University of Crete
Department of Physics

40 Years Anniversary Colloquium Series

Thursday, 1 November 2018 | 17:00 – 18:00, Seminar Room, 3rd floor

Phononic Crystals: Controlling elastic waves from nanometers to meters

Prof. Michael M. Sigalas
Department of Materials Science, University of Patras, Greece

ABSTRACT

Phononic Crystals (PC) are artificially constructed materials which under certain conditions can display frequency regions (Phononic Band Gaps, PBG) where propagation of elastic waves is not allowed. PBG appear at different frequencies depending on the dimensions of the PC. Thus, for dimensions of PC in nm, the PBGs appear in THz while for dimensions in meters are displayed in Hz.

The presentation will describe PC and their properties and applications. The nanoscale PC can be used to control thermal conductivity and have recently been proposed for phononic communications. On the micrometer scale they can be used as sensors. Finally, for PC with dimensions in meters can be used to control vibrations (e.g. seismic waves).

Although they have been studied for over 25 years, they are still of interest in their extreme dimensions. For dimensions in nanometers, the interest is from Physicists and Chemists, while for dimensions in meters, the interest comes from Civil and Mechanical Engineers.

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