

Laser sound visualization

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Abstract

This project investigates laser optics and demonstrates how sound frequencies and waves can be converted into light patterns using a laser, speaker, membrane, and a mirror. A small mirror is attached to a stretched membrane mounted over a speaker. When audio signals of varying volumes, frequencies, tones, and more are played through the speaker, the membrane vibrates, which causes the mirror to oscillate and project different patterns. The patterns are specific to the characteristics of the sound wave and how it is applied. By testing different frequencies and amplitudes, this project demonstrates the relationship between sound, vibration, and light. This system is a simplified model of technologies used in more intricate laser systems and other signal visualization projects while illustrating fundamental concepts of waveforms, physics, and resonances.

Index Terms

lasers, light, LED, sound, physics, mirrors