



# SEMINAR

APPLIED MATHEMATICS AND MECHANICS

FS1026

13 March 2026

A DCAMM seminar No. 800 will be presented by

**Professor Antonio Filippone**  
School of Engineering,  
The University of Manchester, United Kingdom

The title of the lecture is

**Aerodynamics and aeroacoustics of propellers with unequal blade spacing**

**Abstract:**

The seminar is a summary of experimental and numerical investigations on the aerodynamics and aeroacoustics of propellers with unequal blade spacing. Two-bladed propellers with an angular spacing of 90 degrees (blades at right angles) and ordinary propellers are discussed. The aim was to investigate the possibility of properly adjusting the blade spacing to reduce the acoustic emissions without affecting the aerodynamic performance. The use of non-uniform blade spacing could reduce the contribution at the blade passing frequency and its multiples, while giving rise to non-zero contribution a frequencies multiple of the revolution frequency. The acoustic experiments were carried out in an anechoic chamber in the absence of free-stream velocity. The propellers were operated speeds up to 5,000 rpm. The experimental analysis evidenced the presence of noise peaks at 1/2 blade passing frequency and its multiples. The numerical analysis was performed by the combined application of various aerodynamics and acoustic solvers, including vortex particle methods corrected for viscosity, boundary integral formulation, computational fluid dynamics, and aeroacoustic solvers based on the Farassat 1A formulation for the tonal noise and some formulations for broadband noise. All results indicate that the perceived noise might be improved by a shift of the frequencies rather than their energy content.

DATE:	<b>Wednesday, 25 March 2026</b>
TIME:	<b>11:00 – 11:45</b>
PLACE:	<b>Building 414, Room 065E</b> DTU, Technical University of Denmark

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

All interested persons are invited.

Jens Nørkær Sørensen/Jan Becker Høgsberg

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