

## THE MOTION OF WAVES

**Taranko E. V.**, student

Scientific supervisor – Matusevich O. A., senior lecturer  
Belarusian National Technical University  
Minsk, Republic of Belarus

A wave is a disturbance that travels through matter or space. As a wave travels, energy is carried from one place to another. For example, an alarm sounds in a small coastal town. The alarm signals the approach of a tidal wave or tsunami. The latter begins with an earthquake on the ocean floor. The earthquake shakes the water. The shaking sets up a wave in the water. The wave carries the energy of the earthquake to the town. Let's take one more example. Suppose you are on a raft. A motorboat speeds by. What happens with your raft? The boat cuts waves through the water. The waves soon reach you and make your raft bob up and down. Like the tsunami, these "little" waves are also energy carriers. They carry the kinetic energy of the motorboat to your raft.

Water waves are easy to study because we can see them. And we can also see their effects. However, a lot of invisible waves are travelling around us all the time. Waves can travel through solids, liquids, gases and empty spaces (vacuums). Although we cannot see the waves, we can study them by observing their effects.

For example, we wave a large book up and down. Moments later we can see a curtain across the room flutter. Our energy of motion set up waves through the air. The waves carried our energy to the curtains, causing them to move.

A stereo and foil can also demonstrate waves moving through air. For instance, we turn on a stereo and hold a sheet of aluminum foil about one meter in front of the speaker. As the music plays, we can feel the aluminum foil rattle. Waves from the speaker travel through air to the foil.

All sounds travel as waves. Sound waves can travel through all three kinds of matter. We rest our ear on top of a wooden desk and tap on the far end of the desk with a pencil. We hear the tapping because the sound travels through the desk.

There are four different properties of waves, such as frequency, period, wavelength and amplitude.