

Abstract Submitted
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Visualizing Sound: Demonstrations to Teach Acoustic Concepts

VALERIE RENNOLL, American University — Interference, a phenomenon in which two sound waves superpose to form a resultant wave of greater or lower amplitude, is a key concept when learning about the physics of sound waves. Typical interference demonstrations involve students listening for changes in sound level as they move throughout a room. Here, new tools are developed to teach this concept that provide a visual component, allowing individuals to see changes in sound level on a light display. This is accomplished using a microcontroller that analyzes sound levels collected by a microphone and displays the sound level in real-time on an LED strip. The light display is placed on a sliding rail between two speakers to show the interference occurring between two sound waves. When a long-exposure photograph is taken of the light display being slid from one end of the rail to the other, a wave of the interference pattern can be captured. By providing a visual component, these tools will help students and the general public to better understand interference, a key concept in acoustics.

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