Optimization of directional elastic energy propagation - DTU Orbit (09/11/2017)

Optimization of directional elastic energy propagation

The aim of this paper is to demonstrate how topology optimization can be used to design a periodically perforated plate, in order to obtain a tailored anisotropic group velocity profile. The main method is demonstrated on both low and high frequency bending wave propagation in an aluminum plate, but is general in the sense that it could be used to design periodic structures with frequency dependent group velocity profiles for any kind of elastic wave propagation. With the proposed method the resulting design is manufacturable. Measurements on an optimized design compare excellently with the numerical results. (C) 2016 Elsevier Ltd. All rights reserved.

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