Nesrine Kherraz

Laboratoire Ondes et Milieux Complexes, University of Le Havre, France

Control of the propagation of Lamb waves in a tunable piezoelectric phononic plate

Mercoledì 19 Aprile 2017, 11:00

Sala Wataghin, Istituto di Fisica, via P. Giuria 1, Torino

contatto: **Federico Bosia (fbosia@unito.it)**

Abstract

Phononic crystals are artificial periodic elastic structures which can be designed to control the propagation of elastic waves. One of the most important properties of the phononic crystals (PCs) is their ability to prohibit the propagation of acoustic wave in some frequency ranges called Bragg gap or hybridization gap. Recently, a growing number of works has been performed for the tunability of PCs and has been focused on the control of the Bragg-gap opening and the corresponding frequency range. The use of piezoelectric materials for the realization of tunable PC has proved its effectiveness [1-3]. In this study, a piezoelectric plate covered by 1D periodic arrangement of thin metallic electrodes is used in order to tune the dispersion of guided Lamb waves and control the gap opening in the considered band structure. Experimental and numerical results show the possibility of opening band gaps due to the Bragg diffraction and electrical locally resonant mechanisms

[1]: F.Casadei, T.Delppero, A.E.Bergamini, P. Ermanni and M. Ruzzene, J. Appl. Phys, 112, 064902 (2012).

[2]: S.Degraeve, C.Granger, B.Dubus, J.O.Vasseur, M.Pham Thi, and A.C. Hladky-Hennion, J. Appl. Phys, 115, 194508 (2014).

[3]: A.E.Bergamini, M.Zündel, E.A. Flores Parra, T.Delpero, M. Ruzzene, and P. Ermanni, J. Appl. Phys, 118, 154310, (2015).

The speaker

Nesrine Kherraz is a Ph.D. Student at the Laboratoire Ondes et Milieux Complexes, University of Le Havre, France. Her current research focuses on the development of active phononic crystals and metamaterials for ultrasound applications.