

ANALYSING PARAMETERISED REDUCED ORDER METHODS

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ABSTRACT

Coupled problems are often examples of very complex models, the complexity in behaviour often amplified through the coupling. Many such constituent sub-problems often involve parameters, which influence the behaviour of the sub-systems. These parameters may either be uncertain quantities, leading to uncertainty quantification (UQ), or they may be design parameters to be used in some kind of design optimisation. In any case, the computational model may have to be evaluated many times for different parameters in the computational process. This leads to the desire to replace models which are costly to evaluate – so-called high-fidelity or high order models (HFM, also called simulator) – with computationally cheaper ones, which give comparable results with maybe some little error. These are typically reduced order models (ROMs), also called surrogate-, meta-, or proxy models, or emulators.

This minisymposium focuses on methods for coupled problems, parametric problems, and/or reduced order models, as these topics often appear in combination.

Solicited are contributions dealing with any of the topics addressed above, and preferably with more than one, which deal with mathematical formulation and analysis, computational algorithms, and other important procedures concerned with those topics.