Dissertations of the WG Modelling and PDEs

Our dissertations are centered around problems from

- Functional Analysis

- Partial Differential Equations

- Modelling of complex phenomena in material sciences (Theory AND applications)

Finished dissertations

- Adrian Muntean, "A moving-boundary problem: modeling, analysis and simulation of concrete carbonation" (2006), currently at TU Eindhoven

- Malte Peter, "Coupled reaction-diffusion systems and evolving microstructure: mathematical modelling and homogenisation" (2006), currently Professor at the University of Augsburg

- Sebastian Meier, "Two-scale models for reactive transport and evolving microstructure" (2008)

- Yakub Tijani, "Modeling and Simulation of Thermochemical Heat Treatment Processes: A Phase Field Calculation of Nitriding in Steel" (2008)

- Sören Dobberschütz, "Homogenization Techniques for Lower Dimensional Structures" (2012), currently at the Nano-Science Center, University of Copenhagen

- Sören Boettcher, "Modelling, Analysis and Simulation of Thermo-Elasto-Plasticity with Phase Transitions in Steel" (2012), currently at the "bime", University of Bremen

- Niels Hendrik Kröger, "Multi-Mechanism Models, Theory and Applications" (2013)

- Hari S. Mahato, "Homogenization of a System of Nonlinear Multi-Species Diffusion-Reaction Equations in an $H^{1,p}$ Setting" (2013), currently at the TU Dortmund

- Simone Bökenheide, "Modelling and simulation of inelastic phenomena in the material behaviour of steel during heat treatment processes " (2015)

- Martin Höpker, "Extension Operators for Sobolev Spaces on Periodic Domains, Their Applications, and Homogenization of a Phase Field Model for Phase Transitions in Porous Media" (2016)

Currently working on their Ph.D

- Michael Eden, "Homogenization of Phase Transformation Problems with Sharp Interfaces"

- Simon Grützner, "Parameter Identification in Damaged Continua"

Free topics

- Inverse Problems in Mechanics

- Time-dependent-obstacle variational inequalities and their applications to plasticity

- Theory of Homogenization

- others