# Article information:

应用科学|免费全文|准静态超材料超低频宽带的理论与实验研究  
<https://www.mdpi.com/2076-3417/12/18/8981>

# Article summary:

1. Phononic crystals and elastic metamaterials are periodic structures that can control elastic waves in solids.

2. Researchers have explored metamaterial structures with excellent band gap properties, such as double-sided short cylinders, rubber coating, dual resonators, alternating plexiglass and steel materials, and radial elastic metamaterials.

3. Quasi-static periodic structures can open a wide-band stop band in the ultra-low-frequency range, which has been studied theoretically but not experimentally.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article is generally reliable and trustworthy as it provides an overview of existing research on phononic crystals and elastic metamaterials for controlling elastic waves in solids. It also presents a new research proposal to investigate quasi-static band gap properties of an “I-shaped single-phase REM” structure. The article is well written and provides detailed information on the various types of structures that have been studied so far, as well as their respective band gap properties.

However, there are some potential biases in the article that should be noted. For example, the article does not provide any counterarguments or alternative perspectives on the proposed research project or its potential implications. Additionally, while the article does mention some of the risks associated with this type of research (e.g., potential damage to materials due to high frequency vibrations), it does not provide a comprehensive overview of all possible risks or discuss how they could be mitigated. Furthermore, while the article does provide evidence for some of its claims (e.g., citing previous studies), it does not provide sufficient evidence for all its claims (e.g., regarding the proposed “I-shaped single-phase REM” structure). Finally, while the article does present both sides of certain issues (e.g., discussing both Bragg scattering and local resonance mechanisms), it does not do so equally throughout; for example, it focuses more heavily on discussing existing research than exploring potential counterarguments or alternative perspectives on its proposed research project.

# Topics for further research:

* Risks associated with phononic crystals
* Mitigation strategies for elastic metamaterials
* Quasi-static band gap properties
* Bragg scattering mechanisms
* Local resonance mechanisms
* Alternative perspectives on phononic crystals

# Report location:

<https://www.fullpicture.app/item/d5a9da8cfa96417c0b854c74a60fafbd>