

# Preface

*Nonlinear Dynamics* represents one of ten volumes of technical papers presented at the 34th IMAC, A Conference and Exposition on Structural Dynamics, organized by the Society for Experimental Mechanics and held in Orlando, Florida, on January 25–28, 2016. The full proceedings also include volumes on *Dynamics of Civil Structures*; *Model Validation and Uncertainty Quantification*; *Dynamics of Coupled Structures*; *Sensors and Instrumentation*; *Special Topics in Structural Dynamics*; *Structural Health Monitoring, Damage Detection & Mechatronics*; *Rotating Machinery*; *Hybrid Test Methods, Vibro-Acoustics and Laser Vibrometry*; *Shock & Vibration, Aircraft/Aerospace, Energy Harvesting, Acoustics & Optics*; and *Topics in Modal Analysis & Testing*.

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.

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

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