

Special Session

Novel Stochastic Dynamics Methodologies for Civil Engineering Applications

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The ubiquity of uncertainty in real-world engineering problems has long been recognized as a topic of considerable importance. The broad area of uncertainty quantification, which encompasses the modelling and propagation of uncertainties, is associated with particular challenges related to complex stochastic hazard modelling, nonlinear system behavior, and efficient system response and reliability analysis. By harnessing the potential of seminal theoretical advancements in nonlinear random vibration theory and Monte Carlo simulation-based approaches, persistent problems of theoretical and practical importance are amenable to efficient and accurate solution treatments. The objective of this MS relates to discussing current and emerging approaches for modelling and analysis of nonlinear stochastic structural dynamic systems. Further, this MS intends to provide a forum for fruitful exchange of ideas and interaction among diverse technical and theoretical disciplines. This effort can also be construed as a step towards coupling advanced stochastic dynamics tools with stochastic hazard modelling approaches. Specific topics related both to fundamental research and to practical applications of nonlinear stochastic dynamics will be considered.