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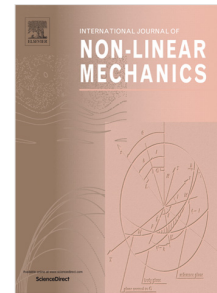
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# Forced nonlinear vibrations in hierarchically constructed media

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## Abstract

The paper deals with the model for a hierarchic multi-level medium. This model consists of the specifically coupled oscillators with power law interactions. We consider the periodic regimes appearing in the model when the uppermost structural level is driven by a harmonic force. To study these regimes as solutions of strongly nonlinear high-dimensional dynamical system, we improve the method of specific points (MSP) and verify the results via the Galerkin method and direct numerical treatment. This gives us the amplitude-frequency response curves characterizing the peculiarities of vibrations in the model. In particular, we revealed the shifting of resonant frequencies depending on the measure of nonlinearity. The deformations of backbone curves leading to jump phenomena are observed as well.

*Keywords:* coupled oscillators, forced vibrations, response curve, resonance, Galerkin method

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