

Turbulence and Flow Control Research Group Seminar Series CITY UNIVERSITY LONDON



“Slat noise experiments, numerics and analysis”

Professor Marcello A. F. Medeiros

*Professor of Aerodynamics and Aeroacoustics
Department of Aeronautical Engineering
University of São Paulo - São Paulo, Brasil*

ABSTRACT

Slat is an important noise generator at landing and is currently an active research topic. Wind-tunnel tests and numerical simulations indicate the spectrum of slat noise is dominated by low-frequency narrowband peaks at operational angle of attack. The current research initiated by acoustic wind tunnel experiments with microphone arrays and beamforming techniques. A number of slat configurations was tested. Numerical simulations were then carried out and good agreement with acoustic results was obtained. Next, the numerical data were used to investigate the noise generation mechanisms. Coherent structures analysis with the Proper Orthogonal Decomposition technique revealed that the tonal peak frequency selection mechanism is associated with Kelvin-Helmholtz instability in combination with open cavity (Rossiter-like) modes. Devices for noise reduction have also been developed.

SPEAKER'S BIO

Marcello A. F. Medeiros received his PhD from the University of Cambridge and is Professor of Aerodynamics and Aeroacoustics in the department of Aeronautical Engineering at the University of São Paulo. He is interested in generation of turbulence and generation of sound from turbulence. He uses physical experiments, numerical simulations and analysis to investigate the physics of these phenomena. His current interests are natural or roughness induced boundary layer transition as well as instability and noise in free shear flows, the slat noise being an application of the latter.

VENUE, DATE & TIME

City University London (click on figures for further details).

Room: AG01

Building: College

Date: 8th October, 2015

Time: 16:00

ORGANISERS

Prof. Alfredo Pinelli, Prof. Chris Atkin,

Dr Marco Placidi, Dr Mohammad Omidyeganeh

Prof. Abdalnaser Sayma

CONTACT

Dr Marco Placidi: marco.placidi.1@city.ac.uk

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