

Invitation for a Special Issue

“Model Reduction of Parametrized Systems” (MoRePaS) in Advances in Computational Mathematics (ACOM)

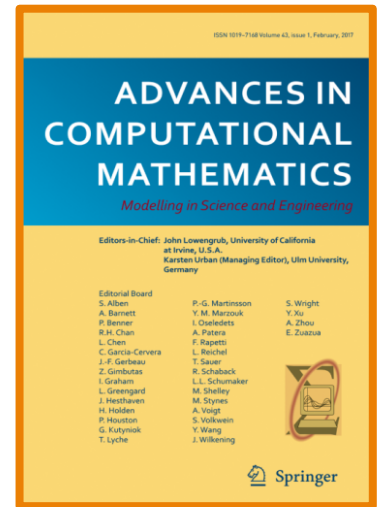
Objective:

The tremendous advances in numerical analysis as well as in computing power in the past decades have resulted in the availability of computational methods for increasingly complex systems. These systems typically involve a variety of parameters (e.g. physical, geometric, loading, or control parameters), possibly affected by uncertainties. Furthermore, in many applications, the goal is not to merely predict the system behavior, but to solve an inverse, design, control, optimization, parameter estimation problem, possibly in real-time and possibly taking into account uncertainties.

The solution of such problems typically requires repeated simulations at many different parameter values. For complex systems, this task can easily become infeasible despite increased computing capabilities. Thus, fast and reliable reduced computational models are needed. Model reduction has been a very active area of research for the past decades.

The proposed special issue MoRePaS in ACOM is supposed to address recent results and significant new achievements in model order reduction, with a focus on the following areas:

- Data-Assimilation and Data-Driven Methods
- Domain Decomposition Approaches
- Dynamic and Adaptive Approximations, Error Estimation
- High-Dimensional Parameter Spaces
- Interpolation Methods
- Krylov-Subspace, Rational Approximation and Interpolatory Methods
- Large-Scale Applications: Industry and Multiphysics Problems; HPC
- Model Reduction for Optimization, Estimation, Control, and Uncertainty Quantification
- Multiscale Methods, Closure Approaches, Stabilization Methods
- Nonstationary Discontinuities and Internal Layers
- Proper Orthogonal Decomposition
- Proper Generalized Decomposition
- Reduced Basis Methods
- Statistical and Machine Learning Methods
- System-Theoretic and Structure-Preserving Methods
- Tensor Methods



Guest Editors:

The Executive Scientific Committee of MoRePaS will act as Guest Editorial Board for the special issue.

- Peter Benner (MPI Magdeburg, Germany)
- Anthony Nouy (Centrale Nantes, France)
- Mario Ohlberger (University of Münster, Germany)
- Gianluigi Rozza (SISSA Trieste, Italy)
- Karsten Urban (Ulm University, Germany)
- Karen Willcox (MIT, Cambridge, USA)

The board is chaired by Anthony Nouy, who is the local organizer and head of the Executive Scientific Committee of MoRePaS IV.

Time Schedule:

Submission deadline: October 1, 2018