



Technische  
Universität  
Braunschweig

Graduiertenkolleg 2075

Modelle für die Beschreibung der Zustandsänderung  
bei Alterung von Baustoffen

## Vortrag im Gästeprogramm des GRK 2075

### Doc. Ing. Dr. Jan Valdman

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### FEM computations in nonlinear mechanics of solids including elasto-plasto-damage and thermo-magnetic models

Mittwoch, 21.06.2017, 14.00 Uhr

TU Braunschweig

Institut für Wissenschaftliches Rechnen

Mühlenpfordtstrasse 23, 8. OG. Raum 812

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We explain computations of the quasistatic evolutionary model presented by Martin Kruzik in his talk on Mathematical modeling of shape memory alloys. Then, we demonstrate some simulations of a thermo-magnetic model and of elasto-plasto-damage models. All computer simulation include own 2D in Matlab implementation of the finite element method.

Literature:

Martin Kruzik, Jan Valdman, Computational modeling of magnetic hysteresis with thermal effects, *Mathematics and Computers in Simulation* (in press)

Tomas Roubicek, Jan Valdman, *Perfect plasticity with damage and healing at small strains, its modelling, analysis, and computer implementation*, *SIAM Journal on Applied mathematics* 76, No. 1, 314-340 (2016)

Education: 1997 MSc. certificate in Numerical analysis and Supercomputing, Mathematical research Institute in the Netherlands, Utrecht and Ing. in Mathematical Modeling, University of West Bohemia, Pilsen, 2002 Dr. rer. nat. in applied mathematics, University of Kiel, 2011 Docent in applied mathematics, Technical University of Ostrava.

Positions: A research fellow at the Department of Decision-Making Theory of the Institute of Information Theory and Automation, CAS and associate professor at the Department of Mathematics and Biomathematics, Faculty of Science, University of South Bohemia, Ceske Budejovice, Czech Republic.

Research interests: Computational continuum mechanics, a posteriori error estimates, FEM implementations of nonlinear problems.

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#### Kontakt

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