

Vibration Isolator of Quasi-Zero Stiffness Metamaterials with High Load-Carrying Capacity and Self-Sensing

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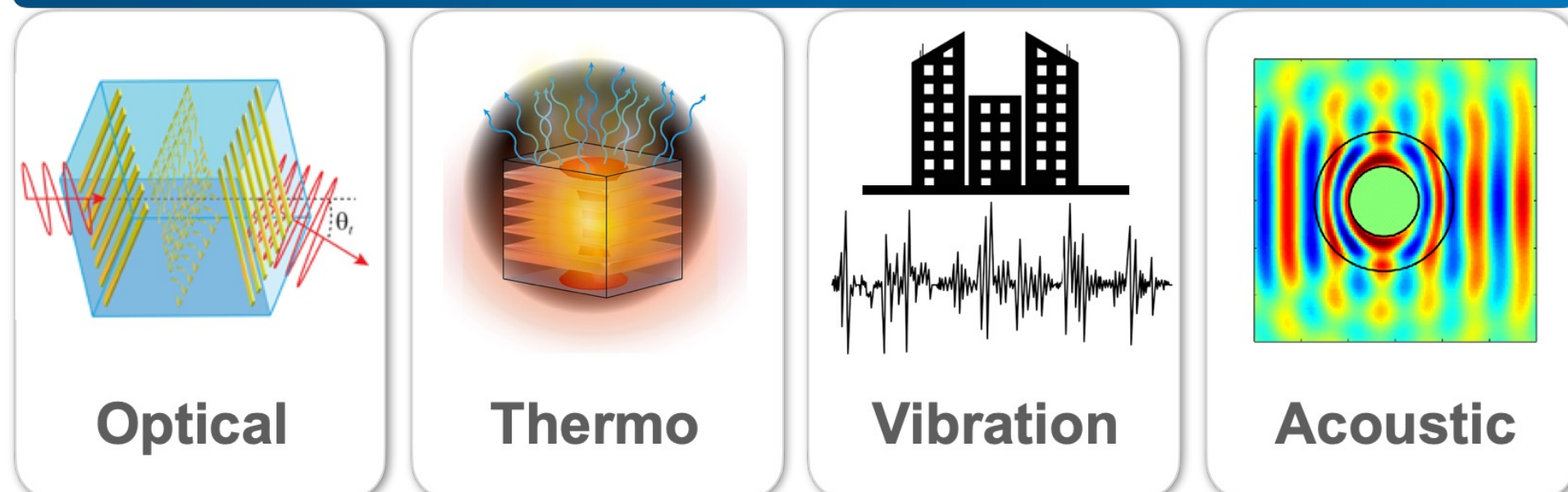
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Introduction

- Metamaterials:

