

MS- Numerical methods for stochastic mechanics and dynamical systems

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Probabilistic and statistical approaches to contemporary structural problems encountered in diverse technical disciplines is nowadays a crucial area of common interest to engineers and applied scientists belonging to different fields. For instance, recent examples in this area have dealt with structural systems subjected to random excitation, uncertainties related to model parameters, propagation of uncertainties on multiple scales, identification procedures and analysis of experimental data. Clearly, these problems often demand a high degree of sophistication in the numerical approaches and the development of innovative approaches for their solution is a challenging but, indeed, critical research topic.

In this context, the objective of this mini-symposium (MS) is to collect scientific contributions pertaining stochastic and probability-based methods in engineering mechanics, as well as presenting cross-disciplinary advances related to this topic. Further, this MS intends to provide a forum for fruitful discussion on advantages, unresolved issues and new perspectives in this field, trying to gather scholars interested in this critical research area. A non-exhaustive list includes nonlinear stochastic mechanics and dynamics, multi-scale/multi-physics stochastic modeling and analysis, structural response/control under natural hazards, random fields, stochastic finite elements, Monte Carlo simulation methods, risk/reliability assessment applications, stochastic stability and control theory, signal processing methodologies, systems identification techniques and applications for structural health monitoring, fractional operators in stochastic mechanics, as well as non-probabilistic approaches (such as interval analysis methods and fuzzy set theory) in engineering mechanics.