VII ECCOMAS Young Investigators Conference
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Recent developments of reduced order modelling techniques in nonlinear and/or high-dimensional computational mechanics

Scientific area: Computational Solids And Structural Mechanics

Reduced order modelling (ROM) techniques aim to reduce the computational complexity of mathematical simulation models for numerical analysis and have become a popular tool in recent years for many applications in engineering sciences. In the field of engineering mechanics ROM techniques are commonly applied to linear and nonlinear problems in various fields, such as solid, fluid, and structural mechanics. Especially when dealing with problems including nonstandard features: high-dimensional, strongly nonlinear, time-dependent, and multiscale problems ROM shows great potential for providing fast and accurate simulation tools. Contributions dealing with recent research topics in the field of reduced order modelling are of interest in this minisymposium. A strong emphasis should be put on the application of model order reduction approaches in combination with the finite element method, however this is not exclusive. The following ROM techniques in nonlinear and/or high-dimensional parametric and stochastic problems are desired:

- ROM to resolve the curse of dimensionality
- ROM in linear and nonlinear structural analysis
- ROM applied to multiscale problem
- Data- and machine learning-driven ROM
- ROM-based UQ analysis
- ROM applied to multiphysics problems
- ROM dealing with fluid-structure interaction

Other topics dealing with recent developments in the field of reduced order modelling are also welcome. One goal of this minisymposium is to provide a platform for young researchers to present, exchange, and discuss ideas and future developments in the field of model order reduction. Due to its interdisciplinary nature, contributions from mathematics and engineering dealing with computational and applied perspectives are encouraged.

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