



Explosions in space can produce a lot of light, but they can't produce any sound. An artist created this image of a space explosion.

Why No One in Space Can Hear You Scream

Imagine it's a Saturday night and you're watching a movie that is set in space. Things are getting really exciting as one spacecraft chases another, and suddenly...BANG! The villain's spacecraft explodes in a big, noisy ball of fire. The explosion sound effect used in the movie is loud and booming—and it's also not scientifically accurate. If you were in space, you wouldn't be able to hear an explosion or anything else, because sound doesn't travel in space.

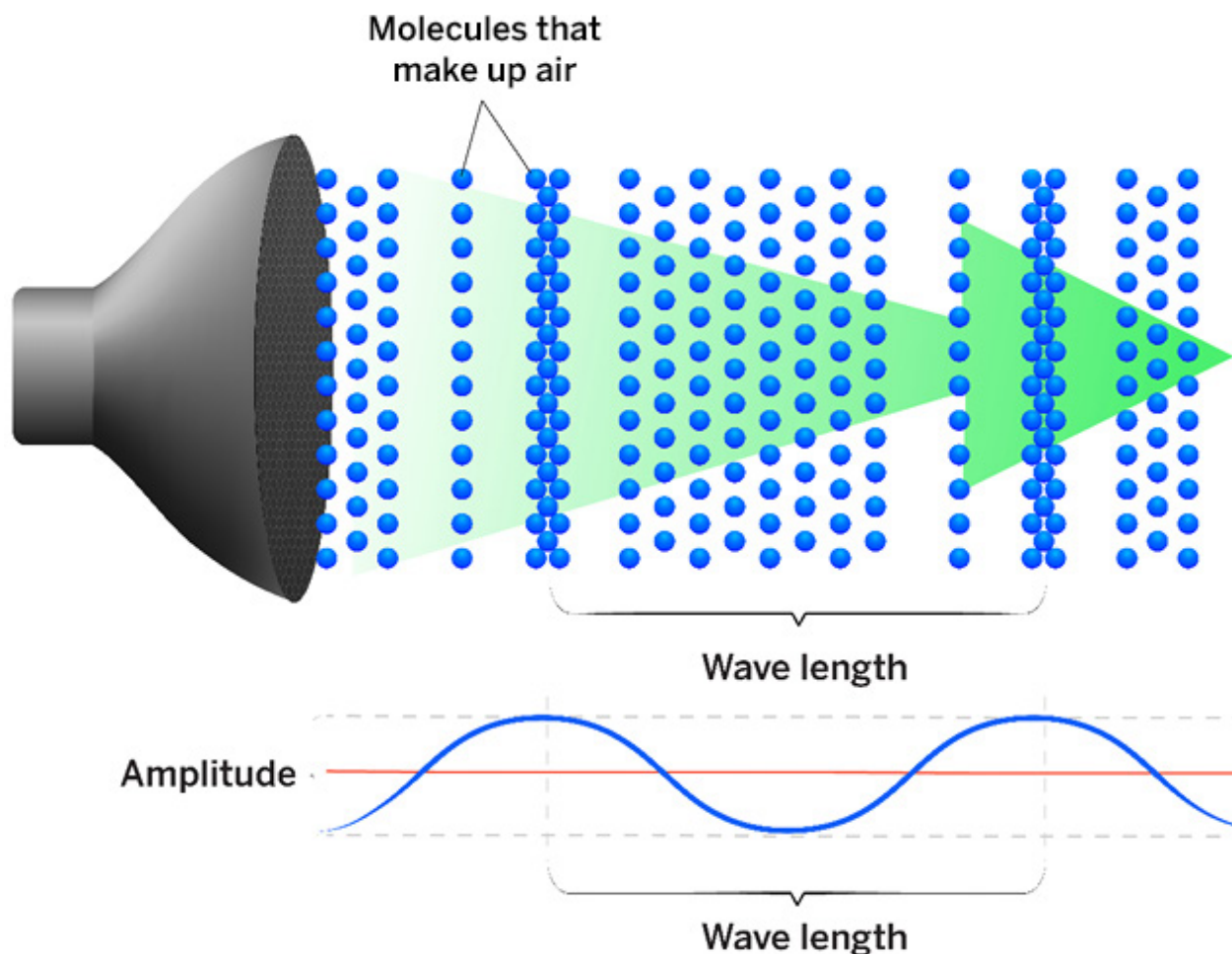
Space is silent. That's because sound is produced by sound waves, and sound waves need something to travel through. The medium sound travels through can be solid, liquid, or gas—on

Earth, it's often air. However, in space, there is no air or any other matter between objects (such as planets, moons, and the sun), so there's nothing to carry sound from place to place.

Sound waves are produced when something vibrates. The object's vibrations make it bump into the nearest atoms or molecules—on Earth, those are usually the molecules that make up the air surrounding it. Those molecules then bump into the molecules next to them, which bump into the molecules next to them, and so on. That pattern of molecules bumping into each other is a wave, and when it reaches your eardrum, you hear it as sound.

In space, there are no molecules for a vibrating object to bump into—objects like planets and the sun can vibrate, but the motion doesn't set off a wave. Therefore, even dramatic events in space, like explosions, are totally silent!

Sound waves can't travel in space, but other kinds of waves can. Electromagnetic waves, including light waves, don't need anything to travel through, so they can get around in space. Explosions put out light waves that can make it to your eyes whether there's matter around or not—that's why you would be able to see the spacecraft's explosion but not hear it.



Sound waves occur when an object, like part of a speaker, vibrates. The vibration pushes nearby molecules into the molecules next to them, and those molecules are pushed into the molecules next to them, and so on, forming a wave that moves away from the speaker. When molecules are pushed into the molecules next to them, it's called compression.