

Preface

Model Validation and Uncertainty Quantification 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 Nonlinear Dynamics; Dynamics of Civil Structures; Dynamics of Coupled Structures; Sensors and Instrumentation; Special Topics in Structural Dynamics; Structural Health Monitoring, Damage Detection and Mechatronics; Rotating Machinery, Hybrid Test Methods, Vibro-Acoustics and Laser Vibrometry; Shock and Vibration, Aircraft/Aerospace, Energy Harvesting, Acoustics and Optics, and Topics in Modal Analysis and Testing.

Each collection presents early findings from experimental and computational investigations on an important area within Structural Dynamics. Model Validation and Uncertainty Quantification (MVUQ) is one of these areas.

Modeling and simulation are routinely implemented to predict the behavior of complex dynamical systems. These tools powerfully unite theoretical foundations, numerical models, and experimental data which include associated uncertainties and errors. The field of MVUQ research entails the development of methods and metrics to test model prediction accuracy and robustness while considering all relevant sources of uncertainties and errors through systematic comparisons against experimental observations.

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