



LAUM



PhD Thesis: Design of Metaplates for controlling flexural waves

A three years PhD position is available at the Laboratoire d'Acoustique de l'Université du Maine, France (LAUM) from October 2016. This PhD position is part of the 2016 projects founded by "Le Mans Acoustique" (Région Pays de la Loire) in which the Polytechnic University of Valencia (Spain) is a major partner. The goal of the project is to design, to model and to characterize experimentally prototypes of metaplates for the control of flexural waves using passive ways.

Variation of the thickness of a plate is a simple way to control its mechanical properties, and therefore to control the flexural waves that propagates inside. This strategy is the origin of acoustic black holes which have been widely studied at LAUM since 8 years. The combination of this thickness variation with local resonators could provide an unprecedented way to more efficiently control the flexural wave dispersion in plates over a wide frequency range. The objective of this PhD is to design a non resonant panel in a targeted frequency band by absorbing the elastic energy, therefore leading to low vibration level of the plate.

A synergistic approach will be adopted by combining: 1) theoretical predictions based on the multiple-scattering theory and the plane wave expansion method, 2) numerical computations by implementing numerical methods (FEM, BEM), and 3) experimental measurements.

Founded in 1981, LAUM has about 130 employees including 50 full-time researchers and teacher-researchers. Since 2000, it has been the leading European laboratory for publications (4th worldwide) in the 2 world-class reviews wholly dedicated to acoustics: Journal of the Acoustical Society of America and Acta Acustica. The National Centre for Scientific Research (CNRS) is the major organization for scientific research in France. CNRS supports all areas of research through the entire country. In addition, the CNRS organizes and provides financial support for meetings in diverse subject areas and offers courses for researchers, such as for laboratory management training. This project being international, the doctorate will benefit from short term missions at the University Polytechnic of Valencia (Gandia campus) to jointly develop several parts of the Project.

Interested candidates should send by e-mail an application to the addresses reported below that should include a cover letter and an updated CV. The deadline will be the 15th of June 2016.

Contact persons:

François Gautier: francois.gautier@univ-lemans.fr, + 33243833981

Adrian Pelat: adrien.pelat@univ-lemans.fr, + 33243833981

Vicent Romero-Garcia: vicente.romero@univ-lemans.fr, +33243833667

Jean-Philippe Groby: Jean-Philippe.Groby@univ-lemans.fr, +33243833670

Rubén Picó Vila: rpico@fis.upv.es