Preface

Topics in Nonlinear Dynamics represents one of six volumes of technical papers presented at the 30th IMAC, A Conference and Exposition on Structural Dynamics, 2012 organized by the Society for Experimental Mechanics, and held in Jacksonville, Florida, January 30–February 2, 2012. The full proceedings also include volumes on Dynamics of Civil Structures; Substructuring and Wind Turbine Dynamics; Model Validation and Uncertainty Quantification; and Modal Analysis, I & 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, in order to go *From the Laboratory to the Real World* 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. This volume addresses theoretical and numerical aspects of nonlinear dynamics (covering rigorous theoretical formulations and robust computational algorithms) as well as experimental techniques and analysis methods.

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

West Lafayette, IN, USA — D. Adams
Belgium — G. Kerschen
Leuven, Belgium — A. Carrella