

Invitation to the talk *A modern view of FFT-based computational methods in micromechanics* of Jun.-Prof. Dr. rer. nat. Matti Schneider at the GAMM Student Chapter at TU Dortmund University

Place: MB I - R165 (Seminar room, hybrid)
Zoom Link: [Link](#)
Meeting ID: 996 1429 2677
Passcode: 308034

Date: Thursday, 1st December 2022
Time: 4:00pm (16:00)

Preliminary agenda

TOP 1: Seminar talk by [Jun.-Prof. Dr. rer. nat. Matti Schneider](#) (see abstract below)

TOP 2: Discussion and Questions

TOP 3: Social and scientific exchange with accompanying drinks and food

Abstract

A modern view of FFT-based computational methods in micromechanics

Jun.-Prof. Dr. rer. nat. Matti Schneider - Karlsruhe Institute of Technology (KIT), Computational Micromechanics

Since their inception in the mid 90s by Moulinec and Suquet, computational methods based on the fast Fourier transform (FFT) have demonstrated their extraordinary capabilities for problems in micromechanics. Their success rests on three ingredients. For a start, they operate on a regular grid, rendering complex meshing procedures superfluous. Secondly, the FFT is used to construct computational schemes that are matrix-free and automatically preconditioned. Last but not least, these techniques were designed to handle inelastic constitutive laws from the beginning. The talk is concerned with recent improvements of the original technology, i.e., the development of more powerful solution techniques based upon an optimization perspective and advances in discretization techniques which are critical for applications to high contrast and perforated materials.
