11th World Congress on Computational Mechanics (WCCM XI)
5th European Conference on Computational Mechanics (ECCM V)
6th European Conference on Computational Fluid Dynamics (ECFD VI)
July 20–25, 2014, Barcelona, Spain

UNCERTAINTY QUANTIFICATION AND CALIBRATION OF PHYSICAL MODELS

Habib N. Najm*, **Kenny Chowdhary and Khachik Sargsyan**

Sandia National Laboratories, Livermore, CA 94551, USA
{hnnajm,kchowdh,ksargsy}@sandia.gov

Key words: *Uncertainty Quantification, UQ, Bayesian, Calibration, Maximum Entropy*

This talk will focus on Bayesian methods for model calibration, and will address two key areas of interest. First, we address the context of model calibration using processed data products. We discuss the use of maximum entropy and approximate bayesian computation methods for model calibration employing given statistics on missing raw data [1, 2]. Second, we address the context of model discrepancy errors and their use in Bayesian inference, with a particular focus on the context of models of physical systems.

REFERENCES

[1] R.D. Berry, H.N. Najm, B.J. Debusschere, H. Adalsteinsson, and Y.M. Marzouk. Data-free inference of the joint distribution of uncertain model parameters. *J. Comput. Phys.*, Vol. **231**, 2180-2198, 2012.

[2] H.N. Najm, R.D. Berry, C. Safta, K. Sargsyan, and B.J. Debusschere. Data Free Inference of Uncertain Parameters in Chemical Models. *International Journal for Uncertainty Quantification*, in press.