



The difference between conventional designs and the space-coiled MPPs design

Technology Summary

Penn State researchers developed a sound-absorbing panel that can achieve broader frequency ranges of high acoustic absorption. The panel has a specific thickness thinner than the structures of conventional porous sound absorption materials and micro-perforated panels (MPP). A unit cell within the panel collectively absorbs noise with a certain range of frequency. Different unit cells are combined to create a supercell that provides a plurality of resonant modes for broadband sound absorption.

Application & Market Utility

A sound absorber with broadband and high absorption at a deep-subwavelength scale is applicable to many fields, such as room acoustics, automobiles, and aerospace engineering. Currently, to achieve a deep-subwavelength scale, a thin decorated membrane is used as well as a modified geometry of the conventional porous sound absorption material and microperforated panel. Those strategies have relatively narrow absorption bandwidth which hinders practical applications. This design, which consists of a combined supercell structure, can achieve broader frequency ranges from 20 Hz to 6 kHz.

Next Steps

The inventors are pursuing a possible licensing opportunity.

TECHNOLOGY READINESS LEVEL

4

Seeking

Investment | Licensing |

Keywords

- Sound absorbing panel
- Space-coiled cavities
- Broadband
- Deep-subwavelength scale
- Metamaterial

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