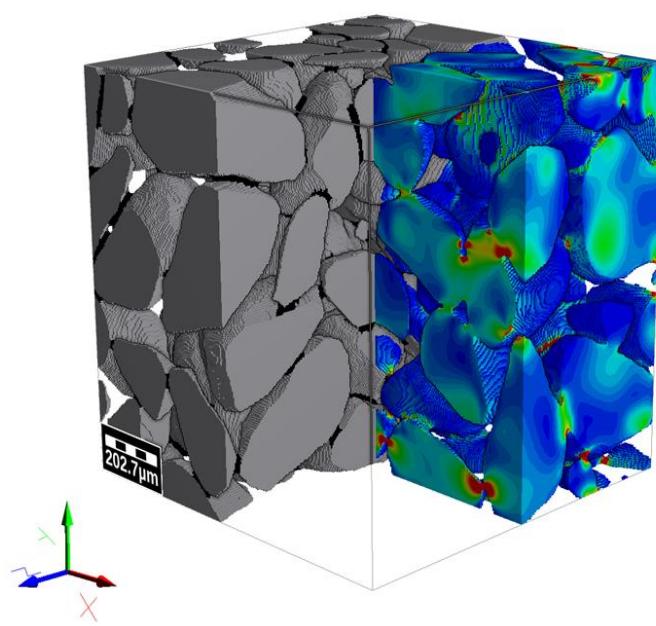


Matti Schneider

“Efficient FFT-based computational homogenization of inelastic solids”

Since the pioneering work of Moulinec and Suquet, computational methods based on the fast Fourier transform (FFT) have been established as a powerful and versatile tool for the computational homogenization of heterogeneous and composite materials. It took some time to understand the numerical method underlying the original proposal by Moulinec and Suquet. However, this understanding turned out to be crucial for subsequent developments, enabling the treatment of large-scale, inelastic and porous materials. The talk at hand



After

studying applied mathematics, Matti Schneider held post-doc positions at TU Chemnitz and the Fraunhofer Institute for Industrial Mathematics ITWM. Since 2017, he is assistant professor for Computational Micromechanics at the Karlsruhe Institute of Technology (KIT). His research interests include numerical methods for computational homogenization, the modeling of microstructures and the eventual upscaling to component scale. He was awarded an ERC Starting Grant and received the von Mises prize of the German Association of Applied Mathematics and Mechanics (GAMM).

discusses the underlying ideas, gives an overview of recent developments and sheds light on the unreasonable effectiveness of regular-grid based methods in computational homogenization.