SEMINARIO DE INVESTIGACION

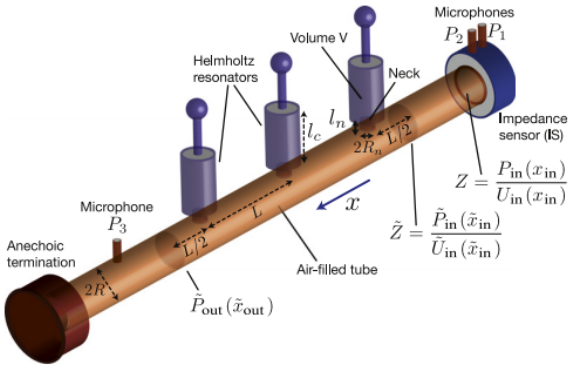
Slow sound propagation and transparency in lossy, locally resonant periodic structures

Vincent TOURNAT
Directeur de Recherche CNRS
http://perso.univ-lemans.fr/~vtournat/
vincent.tournat@univ-lemans.fr

Laboratory of Acoustics at University of Maine, Le Mans, France
http://laum.univ-lemans.fr/

This presentation deals with the sound propagation in lossy, locally resonant periodic structures (an air-filled tube periodically loaded with Helmholtz resonators) taking into account the intrinsic viscothermal losses. In particular, by tuning the resonator with the Bragg gap in this prototypical locally resonant structure, we study the limits and various characteristics of slow sound propagation. While in the lossless case the overlapping of the gaps results in slow sound induced transparency of a narrow frequency band surrounded by a strong and broadband gap, the inclusion of the unavoidable losses imposes limits to the slowdown factor and the maximum transmission. Experiments, theory, and finite element simulations have been used for the characterization of acoustic wave propagation by tuning the Helmholtz/Bragg frequencies and the total amount of loss both for infinite and finite lattices. This study contributes to the field of locally resonant acoustic metamaterials and slow sound applications.

G. Theocharis, O. Richoux, V. Romero-Garcia, A. Merkel, V. Tournat, **Limits of slow sound propagation and transparency in lossy, locally resonant periodic structures**, New J. Phys. 16, 093017 (2014).



Lugar y fecha: Miercoles 29 de Octubre, 12h. Salón de Grados EPS Gandia.
Organizado por: Victor J. Sánchez Morcillo (victorsm@upv.es), Dpto. Física Aplicada