

PHYSICS
DEMONSTRATIONS
IN

SOUND & WAVES

A Three-Part Series on
DVD and Videocassette

Teacher's Guide for Parts I, II, III

Physics Curriculum & Instruction

PHYSICS DEMONSTRATIONS IN SOUND & WAVES: PARTS I, II, III
A Three-Part Series on DVD and Videocassette
Published by Physics Curriculum & Instruction, Inc.

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Printed in the United States of America

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X
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*Reflection off of straight edge
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Introduction

Physics Demonstrations in Sound & Waves has been developed in an effort to give physics instructors a comprehensive collection of demonstrations to supplement and enrich their physics curriculum. The demonstrations are directed at motivating students, giving them a deeper understanding of the concepts in sound and waves.

The program has been assembled with the conviction that video can be used effectively by the teacher as a means to capture the interest and engage the student in the study of physics. The demonstrations in this program will assist the teacher by providing some necessary physical tools that otherwise might not be available in the classroom. It is up to the teacher to integrate these tools into the education plan they have developed for their students. This will usually include preparing for the demonstration by ensuring that any knowledge assumed by the demonstration has already been covered. It will also include reviewing the conclusion of the demonstration. Many times the demonstrations can be used as a springboard into a more quantitative analysis of the physical behavior.

Together, parts I, II, & III of the program contain a total of 24 demonstrations, providing a collection which the teacher may draw upon to meet his or her particular teaching needs. The demonstrations are designed to be shown individually at appropriate times throughout a unit on sound and waves. The demonstrations themselves are relatively short and focus on a particular behavior rather than giving a complete lesson on the topic. The demonstrations contained in this program are not of the format with built in questions and stop points. But rather, it is left to the instructor to decide when it is best to pause the program and ask the necessary questions. Many physics instructors seem to prefer this method of presentation as it allows them to be the "interactive medium" in the classroom.

For the DVD format, individual demonstrations can be quickly accessed by using the on-screen menu which can be called up at any time by selecting the appropriate menu button on the DVD player. For the videocassette format, the on-screen index can be found at the start of the program and also appears regularly throughout the video before each demonstration. Videocassette players that have a real-time counter can be used to quickly find individual demonstrations by using the location time interval given in this guide. To accurately use the location time intervals, videocassette players should be zeroed on the opening title screen of the program.

Physics Demonstrations in Sound & Waves would not have been possible without the extensive assistance and cooperation of the University of Minnesota Physics Department. Special thanks to Phil Johnson for his expertise and advice with demonstration apparatus.