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EFFICIENT METHODS FOR UNCERTAINTY QUANTIFICATION WITH HIGH-DIMENSIONAL MODELS TRACK NUMBER 800

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ABSTRACT

Computational models have played a crucial role in the transition of engineering practice towards the current digital environment. Recent advances in computational methods lead to hyper-resolution high-fidelity first-principle based computer codes which provide an analyst with a plethora of information on the design at hand. However, this comes at an ever increasing computational cost. For many applications in reliability engineering, safety analysis or (robust) design optimization, a multitude of such expensive simulation runs are required. Since it is not always possible or practical to resort to high-performance computing centres, there exists a need for efficient techniques for the propagation of such high-dimensional uncertainty.

This mini-symposium is aimed at gathering expert researchers, academics and practicing engineers concerned with the application of novel and efficient probabilistic and non-probabilistic methodologies for uncertainty quantification in such high-dimensional context. Both fundamental developments in the field of efficient uncertainty quantification and reliability analysis as well as innovative applications ranging from micro-mechanical modelling of heterogeneous random media, to large scale structural mechanics and industrial systems are welcomed