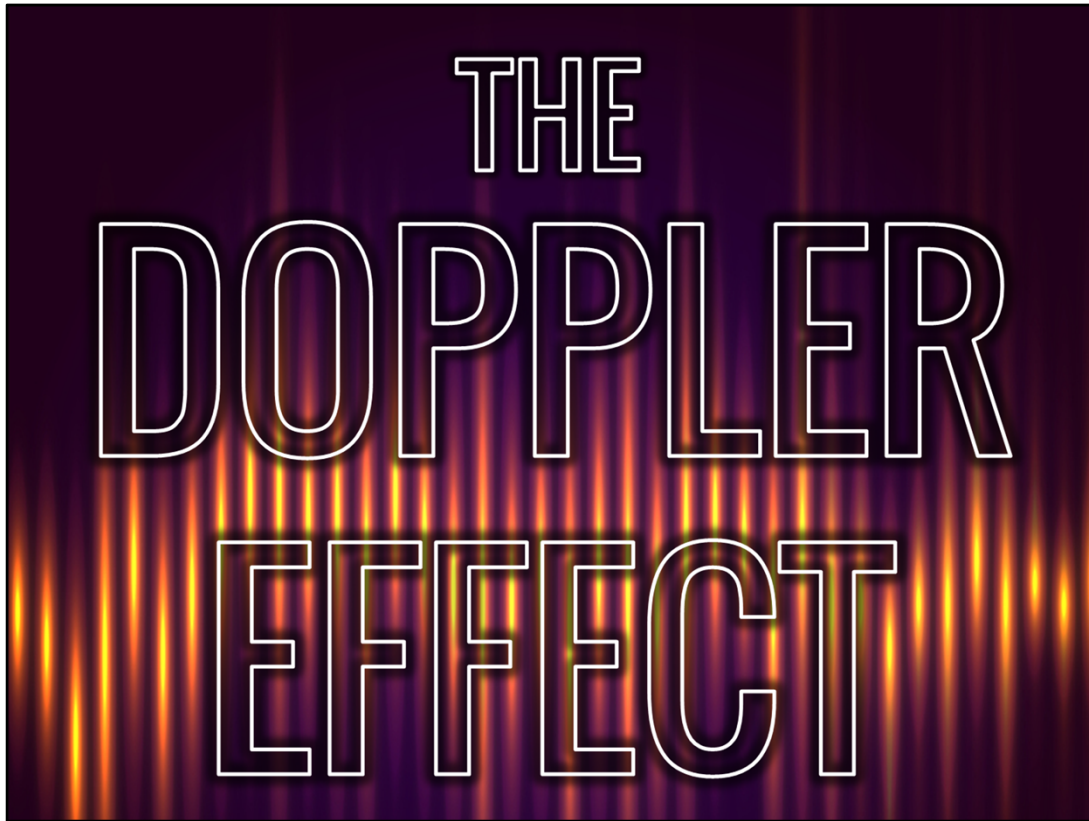


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Topic 4 Content: The Doppler Effect Presentation Notes



The Doppler Effect

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Introduction

Doppler Effect

Stationary Source

Moving Source

Introduction



Initially proposed by Austrian physicist Christian Doppler in 1842, the Doppler Effect states that the frequency of a wave will be perceived differently when the observer and the source are moving towards or away from each other. If the source is moving towards you, the frequency you hear is higher than the true frequency of the source, and if the source is moving away from you, the frequency you hear will be lower than the true frequency of the source.

You have probably noticed the Doppler Effect when you hear a police car rushing by, or if you happen to watch car racing. The pitch of the siren or of the speeding cars starts high as the car rushes towards you, and then drops to a lower pitch as it passes

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You have probably noticed the Doppler Effect when you hear a police car rushing by, or if you happen to watch car racing. The pitch of the siren or of the speeding cars starts high as the car rushes towards you, and then drops to a lower pitch as it passes and zooms away from you.

Click on the tabs to learn more about the Doppler Effect in relation to stationary and moving sources of sound.

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Stationary Source

The slide is titled "Doppler Effect" in a dark header. Below the header, the text "Stationary Source" is centered at the top. In the center of the slide is a white square containing a small black dot. To the left of this square, the text "Stationary Source" is written. In the bottom-left corner, there is a dark brown rectangular box with the text "Moving Source" in white. To the right of this box, there is a text box containing the following text: "If the source of sound is stationary, the sound that it makes radiates out equally in all directions, producing a set of concentric circles of sound." Below this text is a smaller line of text: "Animation courtesy of Dr. Dan Russell, Kettering University".

If the source of sound is stationary, the sound that it makes radiates out equally in all directions, producing a set of concentric circles of sound.

Animation courtesy of Dr. Dan Russell, Kettering University

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Moving Source

Doppler Effect

Stationary Source

Moving Source



If the source is in motion, the waves in front of the source are compressed and the waves in back of the source are further apart. So, if the source is coming toward you, the crests are closer together and you hear a higher frequency. If the source is moving away from you, the crests are farther apart and you hear a lower frequency.

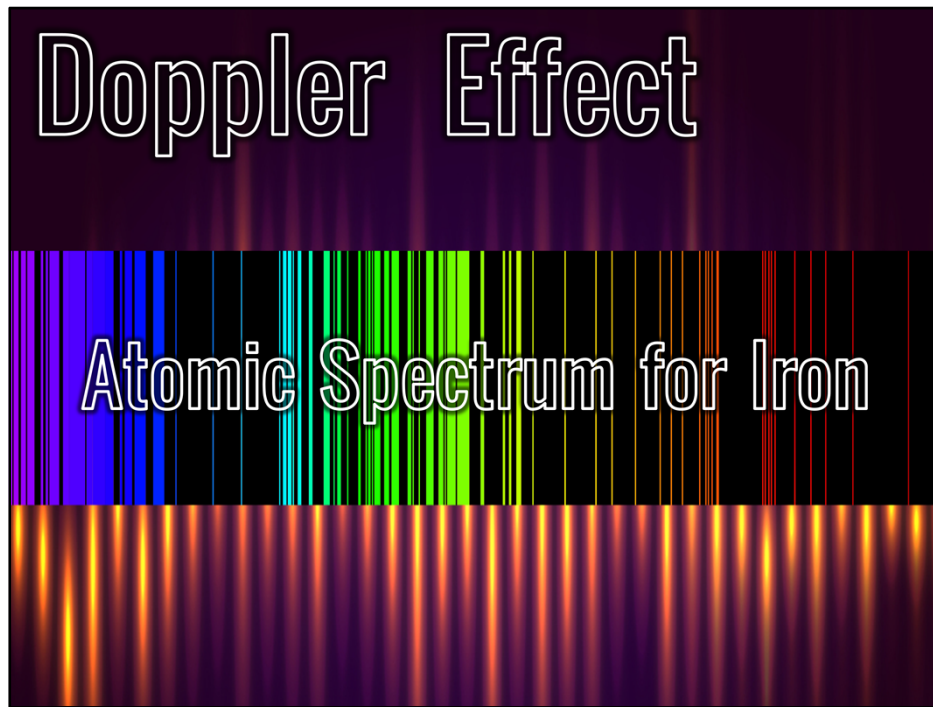
Animation courtesy of Dr. Dan Russell, Kettering University

Moving Source

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One of the wave phenomena for sound is the Doppler Effect. If light is a wave, then it too should experience a similar phenomenon.

Remember that each element has a distinct atomic spectrum due to its specific electron energy levels.

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