AEROSPACE ENGINEERING

DIMEAS - High-fidelity numerical simulations of a multi-degree-of-freedom acoustic liner

Funded By	ERC - EUROPEAN RESEARCH COUNCIL - EXECUTIVE AGENCY Dipartimento DIMEAS

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Context of the research activity	Acoustic liners are widely used to reduce noise in turbofan engines. Conventionally, Single Degree of Freedom (SDOF) liners are adopted. They reduce noise at a given frequency. Modern Ultra High Bypass Ratio (UHBR) engines are characterized by noise sources different than previous generation engines. For this reason, acoustic liners able to reduce noise in a wider frequency range than conventional ones are needed. The experimental characterization of liners and in particular the flow field near the surface is still challenging. The scope of the project is to perform high-fidelity numerical simulations of a realistic liner to shed light on the flow-physics involved.

Objectives	The research project will be carried out within the framework of the ERC Starting Grant project LINING. The candidate will: 1) Identify and design single degree of freedom, double degree of freedom and meta-liners. 2) Perform lattice-Boltzmann simulations and develop advanced post-processing tools. 3) Analyze the flow physics. 4) Share the data in open access with the community. 5) Write conference and journal paper.

Skills and competencies for the development of the activity	The candidate shall: 1) Have good knowledge of both written and spoken English 2) Have background knowledge in acoustics and aeroacoustics 3) Have previous experience with numerical simulations 4) Be able to code in one of the following languages: MATLAB, Python