

## COUPLED PROBLEMS: FLUID-STRUCTURE INTERACTION AND REDUCED ORDER MODELS

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### ABSTRACT

This minisymposium is devoted to the modelling, formulation, and computational methods for coupled problems. One particular class of problems comes from the interaction of fluids and solids or structures, appearing in many industrial and technological (aerospace-, off-shore-, civil- and naval engineering) settings, biological systems, and other phenomena in the natural sciences. This includes, but is not limited to, the vibrations and sloshing of liquids in tanks, structural acoustics, vibration, and noise problems, flow-induced vibrations, biomechanics of the heart, ear, etc, hemodynamics, aeroelasticity, pipelines and rising, (off-shore-) wind turbines, interactions with waves and currents. It also includes the coupling and interplay with descriptions of uncertainty. This idea extends also to the coupling of numerical codes, where the solution strategy and stability of partitioned methods is of particular interest.

In order to obtain reliable and computationally efficient models it is necessary to have consistent and robust formulations and models of the coupling. Often, in order to make the computation feasible at all, or to investigate many-parametric dependence, to perform design optimisation, uncertainty quantification, or to use the coupled models in inverse problems and

identification, it is necessary to use reduced order models. These can only reliably be employed if it is possible to estimate the errors due to the reduction process.

The minisymposium is devoted to all the aspects mentioned above, and will bring together researchers from diverse communities to allow for fruitful discussions and cross-fertilisation.