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Editorial

This Special Issue of the Journal of the Brazilian Society of Mechanical Sciences and Engineering contains a selection of the best papers presented at the 1st International Symposium on Uncertainty Quantification and Stochastic Modeling – Uncertainties 2012. This volume encompasses 12 articles covering both practical and theoretical aspects of uncertainty quantification and stochastic modeling, in the fields of aeronautical, mechanical, civil and production engineering. The volume includes theoretical articles addressing robust stability, energy harvesting and basins of attraction. Applications range from dynamics of beams, rotors and shells to acoustics; and from manufacturing to corrosion and fatigue.

Opening this Special Issue, Bueno et al. (2012) address a methodology to identify aeroelastic stability employing linear matrix inequalities. Godoy and Trindade (2012) investigate the effect of uncertainties in the performance of piezoelectric energy harvesting devices. Gomes et al. (2012) address the modeling of real marine corrosion data through polynomial chaos expansions. Hauer et al. (2012) study how uncertainties affect the drilling and reaming process, highlighting cause and effect relationships within the process. Koroishi et al. (2012) employ the stochastic finite element method to investigate uncertainty propagation in the dynamics of flexible rotors. Martin (2012) investigates roles and interactions in inverse acoustic models, covering acoustic holography and holophony. Mosch et al. (2012) present an interdisciplinary design approach to address the control of uncertainties in a ubiquitous load carrying system: a robust high heel. Oliveira et al. (2012) address the scattering of sound waves due to variabilities in the vibro-acoustic model. Piovan et al. (2012) investigate the effects of modeling uncertainties in the dynamical response of rotating non-linear thin-walled composite beams. Silva et al. (2012) study the influence of physical and geometrical system parameter uncertainties on the nonlinear vibrations and stability of simply-supported cylindrical shells. Using center manifold theory, Spelsberg-Korspeter et al. (2012) present a method for constructing Lyapunov functions for the estimation of basins of attraction. Closing the Special Issue, Suptille et al. (2012) investigate the generation of stationary Gaussian processes and extreme value distributions for high-cycle fatigue models, in an application to tidal stream turbines.

Uncertainties 2012 has taken place at Maresias, city of São Sebastião, state of São Paulo, Brazil, from February 26 to March 2, 2012. The meeting was organized on behalf of the ABCM Committee on Stochastic Modeling and Uncertainty Quantification with the support of SBMAC and ABMEC. Given the overwhelming reception by the scientific community, the ABCM Committee on Stochastic Modeling and Uncertainty Quantification states its intention to make Uncertainties a bi-

annual event, creating a permanent forum for the discussion of academic, scientific and technical aspects of uncertainty quantification in mechanical systems.

We thank the authors who contributed to this volume and to make Uncertainties 2012 a scientifically stimulating meeting. We also cheerfully thank the reviewers who donated their time to increase formal and technical accuracy of the present Special Issue articles.

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André T. Beck and Marcelo A. Trindade
Chairs of the 1st International Symposium
on Uncertainty Quantification and Stochastic Modeling

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