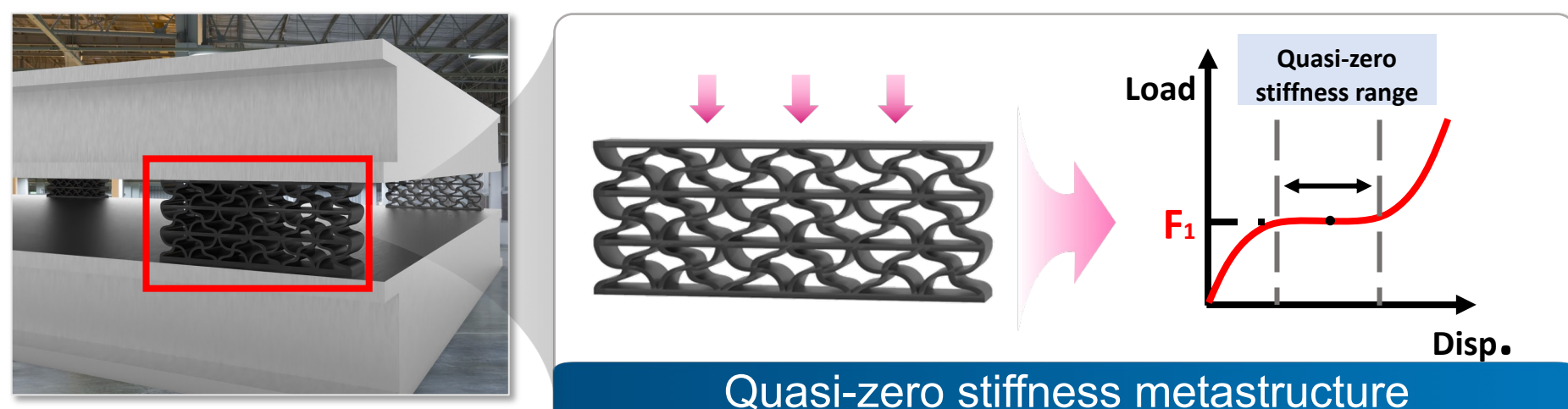
Applications of Metamaterials



- Research objective

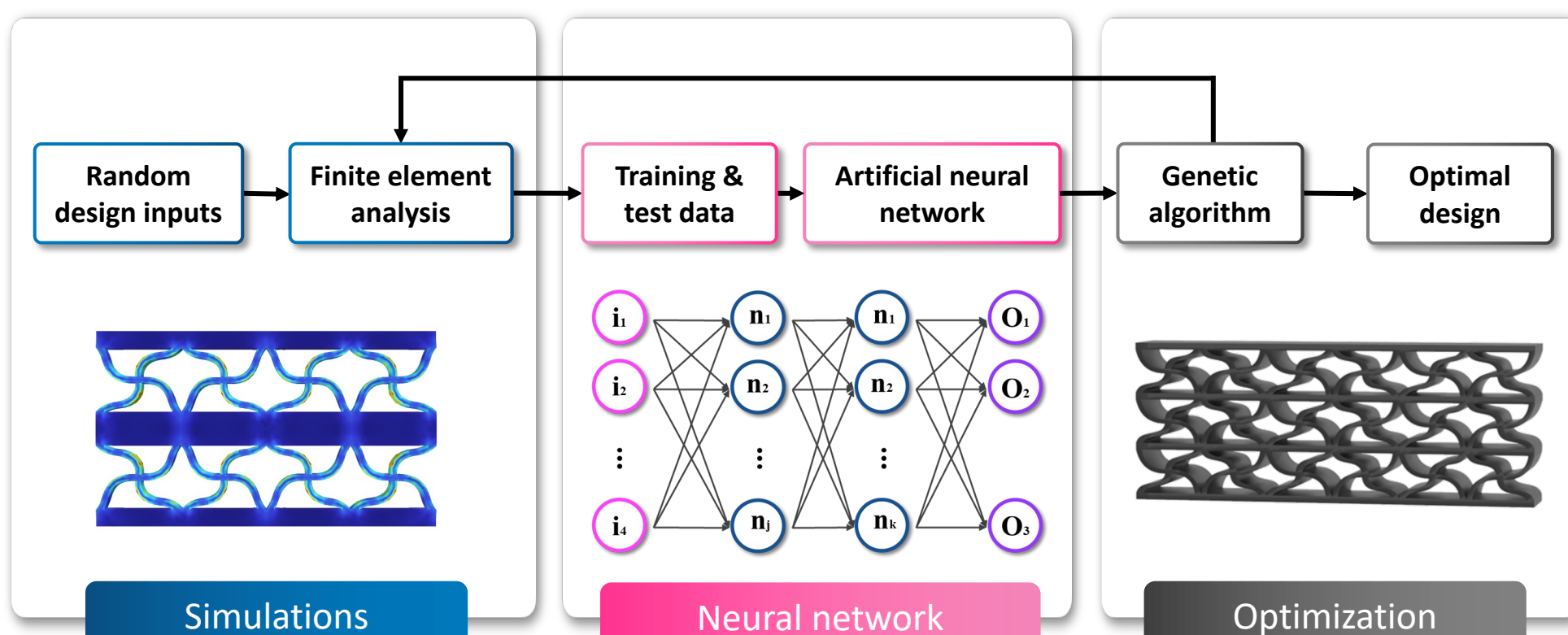
The quasi-zero stiffness characteristics can have outstanding vibration reduction capability

Therefore, the quasi-zero stiffness metamaterial with a high target load was created through machine learning-based optimization.



