December 3, 2020

Additively Manufactured Sound Absorbers

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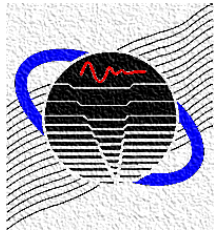
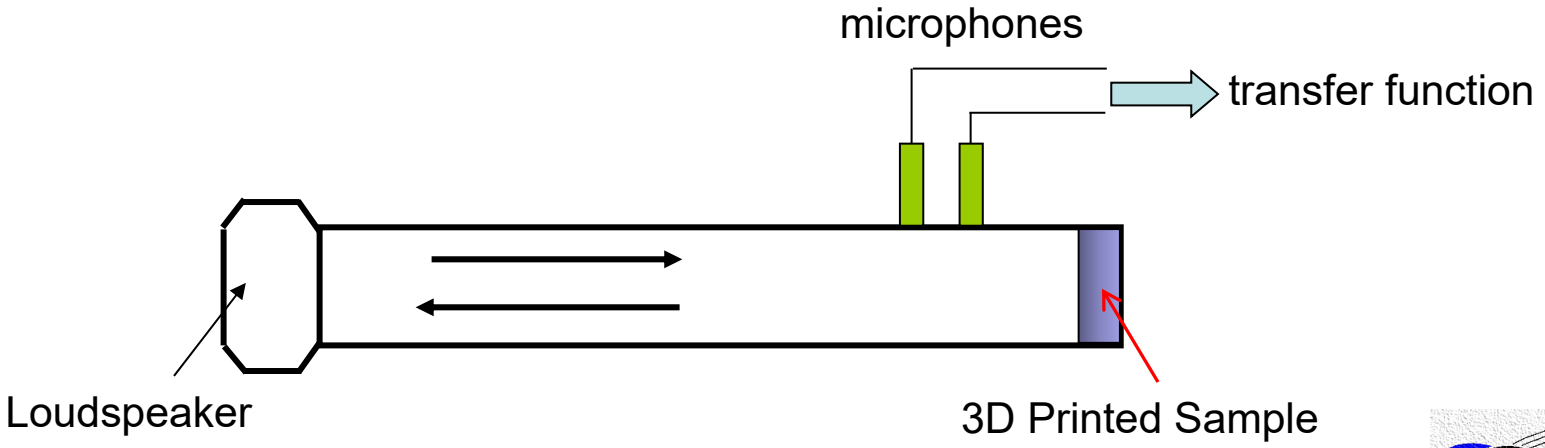


Vibro-Acoustics Consortium

Testing Methodology

3D Printed Sound Absorbers

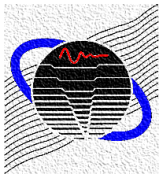
Impedance Tube Diameter: 3.9 in



Overview

3D Printed Sound Absorbers

- Stackable Resonator
- Modular Helmholtz Resonator



Stackable Resonator

3D Printed Sound Absorbers

Length of Tube: 7.44 in

Total Tube Length : 8.44 in

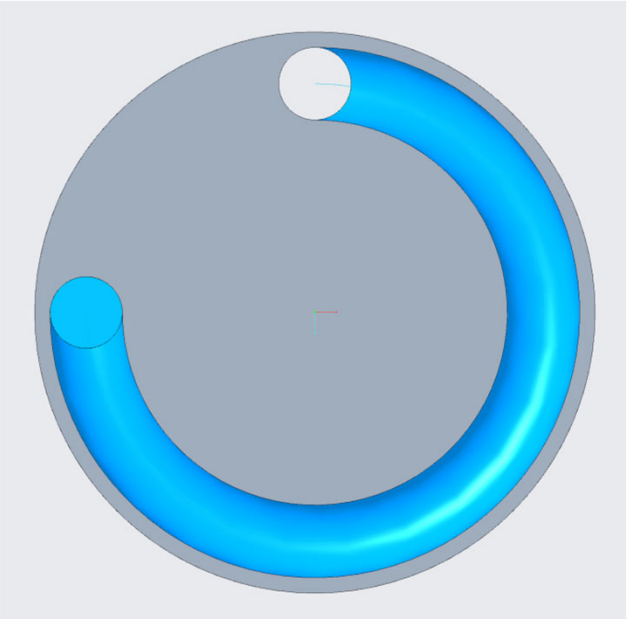
Stack of:

