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Einladung zum Vortrag

von

15. Juni 2016

Herrn Dr. François Willot

Center for Mathematical Morphology, MINES ParisTech

Modelling of microstructure and physical properties of heterogeneous media

As often in materials science, an accurate description of the 3D microstructure is required to model and predict the physical properties of heterogeneous media. In this talk, we examine various numerical and theoretical techniques used to model and simulate random microstructures. We first describe how probabilistic segmentation techniques, coupled with image formation analysis, are applied to image data obtained by SEM, FIB-SEM, tomography or MET. The methods are illustrated by various applications to porous media, mortars, fiber composites and polycrystals. Morphological transformations, derived from image analysis techniques, are used to provide microstructure-sensitive criteria. These criteria allow one to derive and optimize realistic microstructure models, i.e., models that are representative for real microstructures. In a first part of the talk, we focus on the determination and simulation of probabilistic and multi-scale models, with applications to n-phase microstructures used in fuel cell applications. In a second part, we show how spectral (image-based) Fourier methods can be used in complement of microstructure simulations to predict the mechanical and transport properties of heterogeneous materials, in the context of homogenization.

Termin: **Mittwoch, 06. Juli 2016, 10:00 Uhr**

Ort: **Universität Ulm, Helmholtzstr. 22, Raum 2.02**

Alle Interessenten sind herzlich eingeladen.
Der Vortrag findet im Rahmen des Mathematischen Kolloquiums statt.

gez. V. Schmidt