



MUMS Program Opening Workshop
August 20-24, 2018
TENTATIVE SCHEDULE

Monday, August 20th

Gross Hall, Duke University

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| 8:30 | Registration |
| 8:50-9:00 | Intro, Welcome |
| 9:00-10:00 | Overview Lectures:
Merlise Clyde , Duke University
<i>"Model Uncertainty and Uncertainty Quantification"</i> |
| 10:00 -10:30 | Break |
| 10:30-11:30 | Tinsley Oden , University of Texas
<i>Overview on Materials</i> |
| 11:30-12:30 | Elaine Spiller , Marquette University
<i>"An Overview of Reduced-Order Models and Emulators"</i> |
| 12:30-1:30 | Lunch on Your Own |
| 1:30-2:30 | Theoretical Foundations of Model Uncertainty:
Bani Mallick , Texas A&M University
<i>"Hierarchical Bayesian Models for Inverse Problems and Uncertainty Quantification"</i> |
| 2:30-3:30 | Leonard Smith , London School of Economics, Pembroke College, Oxford
<i>"On the Impact(s) of Structural Model Error on Simulation Modelling"</i> |
| 3:30-4:00 | Break |
| 4:00-5:00 | Edward George , Wharton, University of Pennsylvania
<i>"Quantifying Nonparametric Modeling Uncertainty with BART"</i> |
| 5:00-7:00 | Poster Session and Reception |

Tuesday August 21st

Gross Hall, Duke University

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| 9:00-10:00 | Peter Challenor , University of Exeter
<i>"The Isaac Newton Institute Uncertainty Quantification Programme: A Personal Perspective"</i> |
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- 10:00 -10:30 Break
- 10:30-12:00 Panel on Calibration in the Face of Model Discrepancy
Matthew Plumlee, Northwestern University **Mengyang Gu**, Johns Hopkins University, **Georgios Karagiannis**, University of Durham
- 12:00-1:30 Lunch
- 1:30 – 2:30 Model Reduction:
Kevin Carlberg, Sandia National Laboratories
“Machine-Learning Error Models for Quantifying the Epistemic Uncertainty in Low-Fidelity Models”
- 2:30 – 3:30 **Akil Narayan**, University of Utah
“Emulators for models and Complexity Reduction”
- 3:30- 4:00 Break
- 4:00 – 5:00 **Nathan Kutz**, University of Washington
“Data-Driven Discovery of Governing Physical Laws and their Parametric Dependencies in Engineering, Physics and Biology”

Wednesday August 22nd
Gross Hall, Duke University

- 9:00-10:00 Extrapolation:
David Higdon, Virginia Tech University
“Extrapolation: The Art of Connecting Model-Based Predictions to Reality”
- 10:00 -10:30 Break
- 10:30-11:30 **Michael Frenklach**, University of California, Berkeley
“Bound-to-Bound-Data-Collaboration: Prediction on the Feasible Set”
- 11:30 –12:30 **Jenný Brynjarsdóttir**, Case Western Reserve University
“Model Discrepancy and Physical Parameters in Calibration and Prediction of Computer Models”
- 12:30-1:30 Lunch
- 1:30-2:30 Materials:
Roger Ghanem, University of Southern California
“Modeling and Algorithmic Aspects of UQ for Material with Multiscale Behavior”
- 2:30-3:30 **Surya Kalidindi**, Georgia Institute of Technology
“Materials Innovation Driven by Data and Knowledge Systems”
- 3:30-4:00 Break

4:00-5:00 Panel on Materials
Laura Swiler, Sandia National Laboratories; **Michael Demkowicz**, Texas A&M University; **Ralph Smith**, North Carolina State University

Thursday August 23rd

Gross Hall, Duke University

9:00-10:00 Model and Data Fusion:
Robert Wolpert, Duke University
“UQ Data Fusion: An Introduction and Case Study”

10:00 -10:30 Break

10:30-11:30 **Amy Braverman**, JPL/Caltech
“Model Uncertainty in Data Fusion for Remote Sensing”

11:30-12:30 **Bruno Sanso**, University of California, Santa Cruz
“Inferring Release Characteristics from an Atmospheric Dispersion Model using Bayesian Adaptive Splines”

12:30-1:30 Lunch on Your Own

Working Group Formation

1:30-2:30 Working Groups Overview/Proposals

2:30-3:00 Break

3:00-5:00 Working Group Activity
Rooms: 304B, 318, 324, 359, 107

Friday August 24th

Gross Hall, Duke University

9:00-10:00 Working Group Activity
Rooms: 304B, 318, 324, 359, 107

10:00 -10:30 Break

10:30-12:00 Working Groups Finalized

12:00-1:00 Lunch on Your Own

1:00 Shuttle to RDU Airport