1 disk ≈ 400 Hz

2 disks ≈ 200 Hz

3 disks ≈ 133 Hz

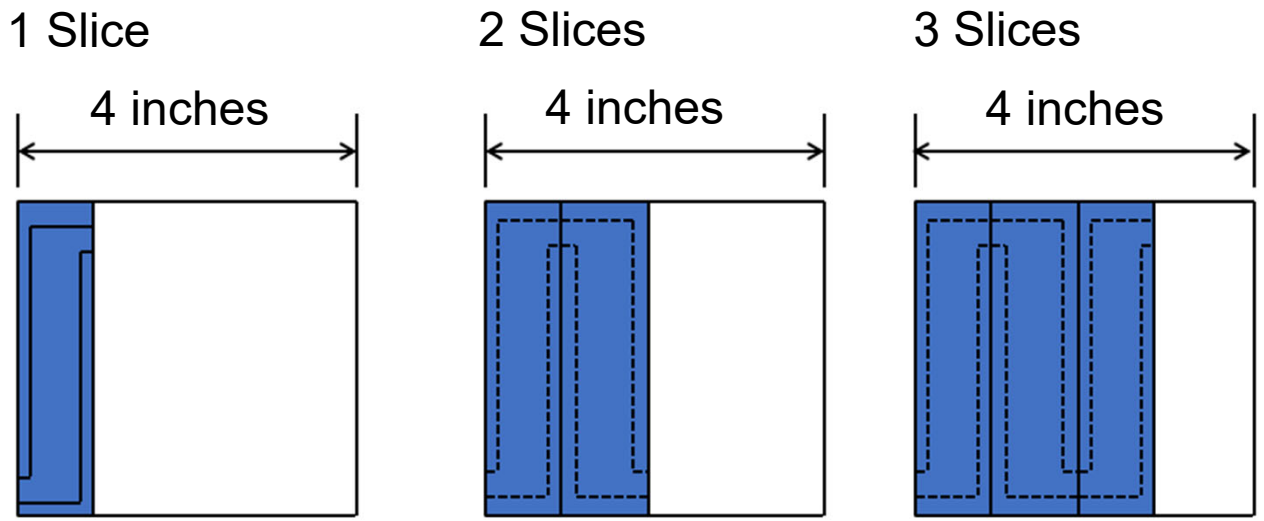
4 disks ≈ 100 Hz



Stackable Resonator

3D Printed Sound Absorbers

Stackable Resonator Configuration
Each slice is 1 in. thick



