

CALL FOR PAPERS

AI EDAM Special Issue, May 2017, Vol. 31, No. 2 UNCERTAINTY QUANTIFICATION FOR ENGINEERING DESIGN

Guest Editors: Roger Ghanem & Xiaoping Du

Engineering design is generally predicated on a presumed behavior of a given system in response to a specified range of loading conditions. With improved sensing, control, and adaptation schemes, external and internal conditions are both characterized with increasing accuracy, permitting safer operation closer to the failure envelope. These technological and scientific advances notwithstanding, discrepancies remain between anticipated and actual behaviors of most engineered systems, often becoming significant as instabilities or failure are approached. The ability to understand, analyze, and characterize the sources and the impact of these errors will have important ramifications on the economy, performance, and safety of these systems.

Recent advances on the topic of uncertainty quantification have enabled the closer integration of data-driven and model-driven paradigms for parameter characterization and performance prediction of many systems of interest in science and engineering. The impact of these capabilities on engineering design are just beginning to be felt with significant implications on the interplay among performance, efficiency, and risk of specific products and the design process as a whole.

This Special Issue on uncertainty quantification for engineering design will consider contributions that demonstrate the significance of uncertainty quantification on any aspect of the design process. A sample of issues to be considered includes the following:

- formulation of novel objective functions and constraints for a design that accounts for uncertainty
- development of efficient algorithms for optimization in the presence of uncertainty
- integration of sensing and uncertainty reduction into the design process
- assessment and management of uncertainty in early stage design
- integration of management and supply-chain uncertainties into the design process
- general insight gained from comprehensive case studies
- uncertainty in designs with multiscale or multiphysics behavior
- uncertainty models, algorithms, and assessment for multidisciplinary design optimization

All submissions will be anonymously reviewed by at least three reviewers. The selection for publication will be made on the basis of these reviews. High quality papers not selected for this Special Issue may be considered for standard publication in *AI EDAM*.

Information about the format and style required for *AI EDAM* papers can be found at <http://aiedam.usc.edu/index.php/Authors/ForAuthors>

Note that all inquiries for Special Issues go to the Guest Editors, **not** to the Editor in Chief.

Important Dates

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| Intent to submit (Abstract & Title): | As soon as possible |
| Submission deadline for full papers: | February 1, 2016 |
| Reviews due: | April 15, 2016 |
| Notification and reviews due to authors: | May 1, 2016 |
| Revised papers due from authors: | July 1, 2016 |
| Notification and second reviews due to authors: | September 15, 2016 |
| Second revised paper due from authors: | December 1, 2016 |

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