

What to expect: Sound, Stings, and Tubes

After having learned about mechanical waves, that may be either traveling or standing waves, we are ready to talk about sound.

Sound is closest to a mechanical wave: it is actually a pressure wave. Air is compressed by a pulse, and this creates an area of compression in an air column.

You already learned about standing waves on a string. When a string from an instrument is plucked or bowed, many modes of oscillations occur at the same time. Thus we can here directly use what we learned about harmonics on a string.

A tube contains an air column. Sound waves in a tube are pressure waves. You could visualize this like Slinky. If you give the Slinky a push to compress it at one end, the pulse travels along the Slinky similar to a pressure pulse traveling along a pipe if the air is pushed at one end of the pipe. You will learn about open and closed end pipes and what type of harmonics are created. The physics of this is the basics for all pipe instruments.