Special Issue

Vibroacoustics of Periodic Porous Media and Resonant Metamaterials

Message from the Guest Editor

Advances in periodic and graded materials, poroelastic media, and resonant metamaterials are reshaping low-frequency sound and vibration control across aerospace, transportation, and the built environment. Topics of interest include, but are not limited to, the following:
Structural–acoustic coupling in periodic, graded, and architected media, as well as dispersion and bandgap engineering;
Poroelastic treatments and foams within Biot-type frameworks, as well as impedance models and nonlocal effects;
Resonant concepts for subwavelength attenuation and broadbanding strategies;
Modeling approaches (FEM, WFE, BEM/BEM-FEM coupling), reduced-order and data-driven surrogates, and inverse/optimization loops;
Experimental methods (impedance tubes, flow ducts, vibrometry, near-field scanning, acoustic holography, and benchmarking protocols);
Robust design under manufacturing tolerances, as well as uncertainty quantification and reliability;
Applications such as aircraft fuselages and liners, eVTOL/UAM, automotive/rail, HVAC and built environments, machinery noise, and metasurface enclosures.

Guest Editor

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Message from the Editor-in-Chief

Editor-in-Chief

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