Name _____

The Whirling Sounds of Doppler: How Moving Sources Affect What We Hear

Short Answer Key

1. The Doppler effect increases the perceived pitch of a sound when a car approaches an observer. As the car moves closer, the sound waves bunch up, leading to a higher-pitched and more intense sound.
2. In medical technology, the Doppler effect is used in ultrasound imaging to visualize blood flow in the human body. For example, it helps detect blood clots, assess the health of the heart, and monitor the blood supply to various organs.
3. The Doppler effect is used to measure the speed of objects in situations such as police radar guns measuring vehicle speed, Doppler radar measuring the speed of precipitation, and speed guns used in sports to monitor athletes' speeds.
4. Astronomers use the Doppler effect to study the motion of celestial objects. By analyzing the shifting colors (spectral lines) of light from stars and galaxies, they can determine whether these objects are moving toward or away from Earth.
5. The factors involved in calculating the observed frequency using the Doppler formula are the actual frequency of the sound source (f), the speed of sound in the medium (v), the velocity of the observer relative to the medium (v_obs), and the velocity of the sound source relative to the medium (v_src).