PhD Scholarship in Acoustics

Laboratoire d'Acoustique de l'Université du Maine (LAUM), UMR6613 CNRS
Le Mans, France

Applications are invited for a 3-year PhD studentship to work on acoustic treatments for aircraft engines. This PhD aims at designing and experimentally validating novel porous materials specifically designed to absorb low-frequency sound. With standard materials this requires very thick treatments that cannot be used in practical applications. The challenge is to provide strong sound absorption and attenuation with thin treatments. The focus will be on functionally graded, digital meta-porous materials that incorporate micro-resonators to efficiently attenuate low-frequency waves in lined ducts. New possibilities offered by rapid prototyping techniques will be employed to both manufacture and guide the design of these new acoustics treatments.

Context: Noise emission remains one the main challenges for the development of commercial aviation. For the next generation of aircraft engines to be quieter and more fuel efficient, the performance of acoustics absorbers installed on these engines must be drastically improved. This PhD project is part of the research programme MACIA that aims to explore and develop novel acoustic treatments specifically for applications in aeronautics. Funded by the ANR, this is a partnership between the Laboratoire d'Acoustique de l'Université du Maine (LAUM), UMR 6613 CNRS, in Le Mans, France and the SAFRAN Group, which is a world-leading manufacturer of aircraft engines.

The student will be based mainly at the LAUM and will be supervised by J.-P. Groby, V. Romero-Garcìa and G. Gabard. This project will be performed in close collaboration with École Polytechnique de Montréal, where the final materials will be manufactured. The project will also involve collaboration with engineers from the SAFRAN Group as well as participation in national and international scientific conferences. The LAUM is one of the largest research labs on acoustics and hosts a large number of researchers and projects working on acoustic treatments, including several specialised experimental facilities. Beside short terms visit in École Polytechnique de Montréal, he/she will have the possibility to benefit from research exchanges with a number of international laboratories, in particular European partners of the DENORMS Action (CA-15125).

Profile: The candidate should possess a strong background in physics (more specifically physical acoustics) and should be motivated by both experiments and theory. We look for highly motivated applicants with excellent interpersonal, written and oral communication skills.

Funding: CIFRE scholarship from the SAFRAN Group.

Duration: 3 years.

Expected start date: September 2017.

Further enquiries: Please contact Jean-Philippe Groby (jean-philippe.groby@univ-lemans.fr, +33 (0)2 43 83 36 70).