



SEMINAR

APPLIED MATHEMATICS AND MECHANICS

FS985

18 April 2023

A DCAMM seminar No. 765 will be presented by

Yolanda Vidal, Professor
Polytechnical University of Catalonia, Spain

The title of the lecture is

Artificial Intelligence for Wind Turbine Condition Monitoring and Structural Health Monitoring

Abstract:

To remain competitive, wind turbines (WTs) must be reliable machines with efficient and effective maintenance strategies. Thus, it is of paramount importance that the wind industry moves from corrective and preventive maintenance to the so-called predictive maintenance (scheduled as needed based on the asset condition). On the one hand, this talk addresses WT condition monitoring methodologies based on SCADA data. WTs generate a wealth of SCADA data from a variety of sensors, which can be effectively used to enable fault diagnosis strategies. Data-driven techniques, based on machine or deep learning, are particularly promising in this field. Furthermore, this approach is cost-efficient and readily available as no extra equipment needs to be installed in the wind turbine. On the other hand, this talk addresses the structural health monitoring (SHM) of WTs. The main purpose is to detect, locate, and characterize damage, so that maintenance operations can be performed in due time. The standard SHM approach based on guided waves (where the input excitation is known and imposed to the structure and then the output vibration is measured) cannot be straightforwardly applied as the excitation is not known (wind, waves, currents) neither can be imposed. A new paradigm, a vibration-response-only methodology, is developed that assumes unknown input excitations and that only the vibration response is measurable by means of different sensors.

DATE:	Thursday, 27 April 2023
TIME:	12:30 – 13:15
PLACE:	Benz Seminar Room, Ø31-605-2, Moseskovvej 72 SDU, University of Southern Denmark

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

All interested persons are invited.

Niels Leergaard Pedersen

DANISH CENTER FOR APPLIED MATHEMATICS AND MECHANICS

• TECHNICAL UNIVERSITY OF DENMARK • AALBORG UNIVERSITY
• AARHUS UNIVERSITY • UNIVERSITY OF SOUTHERN DENMARK