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Recent advances in computational stochastic mechanics

The main aim of this mini-symposium is to provide an overview of recent advances in numerical methods relevant to the stochastic mechanics of solids, fluids as well as their interactions. These numerical methods include the Finite and Boundary Element as well as Finite Difference Methods, and also some meshless techniques necessary in uncertainty quantification of civil, mechanical and aeronautical systems. Stochastic approaches of interest include but are not limited to polynomial chaos, various implementations of the Monte-Carlo simulation, stochastic perturbation techniques, fuzzy sets and Bayesian methods; their usage in conjunction with AI tools would be also welcome. These methods should demonstrate the impact of various nature random variables, processes and fields on spatial-temporal uncertain response of the analyzed engineering structures. Numerical aspects of these methodologies including probabilistic convergence, computational error estimation or some numerical comparative studies, as well as large uncertainties, would be very beneficial for this mini-symposium. The contributions devoted to computer simulations across different geometrical and/or material scales in composite or heterogeneous materials are of special importance, but traditional engineering problems of reliability assessment, durability analysis and life cycles prediction are equally welcome.