

Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

Phase Change Through Levitating Sound Waves ELIJAH REEVES,
WAYNE STRASSER, Liberty University — Sound waves exhibit fascinating properties. Particularly, they can generate heat as they are absorbed, potentially enough to create phase change. Through second law constraints, we are currently creating a levitating device that not only suspends objects with one source of sound but also generates heat through another source. A materials molecules and atoms have some amount of resistance before yielding to the strength from the sound waves disrupting the ordered pattern. The acoustic pressure from sound waves will maintain stability while a secondary source will produce heat without destructively interfering with the sound waves. These sound waves are positioned facing each other from two directions with the same frequency and wavelength to produce a standing wave, which is responsible for maintaining mid-air suspension. While the levitation system maintains a standing wave to suspend objects, the second set of waves enters from opposing directions perpendicular to the standing wave to keep the object from moving outside the levitation boundaries while maintaining sound wave pressure stability. We hope to eventually demonstrate the efficacy of this process through a table-top experimental device.

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Date submitted: 03 Nov 2020

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