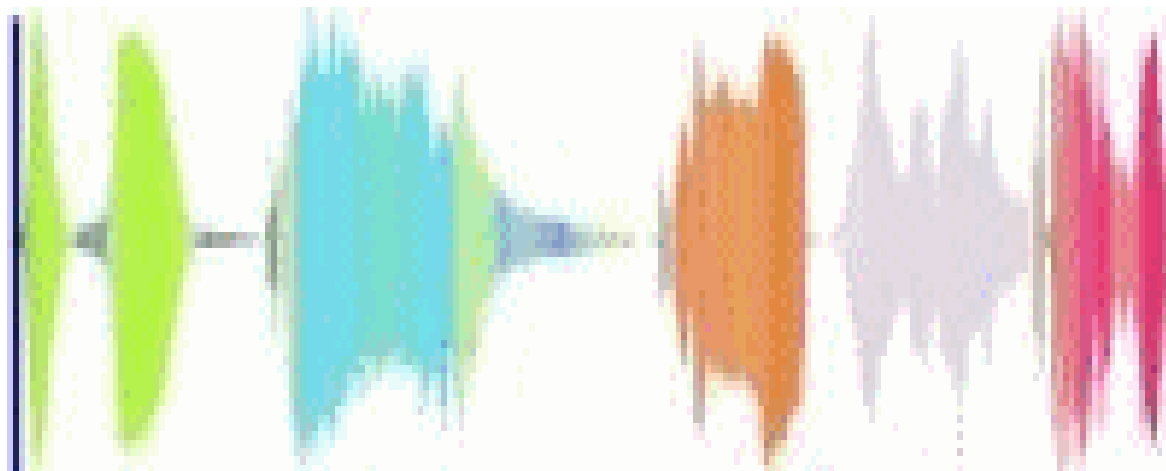




Sound is all around us



What is the sound?

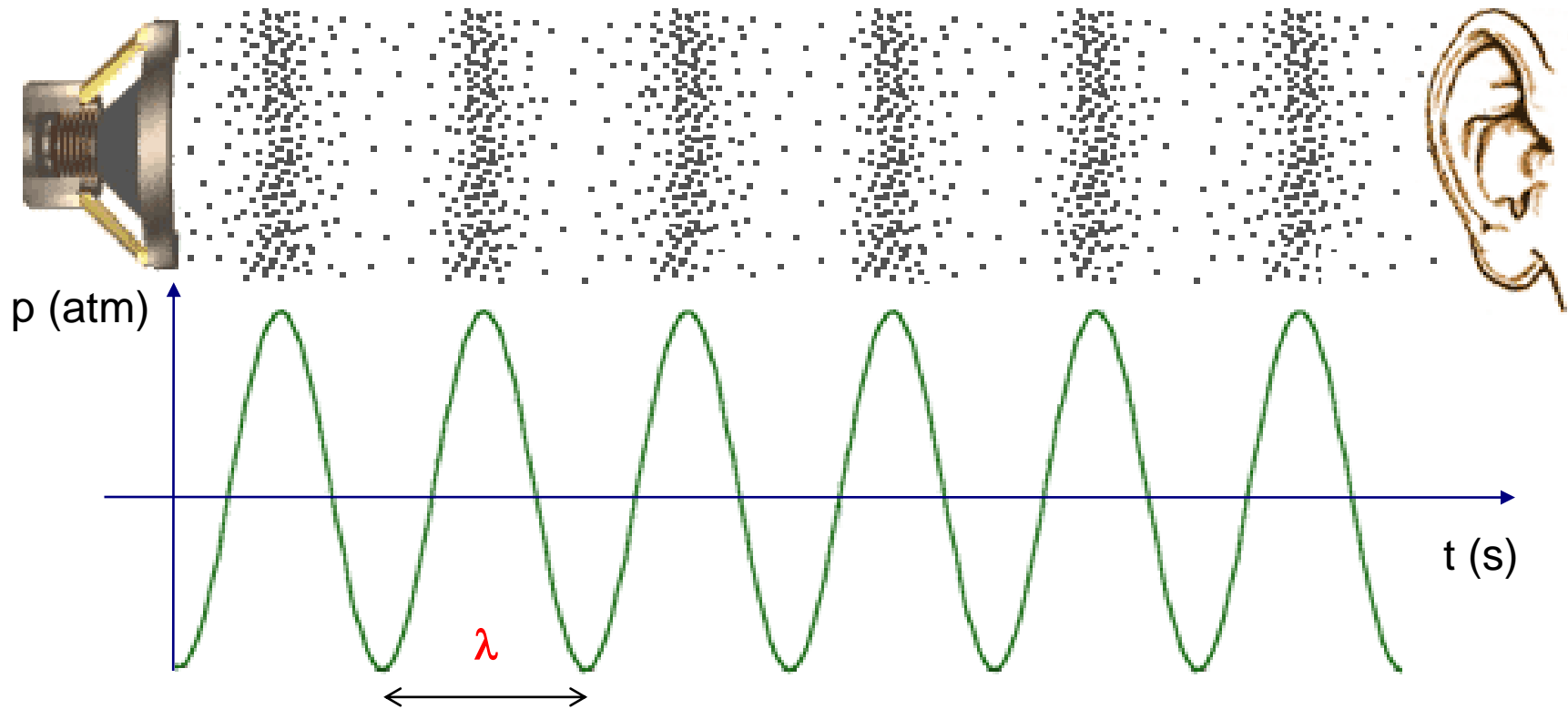
The sound is a mechanical disturbance that propagates through an elastic material medium

