Model Validation and Uncertainty Quantification Sessions
Tuesday–Thursday, February 3–5, 2015

Sessions

**SESSION 18:** Uncertainty Quantification & Propagation in Structural Dynamics I

**SESSION 25:** Uncertainty Quantification & Propagation in Structural Dynamics II

**SESSION 33:** Resource Allocation in Model Validation

**SESSION 38:** SICODYN Research Project

**SESSION 41:** Robustness to Lack of Knowledge in Design

**SESSION 49:** How does V&V/UQ Support Decision Making?

**SESSION 56:** Bayesian Calibration of Predictive Physics-based Models

**SESSION 62:** Test Analysis Correlation in Structural Dynamics

Organized by:
SEM/IMAC Model Validation and Uncertainty Quantification (MVUQ) Technical Division

Numerical models and simulations, regardless of how articulate they may be, are approximate representations of the actual systems they represent. Verification and Validation (V&V) practices, along with uncertainty quantification (UQ) activities, supply the means to establish credibility in model predictions in a quantitative and objective manner. Model verification ensures that the mathematical model is being solved correctly while model validation ensures that model is sufficiently credible representation of reality. Uncertainty quantification seeks to evaluate the effects of uncertainties that originate from numerous sources and track the propagation of those uncertainties to the final prediction(s) of the model. Hence, MV&UQ processes balance tests and simulations to ensure that advanced numerical models may be relied upon with confidence.

At IMACXXXIII there will be eight MV&UQ sessions. Both Tuesday sessions will focus on uncertainty quantification and propagation in structural dynamics applications, during which a tutorial on Bayesian Operational Modal Analysis will be provided by Siu-Kui Au, University of Liverpool. Wednesday morning, the MV&UQ sessions will continue by covering resource allocation in model validation before devoting the second half of the session to the SICODYN research project. Wednesday afternoon, a full session will focus on robustness to lack of knowledge in design under extreme uncertainty. The Thursday morning session will focus on the use of V&V/UQ for decision making and will include a panel discussion. The final MV&UQ session on Thursday afternoon will begin with papers implementing Bayesian calibration for the improvement of predictive physics-based models and conclude with papers focused on test analysis correlation in structural dynamics, directly relating to this year’s theme.

**Tutorial on Bayesian Operational Modal Analysis**

Tuesday, February 3, 2015 | Session 18

Presented by:
S.K. Au, University of Liverpool

See page 21 for details.

**How Does V&V/UQ Support Decision Making**

Thursday, February 5, 2015 | Session 49

Presented by:
A. Urbina, Sandia National Labs

The focus of this panel session is to present how V&V/UQ is incorporated into the decision making process at various organizations (if at all) and/or thoughts as to how we might do this. The outcome of this panel would be to understand what is the current use of V&V/UQ in “real” life and what are the impediments to make V&V/UQ ubiquitous in decision making.

The format for the panel session is each panelist will have a 20 minute presentation. After all the presentations, there will be a panel type session in which the presenters will be asked some “prepared” questions to start the conversation and then open the floor for questions and/or comments.