DANISH CENTER FOR APPLIED MATHEMATICS AND MECHANICS

The 2026 DCAMM Annual Seminar Speaker

Johan Meyers

Professor,
Mechanical Engineering, KU Leuven
Belgium

gives the following lecture at

Aarhus University

Building 5794, Room 118,
Åbogade 40, 8200 Aarhus N

Wind-farm boundary layer interaction, blockage and excitation of gravity waves

Thursday, October 22, at 14:00

There will be an open discussion after the lecture
at 15:00
(Refreshments are served)

This lecture aims at popularizing mechanical science to a broad audience of interested students and staff as well as engineers working in industry

The Danish Centre for Applied Mathematics and Mechanics, DCAMM, is a framework for internationally oriented scientific collaboration between staff members at a number of departments at the Technical University of Denmark, Aalborg University, Aarhus University and University of Southern Denmark. The "DCAMM Annual Seminar Speaker" is an initiative created to disseminate mechanics to a broader audience.
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Abstract

With the development of large-scale wind farms featuring increasingly high power densities, wind-farm blockage has emerged as a major concern for developers. This presentation examines the underlying physics of wind-farm blockage, with particular emphasis on hydrostatic blockage effects arising from atmospheric stratification and associated excitation of gravity waves. Large-eddy simulations are employed to investigate the relevant parameter space, focusing on both the adverse impacts of blockage, such as unfavorable pressure gradients and flow deceleration upstream of the wind farm, and the potential benefits associated with favorable pressure gradients within the farm itself. The importance of blockage and gravity waves wind-farm wake recovery is also briefly discussed. Finally, consequences of blockage for wind-farm control are discussed.