令和 5 年 2 月 10 日

公益社団法人 応用物理学会
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応用物理学会北海道支部講演会のお知らせ

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【 演題 】 Flexural Metamaterial Beam : Shielding and Tailoring Vibration at broad low frequencies
【 講師 】 Joo Hwan Oh
Ulsan National Institute of Science and Technology (UNIST), South Korea,
Associate Professor
【 日時 】 2023 年 2 月 22 日 16:30-17:30
【 場所 】 北海道大学工学部物理工学系大会議室 （A-1-17）
【 後援 】 応用物理学会北海道支部
【 講演の要旨 】
Metamaterial is an artificial material consisting of sub-wavelength unit cells. Owing to the unit cell's dynamic phenomena, metamaterials exhibit various extraordinary characteristics such as negative density or stiffness. Especially, metamaterial can provide bandgap at sufficiently low frequencies to be used in various engineering fields. In this talk, recent researches on flexural metamaterial beams which have broad bandgap at extremely low frequencies are presented with possible applications in vibration shielding and energy harvesting. Among other elastic motions, flexural motion has its own governing equations so that previous theories for elastic metamaterials are hard to be applied. We developed a new theory of flexural metamaterial, called 'extended mass-spring model', to more clearly predict and effectively study flexural motions in metamaterials. From the extended mass-spring model, various unique theories in flexural metamaterials were revealed. In addition, new strategy of achieving broad bandgap at low frequencies were given, providing new flexural metamaterial beam suppressing broad band vibrations at low frequencies. Based on the metamaterial beam, various researches on vibration suppression and focusing were investigated.

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