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Stackable Resonator

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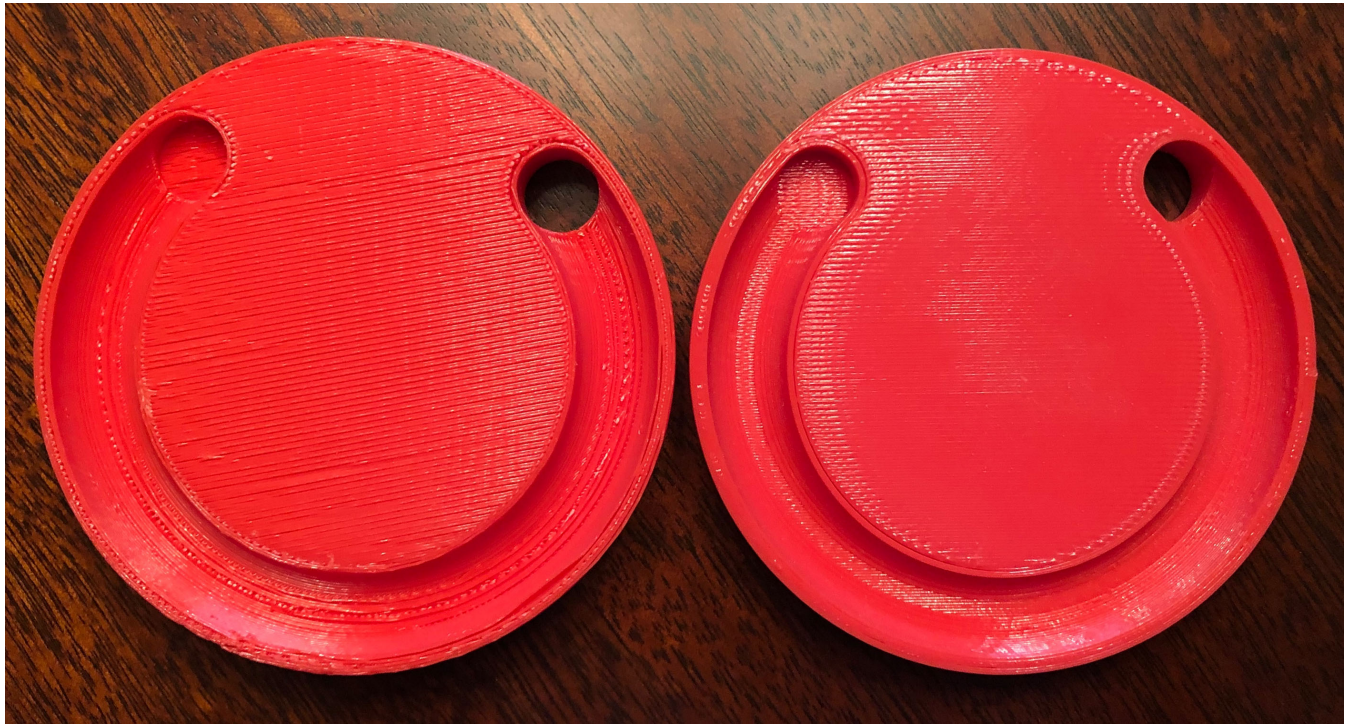
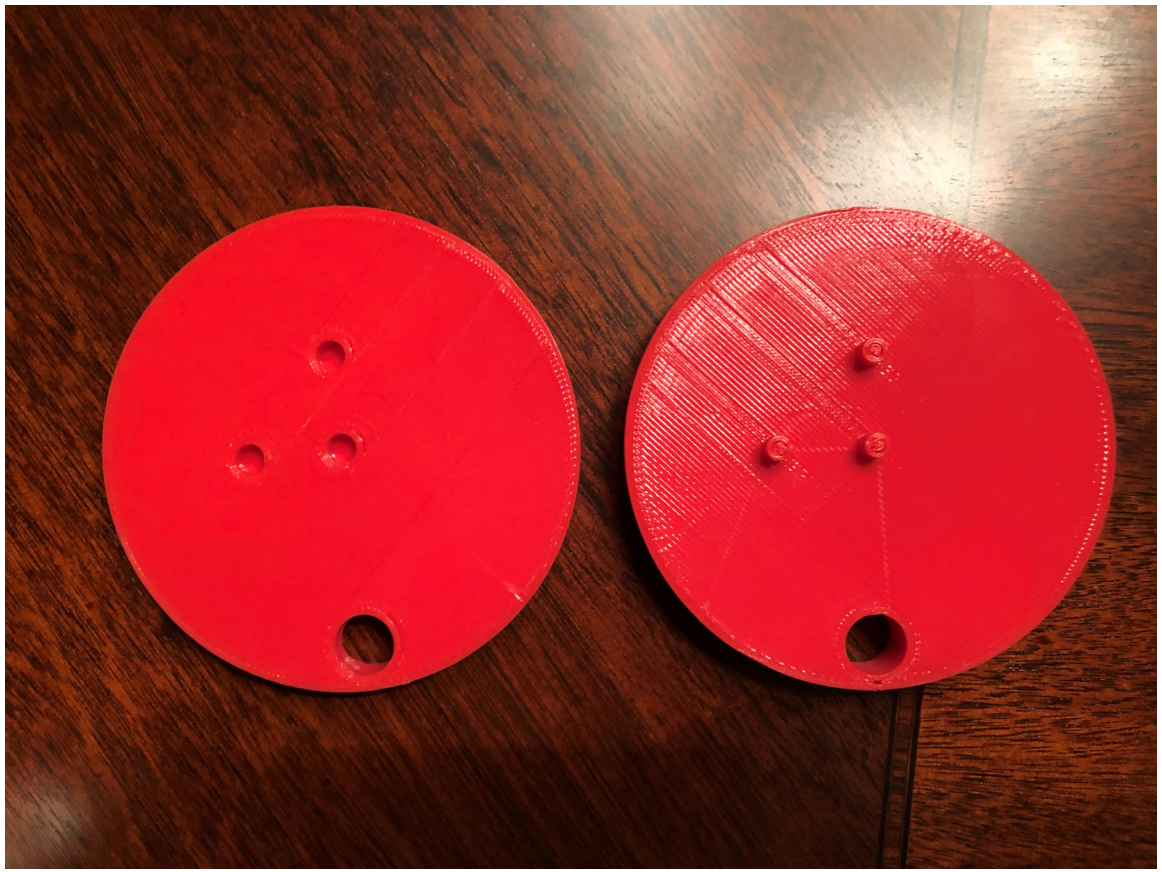


