

*Preliminary Program*

**IFIP Working Conference on  
Uncertainty Quantification in Scientific Computing**

Millennium Harvest House  
Boulder, Colorado, USA  
August 1-4, 2011

*All sessions will be held in the Ballroom unless otherwise noted.*

**Sunday July 31**

16:00 – 18:00 **Registration**  
Hotel Lobby

**Monday August 1**

*Opening Session*

08:15 Welcoming Remarks  
*Ronald Boisvert, National Institute of Standards and Technology, US*  
*Andrew Diestfrey, National Institute of Standards and Technology, US*

*Session I: Uncertainty Quantification Need: Risk, Policy, and Decision Making (Part 1)*

Chair: Andrew Dienstfrey, NIST, US  
Discussant: TBD

08:30 **Keynote Address**  
Uncertainties in Using Genomic Information to Make Regulatory Decisions  
*Pasky Pascual, Environmental Protection Agency, US*

09:30 TBD  
*Mark Cunningham, Nuclear Regulatory Commission, US*

10:15 **Break**

10:45 An Industrial Viewpoint on Uncertainty Quantification in Simulation: Stakes, Methods,  
Tools, Examples  
*Alberto Pasanisi, Electricité de France, France*

11:30 Living with Uncertainty  
*Patrick Gaffney, Bergen Software Services International, Norway*

12:15 **Lunch**  
Outdoor patio (Coach's Corner in bad weather)

***Session II: Uncertainty Quantification Need: Risk, Policy, and Decision Making (Part 2)***

Chair: Tony O'Hagan, University of Sheffield, UK  
Discussant: TBD

13:15 Scientific Computation and the Scientific Method: A Tentative Road Map for  
Convergence  
*Les Hatton, Kingston University, UK*

14:00 Interpreting Regional Climate Predictions  
*Doug Nychka, National Center for Atmospheric Research, US*

14:45 Weaknesses and Failures of Risk Assessment  
*William Oberkampf, Sandia National Laboratories, US (retired)*

15:30 **Break**

16:00 **Panel Discussion:** UQ and Decision Making  
*Mac Hyman, Tulane University, US (Moderator)*  
*Sandy Landsberg, Department of Energy, US*  
*Larry Winter, University of Arizona, US*  
*Charles Romine, NIST, US*

17:30 **Adjourn**

18:00-19:30 **Reception**  
Outdoor patio (in Ballroom in case of inclement weather)

**Tuesday August 2**

***Session III: Uncertainty Quantification Theory (Part 1)***

Chair: Richard Hanson, Rogue Wave Software, US  
Discussant: TBD

08:30 **Keynote Address**  
Bayesian Analysis for Complex Physical Systems Modeled by Computer Simulators:  
Current Status and Future Challenges  
*Michael Goldstein, Durham University, UK*

09:30 Uncertainty and Sensitivity Analysis: From Regulatory Requirements to Conceptual  
Structure and Computational Implementation  
*Jon Helton, Sandia National Laboratories, US*

10:15 **Break**

10:45 Overview of Uncertainty Quantification Algorithm R&D in the DAKOTA Project  
*Michael Eldred, Sandia National Laboratories, US*

11:30 TBD  
*Alireza Doorstan, University of Colorado*

12:15 **Lunch**  
Outdoor patio (Coach's Corner in bad weather)

### ***Session IV: Uncertainty Quantification Theory (Part 2)***

Chair: Ronald Cools, Katholieke Universiteit Leuven, Belgium

Discussant: TBD

13:15 **Keynote Address**  
Verified Computation with Probability Distributions and Uncertain Numbers  
*Scott Ferson, Applied Biomathematics, US*

14:15 Meltdown Modeling  
*Andrea Saltelli, Centre for Research on Lifelong Learning, Italy*

15:00 Parametric Uncertainty Computations with Tensor Product Representations  
*Hermann Matthies, Technische Universität Braunschweig, Germany*

15:45 **Break**

16:15 **Hot Topics Session**  
Those wishing to speak should contact the moderator by 13:00 on Tuesday.  
*Brian Ford, NAG Ltd., UK (Moderator)*

17:45 **Adjourn**

## **Wednesday August 3**

### ***Session V: Uncertainty Quantification Tools***

Chair: Bo Einarsson, Linköping University, Sweden

Discussant: TBD

08:30 **Keynote Address**  
Needed Remedies for the Undebugability of Large-scale Floating-point Computations in Science and Engineering  
*William Kahan, University of California at Berkeley, US*

09:30 Accurate Prediction of Complex Computer Codes via Adaptive Designs  
*William Welch, University of British Columbia, Canada*

10:15 **Break**

- 10:45 Using Emulators to Estimate Uncertainty in Complex Models  
*Peter Challenor, National Oceanography Centre, UK*
- 11:30 Measuring Uncertainty in Scientific Computations Using the Test Harness  
*Brian Smith, Numerica 21 Inc., US*
- 12:15 **Lunch**  
Outdoor patio (Coach's Corner in bad weather)
- 13:15 **Tour of NIST and NOAA Laboratories**  
Bus pickup outside hotel lobby
- 16:30 **Walk in Chautauqua Meadows**
- 17:30 **Reception and Banquet**  
Chautauqua Dining Hall
- 19:30 **Buses Depart for Hotel**

## **Thursday August 4**

### *Session VI: Uncertainty Quantification Practice (Part 1)*

Chair: Michael Thuné, University of Uppsala, Sweden  
Discussant: TBD

- 08:30 **Keynote Address**  
Numerical Aspects of Evaluating Uncertainty in Measurement  
*Maurice Cox, National Physical Laboratory, UK*
- 09:30 Model-based Interpolation, Approximation, and Prediction  
*Antonio Possolo, NIST, US*
- 10:15 **Break**
- 10:45 Emerging Architectures and UQ: Implications and Opportunities  
*Michael Heroux, Sandia National Laboratory, US*
- 11:30 Visualization of Error and Uncertainty  
*Chris Johnson, University of Utah, US*
- 12:15 **Lunch**  
Outdoor patio (Coach's Corner in bad weather)

***Session VII: Uncertainty Quantification Practice (Part 2)***

Chair: Ronald Boisvert, NIST

Discussant: TBD

13:15 Uncertainty Reduction in Atmospheric Composition Models by Chemical Data Assimilation

*Adrian Sandu, Virginia Tech, US*

14:00 Uncertainty Quantification for Turbulent Reacting Flows

*James Glimm, State University of New York at Stony Brook, US*

14:45 Interval Based Finite Elements for Uncertainty Quantification in Engineering Mechanics

*Rafi Muhanna, Georgia Tech Savannah, US*

15:30 **Break**

16:00 Reducing the Uncertainty When Approximating the Solution of ODEs

*Wayne Enright, University of Toronto, Canada*

16:45 **Closing Remarks**

*Andrew Dienstfrey, NIST, US*

17:00 **Conference Adjourns**

*Version: 27 June 2011*