

Reduced-Order Modeling for Simulation and Optimization: Powerful Algorithms as Key Enablers for Scientific Computing

Tentative Schedule

Thursday – November 17, 2016

12:00 Arrival, Registration

13:00 Lunch

14:00 Address of Welcome

14:15 **Maxwell in Motion – Dynamical Simulation of Electromechanical Systems**
Stefan Kurz (Robert Bosch GmbH)

14:45 **Reduced Basis Methods and Industrial Problems - Chances and Challenges**
Karsten Urban (Ulm University)

15:15 **Interpolation-Based Optimal Model Order Reduction for Quadratic-Bilinear Control Systems**
Pawan Goyal (Max Planck Institute Magdeburg)

15:35 Group Photo / Coffee Break

16:00 **Numerical Challenges in Simulation and Optimization – A Chemist's Perspective**
Michael Rieger (BASF SE)

16:30 **ROM-Based Multiobjective Optimal Control of the Navier-Stokes Equations**
Michael Dellnitz (Paderborn University)

17:00 **Advances in Theory and Practice of Tensor Decompositions Using Low Rank Matrices**
Eugene Tyrtshnikov (Russian Academy of Sciences)

17:20 **MOR Approaches for Simulation of Electrochemical Processes in Porous Electrodes of Li-ion Batteries**
Oleg Iliev (Fraunhofer ITWM)

17:40 Discussion

19:00 Workshop Dinner

Friday – November 18, 2016

9:00 Discussion Summary of Previous Day

9:15 **Model Reduction for Reactive Flows**
Volker Mehrmann (TU Berlin)

9:45 **Model Order Reduction enabling Simulation beyond classical Applications**
Dirk Hartmann (Siemens AG)

10:15 **Nonintrusive Realization Theory for Structured Problems**
Benjamin Unger (TU Berlin)

10:35 Coffee Break / Poster Session

Towards Dynamic Optimization of CO₂ Methanation Reactors using Reduced Order Models
Jens Bremer (Max Planck Institute Magdeburg)

sss & sssMOR: Analysis and Reduction of Large-scale Dynamic Systems with MATLAB
Alessandro Castagnotto & Maria Cruz Varona (TU Munich)

Model Order Reduction on Energy Networks
Sara Grundel (Max Planck Institute Magdeburg)

Kernel Approximations for Surrogate Modelling in Simulation Science
Bernard Haasdonk (University of Stuttgart)

Space-time FEMPOD for Finite-time Horizon Optimal Control Problems
Jan Heiland (Max Planck Institute Magdeburg)

POD-Galerkin Reduced-Order Modeling with Adaptive Finite Element Snapshots
Sebastian Ullmann (TU Darmstadt)

11:30 **Adaptive Snapshot Location Strategies in POD MOR**
Michael Hinze (University of Hamburg)

12:00 **Combination of Linearly Reduced Models with Nonlinear FE Models for the Acceleration of Car Crash Simulations**
Jörg Fehr (University of Stuttgart)

12:30 **SIMUROM: Simulation and Robust Optimization of an Electric Machine with Uncertainties**
Zeger Bontinck (TU Darmstadt)

12:50 Closing Discussion & Farewell