Stackable Resonator

3D Printed Sound Absorbers



Stackable Resonator

3D Printed Sound Absorbers

Stackable Resonator

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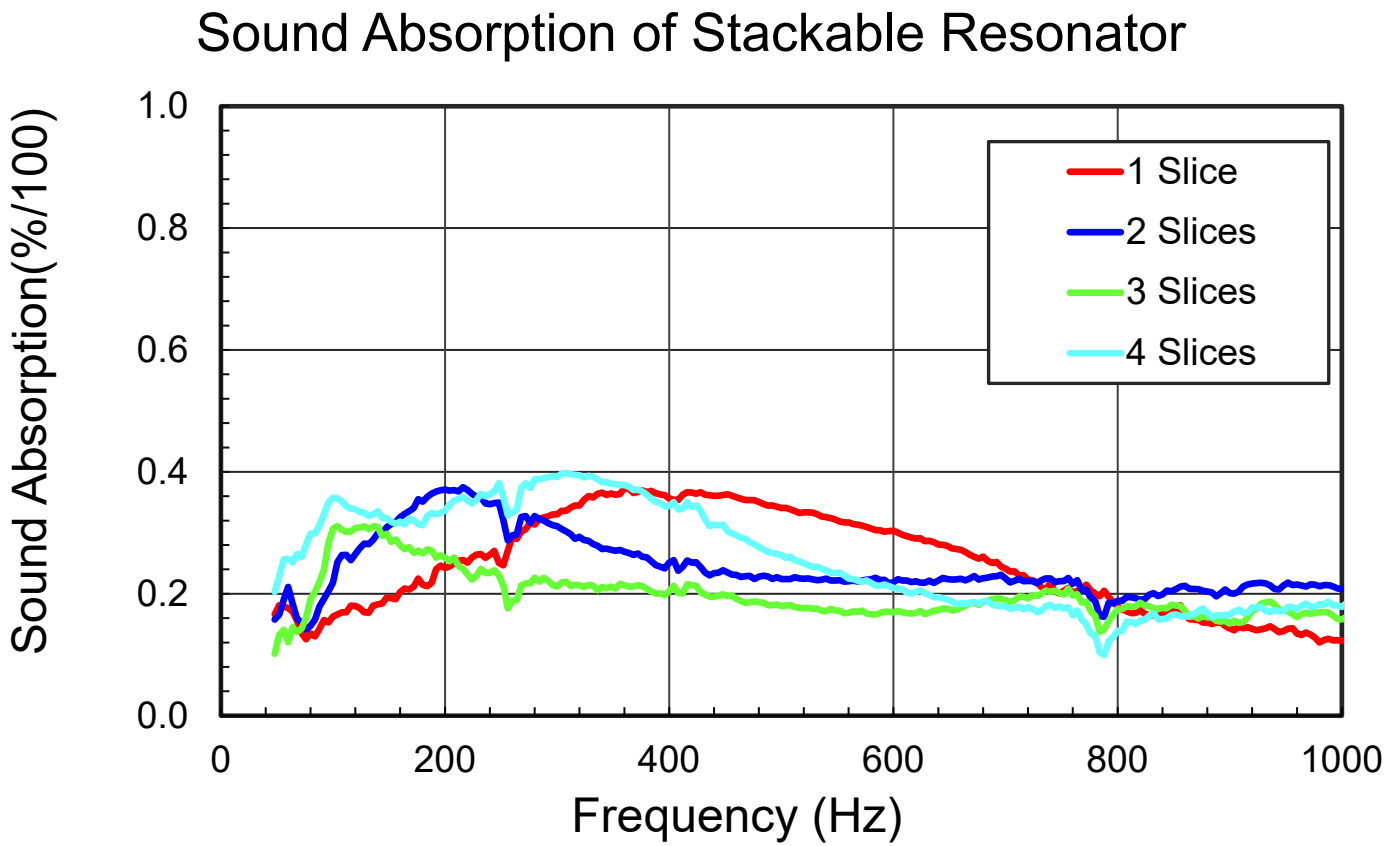

