

COMPUTATIONAL DESIGN OF MECHANICAL METAMATERIALS

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MINISYMPOSIUM

This mini-symposium aims to provide a platform for knowledge exchange and stimulate discussions on the computational design of mechanical metamaterials with tailored properties. As metamaterials continue to gain popularity for applications in several fields, including aerospace engineering, sustainable manufacturing, healthcare and biomedical engineering, conventional trial-and-error design methods have proven to be inadequate and inefficient for handling their vast design-property space. The increasing complexity required by modern applications demands advanced computational modeling and systematic inverse design techniques that go beyond trial-and-error approaches based on physical intuition.

We welcome contributions that explore current methodological research enabling the computational design of mechanical metamaterials. Topics of interest include both novel approaches to design and novel applications of metamaterials including, but not limited to:

- Advanced computational modeling (e.g. nonlinear constitutive behavior, fracture, instabilities, wave propagation)
- Micromechanics and multiscale modeling
- Topology optimization
- Data- and machine learning-driven modeling and generative design
- Novel design techniques for applications of metamaterials in healthcare and space