
Low-frequency propagating and evanescent waves in high-contrast sandwich structures

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Abstract

The presentation is concerned with elastic waves propagation in aerogel-based sandwich plates, characterised by a high contrast in geometric and mechanical parameters of the layers. A multiparametric approach is developed. It is demonstrated that due to a high contrast an additional low-frequency propagating wave and a slowly decaying evanescent one emerges. The link between them is investigated. Two-mode long-wave low-frequency asymptotic expansions of the full dispersion relation are derived. Comparison of the asymptotic results with the numerical solution of the full dispersion relation is presented.

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