平成 28 年 6 月 2 日
応用物理学会北海道支部
会員各位

応用物理学会北海道支部講演会のお知らせ

下記講演会を開催いたしますので、多数ご参加下さいますようご案内申し上げます。

演題：Elastic waves in granular phononic crystals
講師：Viyalyi E. Gusev 氏
（(Professor, Universite du Maine, Le Mans, France）
日時：平成28年6月13日（月） 16:30～17:30
場所：北海道大学工学部物理工学系大会議室 （A1-17）
主催：応用物理学会北海道支部

講演の要旨

A new concept of controlling wave propagation in microscopically periodic media is discussed. A weak periodic modulation normal to the direction of wave propagation, and not along the direction of wave propagation, introduces in the initially forbidden frequency range an allowed gap (window) with the width, which is of the order of the initially allowed frequency band.

The rotational acoustic modes in granular crystals are described. The experiments with long-wavelength acoustic waves in 3D unconsolidated granular crystals provided the first explicit experimental confirmation of the classical predictions of the Cosserat continuum elasticity theory, which accounts for the rotational degrees of freedom of infinitesimal particles constituting deformable solids. The description of the elastic modes in 2D granular crystals, in membranes built of the spherical particles and in the cubic packing of cylinders, where the birefringence of the acoustic waves,

non-monotonous bands and Dirac cones are possible, is presented. Localized modes, existing in 1D chain of cylinders due to the second rotational freedom of their motion, are also analyzed. Extremely slow edge modes on the hexagonal and honeycomb membranes are revealed.

Finally, the results of the recent experiments on the linear and nonlinear rotational waves in the chains of the magnetically interacting spherical beads (one-dimensional granular phononic crystals) will be presented.

世話人　松田理
北海道大学大学院工学研究院応用物理学専攻
電話：011-706-7190　omatsuda@eng.hokudai.ac.jp