Overview

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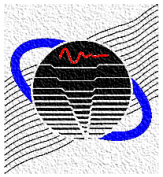
- Modular Helmholtz Resonator



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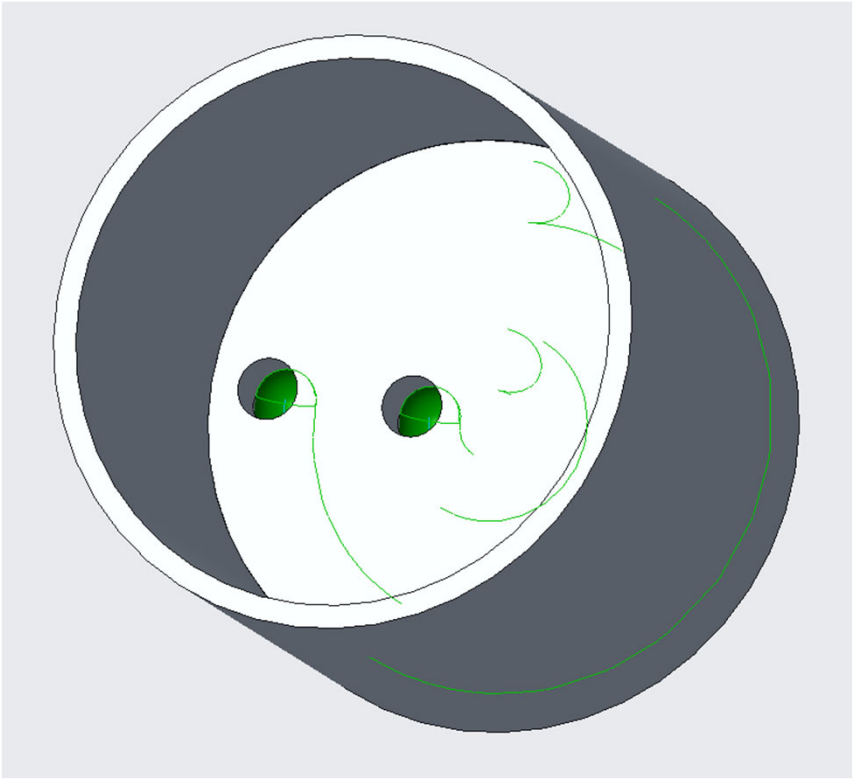
Modular Helmholtz Resonator

