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Abstract

The problem of synthesis of metamaterials is becoming of great importance for its emerging potential and important technological applications.

It can be resumed as follows: once prescribed some desired and physically admissible properties for a novel metamaterial to find a micro-structure that at certain macro length-scale produces a homogenized material whose mechanical behavior is exactly the prescribed one.

This problem produces very interesting and difficult challenges both theoretical and experimental.

A list of the available results when the desired properties are those of second gradient materials will be presented and some interesting technological applications of the developed concepts are envisioned