DCAMM SEMINAR

APPLIED MATHEMATICS AND MECHANICS

FS924 6 November 2017

A DCAMM seminar No. 715 will be presented by

Associate Professor Albert Turon
Department of Mechanical Engineering and Industrial Construction
University of Girona, Spain

The title of the lecture is

Simulation of Delamination in 3D Composite Structures under Fatigue Loading

Abstract:

The use of numerical tools to account for fatigue-driven delamination in the safety assessment of 3D composite structures still remains challenging. The accuracy and predictive capabilities of most of the existing simulation methods for fatigue delamination are improvable and/or limited to two-dimensional models. In this work, the method presented in [1] has been enhanced for 3D structures where the crack front shape can change during propagation. A criterion to identify the crack propagation direction, as well as a new expression for the three-mode decomposed J-integral, have been developed to this end. The resulting formulation has been implemented in ABAQUS to simulate the fatigue behavior of a reinforced composite plate which exhibits changing shape of the delamination front along the loading history. The method is capable to reproduce the change in crack front shape and the delamination growth rate registered during the experimental testing.

[1] Bak B.L.V., Turon A., Lindgaard E., Lund E (2016) A Simulation Method for High- Cycle Fatigue-Driven Delamination Using a Cohesive Zone Model. International Journal for Numerical Methods in Engineering, 106, 163-191.

DATE: **Monday, 20 November 2017**

TIME: **14:00 – 14:45 + questions**

PLACE: **Room 1.101, Aalborg University**
Fibigerstræde 16, 9220 Aalborg East

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

All interested persons are invited.

Niels Leergaard Pedersen