

SPECIAL ISSUE ON UNCERTAINTY QUANTIFICATION AND STOCHASTIC MODELING

*Andre T. Beck & Marcelo A. Trindade**

Department of Structural Engineering, São Carlos School of Engineering, University of São Paulo, Av. Trabalhador São-Carlense, 400, São Carlos-SP, 13566-590, Brazil

PREFACE

This Special Issue of the *International Journal for Uncertainty Quantification* presents a selection of extended versions of articles presented at the 1st International Symposium on Uncertainty Quantification and Stochastic Modeling (Uncertainties 2012), which has taken place at Maresias, city of São Sebastiao, state of São Paulo, Brazil, from February 26 to March 2, 2012.

The meeting was organized on behalf of the Brazilian Society of Mechanical Sciences and Engineering's (ABCM) Committee on Uncertainty Quantification and Stochastic Modeling, with the objective of providing a proper forum for discussion of academic, scientific, and technical aspects of uncertainty quantification in mechanical systems. Financial support was provided by the Brazilian Funding Agencies CAPES, FAPESP, and CNPq, which are gratefully acknowledged. Additional operational support from the Structural Engineering Department of São Carlos School of Engineering (EESC) and from the Brazilian Societies of Applied and Computational Mathematics (SBMAC) and Computational Methods in Engineering (ABMEC) was essential for the meeting's success.

The symposium consisted of 59 oral presentations and 9 keynote lectures covering practical and theoretical aspects of uncertainty quantification and stochastic modeling, with applications to structural dynamics, nonlinear dynamics, corrosion and damage, structural reliability, optimization, acoustics, and vibroacoustics. Based on their contributions and editorial guidelines, selected presenters were invited to prepare full papers for publication in this special issue. All manuscripts underwent scientific and technical peer review according to the journal standards.

The contributions in this special issue include studies on model reduction for dynamics of complex structures using a probabilistic approach (Batou and Soize, 2013), reliability-based design optimization of reinforced concrete structures (Aoues et al., 2013), multi-stage bayesian framework for prediction of porous media flow (Ginting et al., 2013), effect of uncertainties on the performance of discrete spatial modal filters (Trindade et al., 2013), and design-point excitation for crack propagation under random loading (Moustapha et al., 2013).

In conclusion, we thank the authors for their valuable contributions and also the reviewers for their comments, which undoubtedly improved the formal and technical value of the articles presented in this special issue.

REFERENCES

1. Batou, A. and Soize, C., Uncertainty quantification in low frequency dynamics of complex beam-like structures having a high-modal density, *Int. J. Uncertainty Quantification*, 3(6):475–485, 2013.
2. Aoues, Y., Chateaneuf, A., Lemosse, D., and El-Hami, A., Optimal design under uncertainty of reinforced concrete structures using system reliability approach, *Int. J. Uncertainty Quantification*, 3(6):487–498, 2013.
3. Ginting, V., Pereira, F., and Rahunanthan, A., A multi-stage bayesian prediction framework for subsurface flows, *Int. J. Uncertainty Quantification*, 3(6):499–522, 2013.
4. Trindade, M. A., Pagani Jr., C. C., Oliveira, L. P. R., and Massaroppi Jr., E., Effectiveness of spatial modal filters based on optimally designed arrays of piezoelectric sensors, *Int. J. Uncertainty Quantification*, 3(6):523–540, 2013.

*Correspond to Marcelo A. Trindade, E-mail: trindade@sc.usp.br, URL: <http://www.eesc.usp.br/labdin>

5. Moustapha, M., Beck, A. T., and Bourinet, J.-M., Design-point excitation for crack propagation under narrow-band random loading, *Int. J. Uncertainty Quantification*, 3(6):541–553, 2013.