



Journal of Computational and Nonlinear Dynamics

Special Issue on Sensitivity Analysis and Uncertainty Quantification

The development and acceptance of modeling and simulation tools in the design of large and complex dynamical systems require reliable simulation mechanisms under model and data uncertainty. Sensitivity analysis (SA) and uncertainty quantification (UQ) are recognized as critical elements in improving credibility and robustness in prediction of phenomena and behaviors associated with dynamical systems. Sensitivities to model parameters, model forms, as well as initial and boundary conditions, are essential in simulation result interpretation, model calibration, simulation-based optimization under uncertainty, model reduction, and reliability assessment.

This focus of this special issue is on recent advances in theoretical and computational aspects of sensitivity analysis and uncertainty quantification for system dynamics in multiple disciplines and phenomena, as well as their applications to optimize the performance of complex dynamic systems, such as those encountered in automotive, aerospace, civil, marine, micro-mechanical applications, industrial equipment and machinery, and various consumer products. Topics of interest include local and global sensitivity analysis, uncertainty quantification, verification and validation, and optimization under uncertainty.

We welcome submissions related to theoretical, computational, and applied aspects of one or more of the following:

- local and global sensitivity analysis
- uncertainty quantification
- reliable simulation under model and data uncertainty
- design of computational experiments
- reduced-order models and surrogate models
- verification and validation
- simulation-based optimization under uncertainty
- new UQ algorithms for emerging computer architectures
- engineering applications of SA and UQ

Important Dates

Paper submission: Open until deadline of June 1, 2018

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If the journal web tool is used, please direct your submission to the special issue on "Sensitivity Analysis and Uncertainty Quantification".

All submitted papers will be peer-reviewed according to the usual standards of the journal, and the papers will be evaluated based on originality, quality, and relevance to this special issue and the journal. The submitted papers should be formatted according to the journal style as described on the journal homepage. Submitted papers must not have been published previously, nor be under consideration for publication elsewhere.