SEMINAR

APPLIED MATHEMATICS AND MECHANICS

FS983 8 February 2023

A DCAMM seminar No. 764 will be presented by

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The title of the lecture is

Some topics in gradient extended crystal plasticity, damage, and oxygen assisted intergranular fracture

Abstract:

This presentation will give an overview of activities in the field of gradient-enhanced theories of crystal plasticity. The starting point is a thermodynamically consistent formulation whose aim is to capture the size-dependent behavior of polycrystals. For this formulation, different numerical algorithms to solve the resulting coupled FE problem have been investigated. The boundary conditions for the extended gradient field both at the outer and inner boundaries of a volume element are discussed and the influence of different choices is analyzed.

Furthermore, the model formulation is developed to include damage with the aim to simulate ductile fracture. Numerical results of a single-crystalline metal will be present to show how the damage propagates inside the grain and the interaction with the grain boundary conditions. Finally, a grain boundary model for oxygen-assisted intergranular fracture will be summarized and some results showing its main characteristics will be shown.

DATE: **Thursday, 23 February 2023**

TIME: **14:30 – 15:15**

PLACE: **Building 402, Room 025**
DTU, Technical University of Denmark

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

All interested persons are invited.

Niels Leergaard Pedersen