## Abstract Submitted for the MAS17 Meeting of The American Physical Society

Modifying Amplitudes of Various Waves Using Novel Patterns<sup>1</sup> AYUSHI SANGOI, CAMELIA PRODAN, KYLE DOBISZEWSKI, New Jersey Institute of Technology — Certain novel patterns have various properties that can be applied to modifying acoustics among other things. This research project studies the effects of a novel pattern on the ability of waves to transfer through space. By understanding this relationship between the pattern and the movement of waves, we seek to help in sound-proofing rooms, noise reduction in industrial shipping and the navy, and hacking in air-gapped computers. Inspired by previous research regarding the transfer of water through such patterns and noise-dampening land art near Amsterdam's airport, we test the difference between the waves entering and leaving the patterns. The patterns are tested using various frequency stimuli. Certain frequencies were amplified by the novel pattern, while others were dampened almost to the point of being muted. The targeted frequencies shifted based on the spacing in the patterns themselves. This determines the role of the particular novel pattern in the transfer of waves. This helps support other research using microtubules in cancer research. The observations and discoveries of this research can have significant effects in the field of physics as well as life science and medicine.

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