Identification of the constitutive parameters of strain gradient elasticity using guided wave propagation in architectured materials

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Résumé

In this work we introduce an identification procedure for the numerical assessment of the constitutive parameters of strain gradient elasticity (SGE) for architectured materials. The key idea is to measure the dispersion diagram of guided waves propagating in an architectured plate and then, by solving an inverse problem, to retrieve the constitutive parameters of the homogeneous equivalent material by fitting the response of the SGE model. In the present contribution this procedure is tested in the case study of a hexagonal honeycomb lattice. The strength of such approach, which is investigated here from a numerical viewpoint only, is that it could also be readily applied in an experimental setting.

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