

Acoustic Metamaterials And Phononic Crystals Springer Series In Solid State Sciences

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Acoustic Metamaterials And Phononic Crystals

Introduction. This comprehensive book presents all aspects of acoustic metamaterials and phononic crystals. The emphasis is on acoustic wave propagation phenomena at interfaces such as refraction, especially unusual refractive properties and negative refraction. A thorough discussion of the mechanisms leading to such refractive phenomena includes local resonances in metamaterials and scattering in phononic crystals.

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Amazon.com: Acoustic Metamaterials and Phononic Crystals ...

To carefully engineer a phononic crystal in an acoustic "atom" scale, acoustic metamaterials with their inherent deep subwavelength nature have triggered more exciting investigations on negative bulk modulus and/or negative mass density.

Phononic crystals and acoustic metamaterials - ScienceDirect

Phononic crystals require the lattice size to be the same order of magnitude as the wavelength in the direction of sound wave propagation, while the acoustic metamaterial is able to [12].

(PDF) Phononic Crystals and Acoustic Metamaterials

Acoustic metamaterials and phononic crystals have some extraordinary physical properties, effective negative parameters, band gaps, negative refraction, etc., extending the acoustic properties of existing materials.

A Review of Acoustic Metamaterials and Phononic Crystals

The emphasis is on acoustic wave propagation phenomena at interfaces such as refraction, especially unusual refractive properties and negative refraction. A thorough discussion of the mechanisms leading to such refractive phenomena includes local resonances in metamaterials and scattering in phononic crystals. Table of contents (10 chapters)

Acoustic Metamaterials and Phononic Crystals | Pierre A ...

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Phononic crystals and acoustic metamaterials Classical waves, including elastic waves (acoustic waves) and electromagnetic waves (optical waves and microwaves), are described by conventional...

Phononic crystals and acoustic metamaterials

Phononic crystals and acoustic metamaterials are artificial materials that exhibit extraordinary physical phenomena, functions, and properties in acoustics. Phononic crystals are generally periodic elastic composites or structures designed with local defects for controlling of acoustic wave propagation.

Crystals | Special Issue : Recent Advances in Phononic ...

An acoustic metamaterial, sonic crystal, or phononic crystal, is a material designed to control, direct, and manipulate sound waves or phonons in gases, liquids, and solids (crystal lattices). Sound wave control is accomplished through manipulating parameters such as the bulk modulus β , density ρ , and chirality.

Acoustic metamaterial - Wikipedia

Acoustic MMs, usually rely on a geometrical design to control sound wave propagation. The same ideas as for photonic MMs can often be applied, because of the similar behavior of the electromagnetic and acoustic waves. Phononic crystals, which are conceptually similar to photonic crystals, are one kind of acoustic MMs.

Phononic Crystal - an overview | ScienceDirect Topics

Acoustic Metamaterials and Phononic Crystals. Acoustic Metamaterials and Phononic Crystals pp 217-251 | Cite as. Nonlinear Periodic Phononic Structures and Granular Crystals

Nonlinear Periodic Phononic Structures and Granular Crystals

Phononic crystals and acoustic metamaterials are periodic structures whose effective properties can be tailored at will to achieve extreme control on wave propagation.

Gradient index phononic crystals and metamaterials in ...

Phononics 2019 is the fifth conference dedicated to analysis and manipulation of phonons (vibrations in solids), connecting researchers interested in phononic crystals, acoustic/thermal metamaterials, wave propagation in periodic structures, nano-scale phonon transport, and optomechanics and phonon coupling.

Phononics 2019: 5th International Conference on Phononic ...

the sources of damping in phononic crystals and acoustic metamaterials into three categories, depending on the type and configuration of the unit cell. These are: (1) bulk material-level dissipation stemming from deformation processes (e.g., dissipation due to friction between internal crystal planes

Chapter 6: DAMPED PHONONIC CRYSTALS AND ACOUSTIC METAMATERIALS

A seismic metamaterial, is a metamaterial that is designed to counteract the adverse effects of seismic waves on artificial structures, which exist on or near the surface of the earth. Current designs of seismic metamaterials utilize configurations of boreholes, trees or proposed underground resonators to act as a large scale material. Experiments have observed both reflections and bandgap ...

Seismic metamaterial - Wikipedia

You are cordially invited to PHONONICS 2017: The 4 th International Conference On Phononic Crystals/Metamaterials, Phonon Transport/Coupling And Topological Phononics, to be held in Changsha, China from June 4th to June 9th, 2017. PHONONICS 2017 is the fourth conference dedicated to analysis and manipulation of phonons (vibrations in solids), connecting researchers interested in phononic ...

The 4th International Conference on Phononic Crystals ...

Introduction to Photonic and Phononic Crystals and Metamaterials, by Arthur R. McGurn, presents a study of the fundamental properties of optical and acoustic materials which have been of recent interest in nanoscience and device technology. The level of the presentations is appropriate for advanced undergraduates, beginning graduate students, and researchers not directly involved in the field.

Introduction to Photonic and Phononic Crystals and ...

A periodic array of holes in a membrane or substrate will give rise to a stopband for acoustic waves in a certain frequency range, hence the periodic array of holes acts as a phononic crystal.