

# Preface

*Nonlinear Dynamics* represents one of the eight volumes of technical papers presented at the 32nd IMAC, A Conference and Exposition on Structural Dynamics, 2014, organized by the Society for Experimental Mechanics, and held in Orlando, Florida, February 3–6, 2014. The full proceedings also include volumes on Dynamics of Coupled Structures; Model Validation and Uncertainty Quantification; Dynamics of Civil Structures; Structural Health Monitoring; Special Topics in Structural Dynamics; Topics in Modal Analysis I; and Topics in Modal Analysis II.

Each collection presents early findings from experimental and computational investigations on an important area within structural dynamics. Nonlinearity is one of these areas.

The vast majority of real engineering structures behave nonlinearly. Therefore, it is necessary to include nonlinear effects in all the steps of the engineering design: in the experimental analysis tools (so that the nonlinear parameters can be correctly identified) and in the mathematical and numerical models of the structure (in order to run accurate simulations). In so doing, it will be possible to create a model representative of the reality which, once validated, can be used for better predictions.

Several nonlinear papers address theoretical and numerical aspects of nonlinear dynamics (covering rigorous theoretical formulations and robust computational algorithms) as well as experimental techniques and analysis methods. There are also papers dedicated to nonlinearity in practice where real-life examples of nonlinear structures will be discussed. Additionally, there are papers which discuss the results obtained by different research groups on a Round Robin exercise on nonlinear system identification.

The organizers would like to thank the authors, presenters, session organizers, and session chairs for their participation in this track.

Liege, Belgium  
Nashville, TN, USA

Gaetan Kerschen  
D. Adams

<http://www.springer.com/978-3-319-04521-4>

Nonlinear Dynamics, Volume 2

Proceedings of the 32nd IMAC, A Conference and  
Exposition on Structural Dynamics, 2014

Kerschen, G. (Ed.)

2014, VIII, 319 p. 256 illus., 208 illus. in color.,

Hardcover

ISBN: 978-3-319-04521-4