Numerical & Experimental Methods

- Design optimization using machine learning



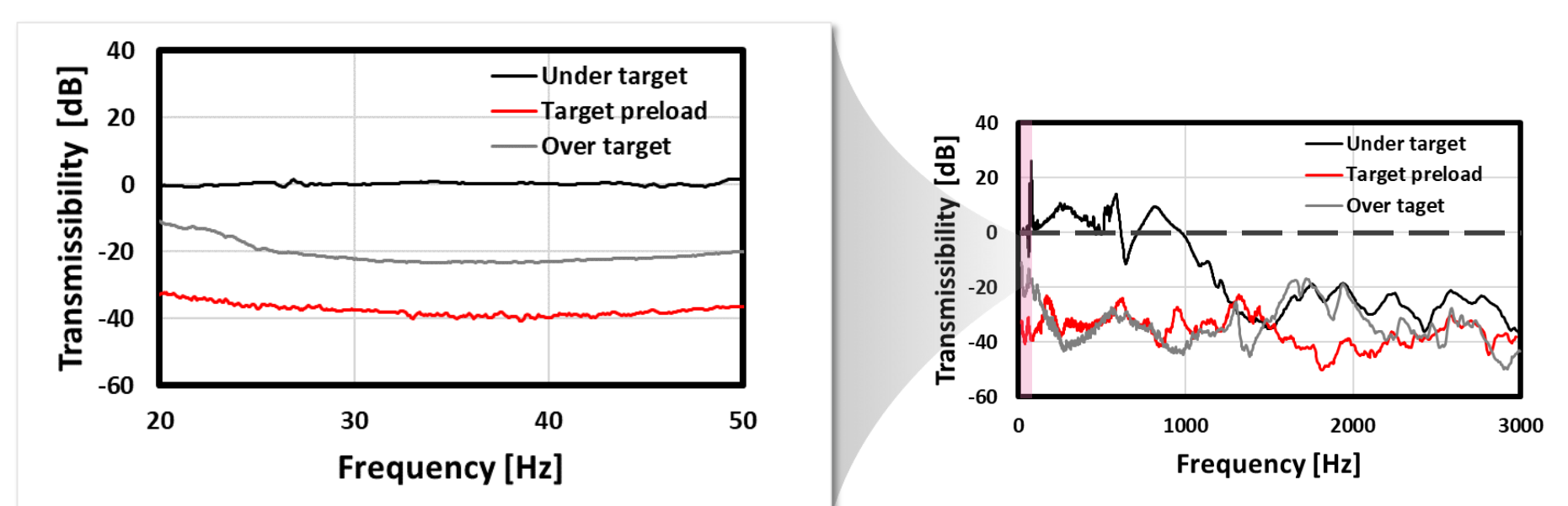
- ✓ Considering both structural safety and quasi-zero stiffness characteristic, optimization was performed using a machine learning

- Fabrication of quasi-zero stiffness metamaterials

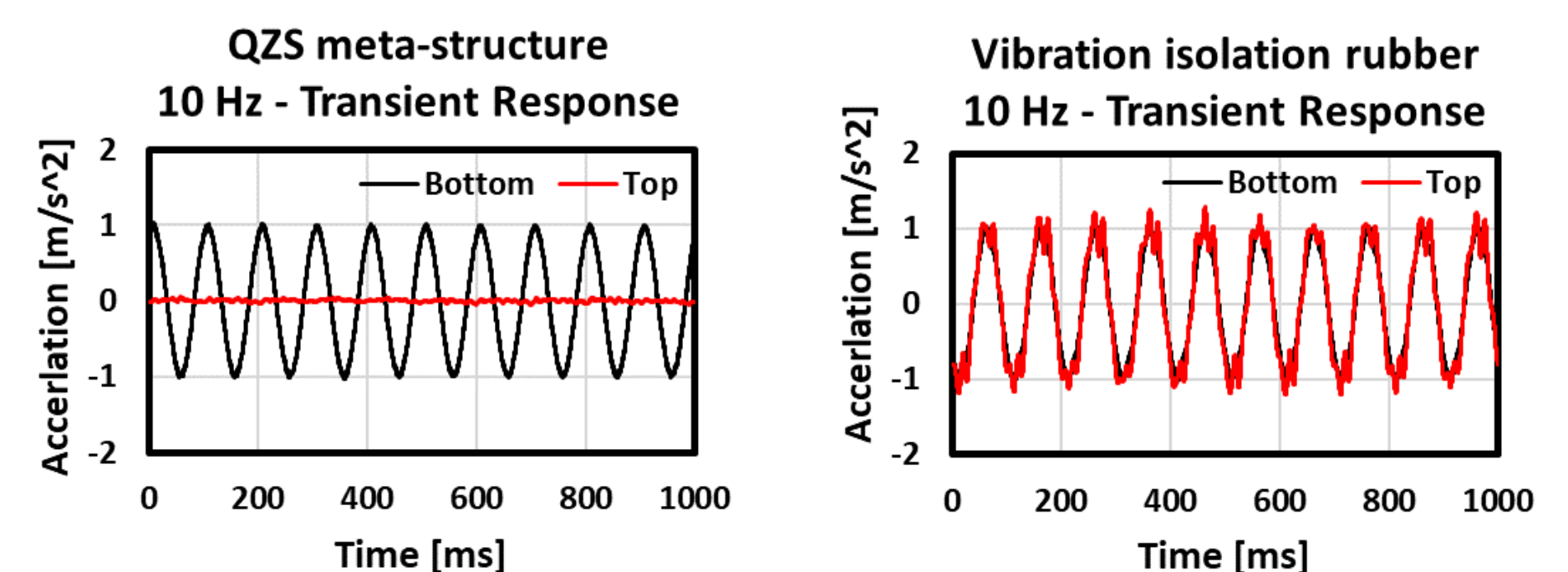


Results & Discussion

- Transmissibility vibration tests of QZS metamaterials with several preload



- Transient vibration tests of QZS metamaterial and rubber



- Self-sensing test of QZS metamaterial

