



SEMINAR

APPLIED MATHEMATICS AND MECHANICS

FS876

7 May 2014

A DCAMM seminar No. 673 will be presented by

Dr. Antonio Filippone
The University of Manchester
Manchester, United Kingdom

The title of the lecture is

Long-Range Noise Propagation

Abstract:

Sound propagation in the atmosphere takes place over long distances (several km), over complex terrain with variable acoustic impedance and variable conditions. This includes stratified atmospheres with variable temperature, density, relative humidity, wind speeds and wind directions. Thus, there is a large set of parameters, most of which cannot be determined by measurement. Although the matter discussed is specifically concerned with aircraft community noise, the theoretical methods presented apply equally to other long-distance propagation problems such as wind turbines and road traffic. The determination of instantaneous and integral noise metrics, and the iso-levels of the acoustic signatures on a wide area are described. Two independent models have been extended and improved numerically: a wave-equation model and a ray-tracing model. These models operate over a fixed-impedance ground in a stratified atmosphere affected by horizontal winds. A comparison between the two models is shown for negative and positive sound speed gradient, in the frequency and in the space domain. The case of a full aircraft noise model will be shown. The case of a flight trajectory is considered for two types of aircraft: turbofan-powered and propeller-powered. Accuracy issues are examined in detail.

DATE:	Tuesday, 20 May 2014
TIME:	11:00
PLACE:	Room 105, Building 404, DTU, Technical University of Denmark

Danish pastry, coffee and tea will be served 15 minutes before the seminar starts.

All interested persons are invited.

Christian Niordson

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