What is the speed of sound in the air?

$$c = 340 \text{ m/s}$$

The qualities of sound

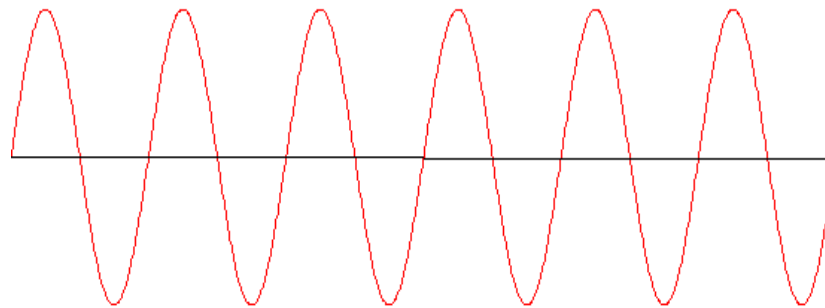
The pressure variation in a sound wave repeats itself in space over a specific distance -this distance is known as the **wavelength λ** .



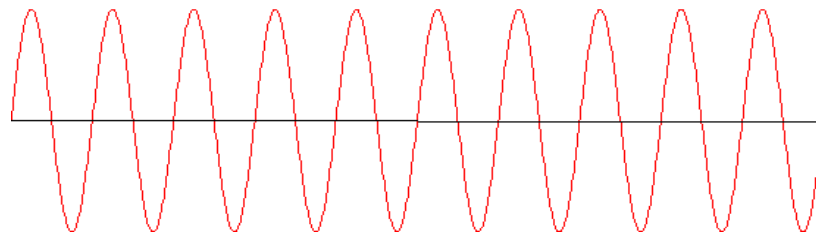
Known as the **frequency** of the sound wave, the number of wavelengths passing per second is traditionally measured in **hertz - Hz**



300 Hz



500 Hz



How do we make sounds?

Musical instruments

chordophones, or
strings



aerophones, or
winds



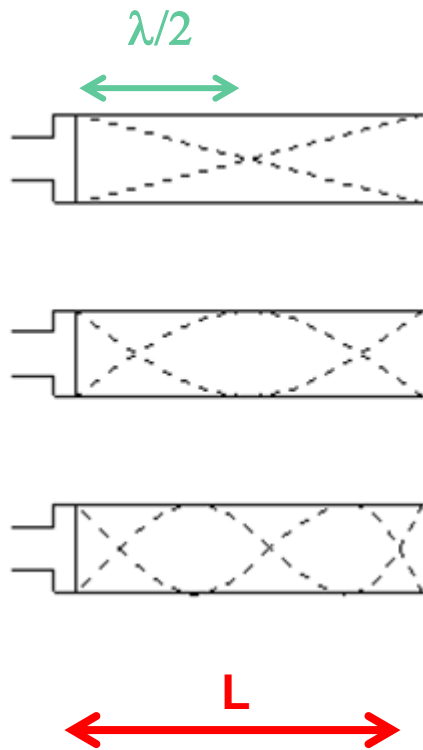
shutterstock.com • 170577131

percussion
instruments

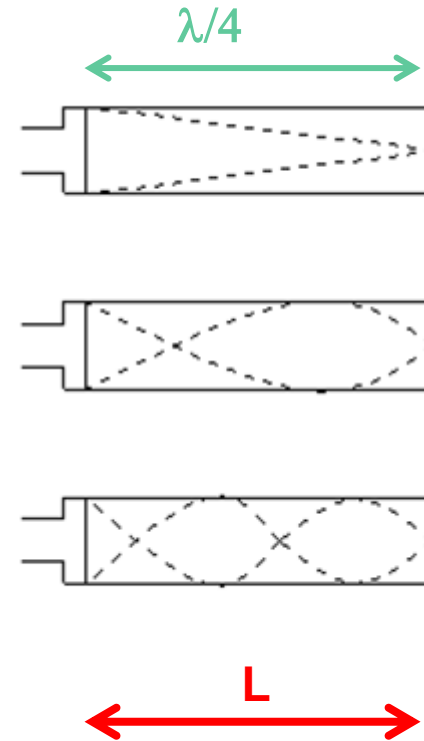


The aerophone musical instrument has a cylinder (air tube) in which the air resonates. The resonance of a tube of air is related to the length of the tube and whether it has closed or open ends.

Tub of air with opened end



Tub of air with closed end



The fundamental frequency can be calculated with the formula:

$$f = \frac{c}{2L}$$

$$f = \frac{c}{4L}$$

Making a pan flute from straws:

We need:

- Straws
- Scissors
- Glue Gun



Bibliography

<https://www.britannica.com/science/sound-physics>

https://en.wikipedia.org/wiki/Acoustic_resonance

DISCLAIMER

"The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein