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RECENT TRENDS IN ELASTIC AND ACOUSTIC METAMATERIALS

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ABSTRACT

The term "metamaterial" indicates, in a broad sense, an engineered material with effective properties arising from a tailored design of its architecture, either at the nano/microscale or at the macroscale [1]. This architecture is conceived to attain exotic properties that may not be found in nature, as enhanced strength and stiffness for given density, negative stiffness, negative or zero Poisson's ratio, enhanced energy absorption, and frequency-dependent mechanical properties to mention only a few, which open new and unforeseen opportunities for mechanical and acoustic applications. Moreover, a growing number of studies is currently devoted to designing metamaterials with programmable properties in space and time and to developing materials with multifunctional properties, including mechanical, thermal, piezoelectric and optical. In this context, the mini-symposium aims to gather the most recent theoretical and computational studies on elastic and acoustic metamaterials, with the purpose of stimulating a fruitful discussion among experts in this broad field. Topics covered include, but are not limited to:

- Locally resonant metamaterials
- Metasurfaces
- Origami/kirigami-based designs
- Bioinspired designs
- Hierarchical designs
- Multiphase metamaterials
- Time-varying metamaterials
- Topological metamaterials
- Design, size/shape optimization, topology optimization
- Fabrication processes

REFERENCES

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