3D Printed Sound Absorbers



Modular Helmholtz Resonator

3D Printed Sound Absorbers

Modular Helmholtz Resonator

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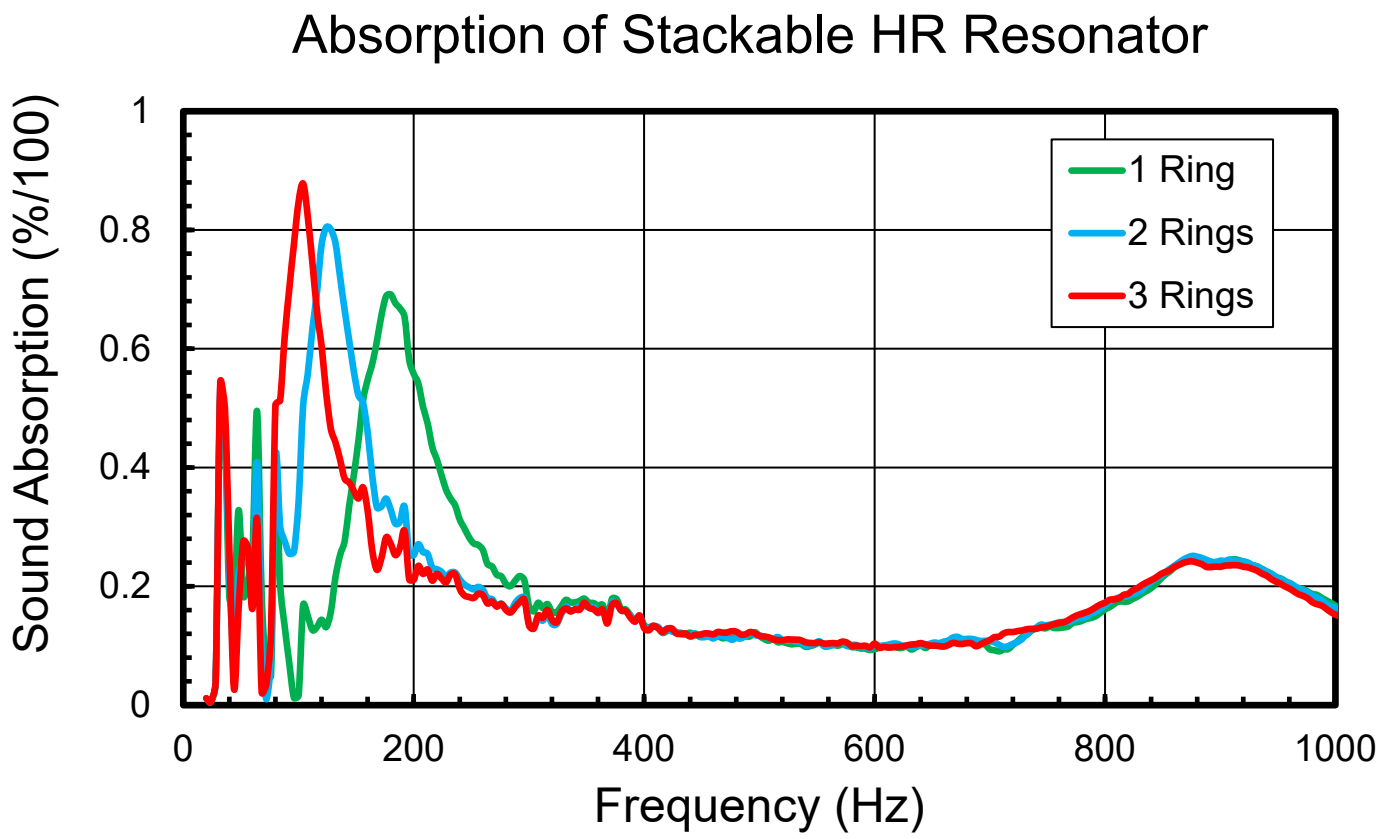

Summary

3D Printed Sound Absorbers

- Only beginning to tap the potential for 3D printed sound absorbers.
- Stackable resonators provide an option to deliver absorbers tuned to the frequency ranges of greatest interest.
- Interchangeable modular resonator?