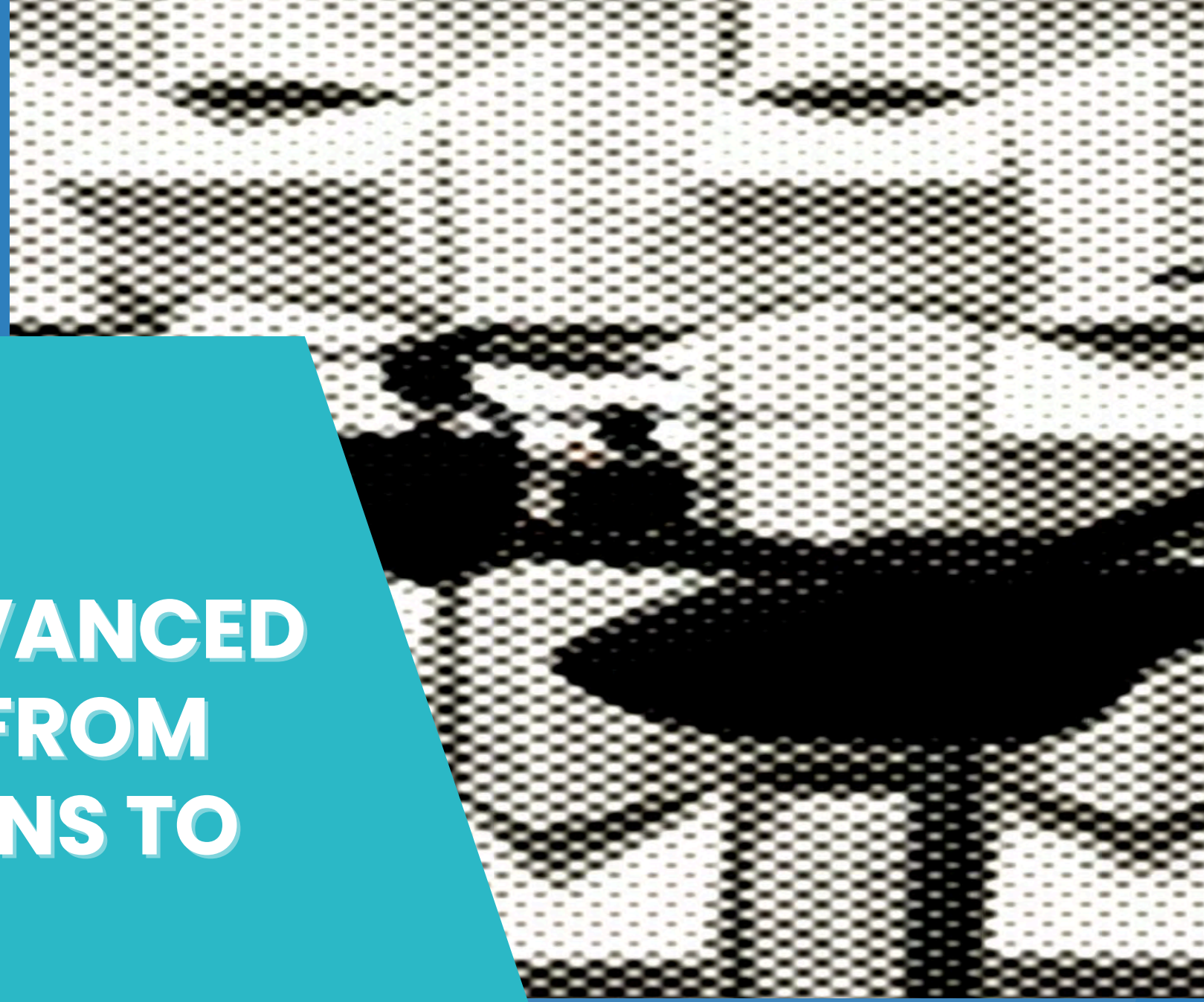




Politecnico
di Torino

DIMEAS SEMINAR

AERODYNAMICS AND AEROACOUSTICS OF ADVANCED AIR MOBILITY VEHICLES: FROM MID-FIDELITY SIMULATIONS TO WIND TUNNEL TESTS



SPEAKER



Alex Zanotti

Associate Professor,
Department of
Aerospace Science
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**Friday 18 July
at 11:30 a.m.**



**Sala Ferrari, II floor,
DIMEAS – Politecnico di Torino**

PROGRAM

Abstract

Innovative concepts for Advanced Air Mobility (AAM) vehicles represent one of the most investigated topics in aeronautics. These aircraft characterized by the capability of vertical take-off and landing (eVTOLs) present unprecedented challenges due to their unique design, particularly characterized by several rotors/propellers. Therefore, eVTOLs design requires fast and reliable tools to investigate key aspects such as interactional aerodynamics and acoustic footprint to be thoroughly addressed to gain regulatory approval and public acceptance. The seminar will provide coverage of the research effort of the Aerodynamics Laboratory of Politecnico di Milano (POLIMI) devoted to the study of the interactional aerodynamics mechanisms related to multi-propeller aircraft configurations. In particular, the technologies and methodologies pertaining to the study of this topic will be presented going from the use of state-of-the-art wind tunnel experiments to mid-fidelity simulations performed using DUST, a vortex-particle-method based software developed at Department of Aerospace Science and Technology of POLIMI. Key topics covered in this seminar include the effects of the principal interactional aerodynamics phenomena occurring on innovative aircraft/rotorcraft configurations along with their flight envelope (i.e. propeller-propeller, propeller-wing, blade-vortex-interactions, vortex ring state) and their main effects on aerodynamic performance and acoustic footprint.

BIO

Short Bio: Alex Zanotti is Associate Professor of Fluid Dynamics at Politecnico di Milano. He is a graduate of Politecnico di Milano where he received his Ph.D. in Rotary Wing Aircraft in 2012 and also earned M.Sc. degree in Aerospace Engineering in 2006. He is the Scientific Coordinator of the Aerodynamics Laboratory of the Department of Aerospace Science and Technology of Politecnico di Milano and Deputy Head of the Scientific Council of the Politecnico di Milano Wind Tunnel. He is in charge of the chair of Experimental Fluid Dynamics and Aerodynamics of Transport Vehicles courses at M.Sc. Degree in Aeronautical Engineering of Politecnico di Milano. He is Scientific Coordinator of the mid-fidelity aerodynamic solver DUST.