European project ARTEM (H2020)

Background

This thesis is part of the European ARTEM project (H2020): Aircraft noise Reduction Technologies and related Environmental iMpact

Keywords: ENP External Noise prediction, Low Noise Technology, innovative aircraft configurations

PhD thesis

The goal of this thesis is to produce and implement an acoustic liner designed to lower the noise in aeronautic applications. The liner will be flush mounted and it will have a thickness of less than 50 mm. The study proposed in this thesis focuses on sound absorption using miniature capacitive transducers. LAUM researchers have already developed several models to describe such transducers behavior: lumped elements models, full analytical models and numerical (including FEM) models.
After a bibliography work, the student will have to built-up a liner mockup made of capacitive transducers with a real acoustic impedance (Z=1). The mockup fabrication will result in several acoustic panels that will be dedicated to be flush mounted on the acoustic test-bench. Actually, several kinds of panels will have to be developed because there may be several acoustic test benches (some of them with flat wall, full scale, and some other curved – as in a plane propeller – with a 1:10th scaling factor).

The PhD student will work in close collaboration with the PhD student implied in similar work on the MACIA ANR project.

Thesis Supervision:

- Thesis supervisor: Stéphane Durand
- Thesis co-supervisor: Yves Aurégan

Laboratory:

The thesis applicant will be hosted at the Laboratoire d'Acoustique de l'Université du Mans (LAUM – UMR CNRS 6613) avenue Olivier Messiaen, F-72085 Le Mans, France