samsi
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Joint MUMS Program Transition - SPUQ Workshop, May 14-17, 2019
SCHEDULE

Tuesday May 14th
MUMS Transition Workshop
Sitterson Hall, Room 014, UNC

8:50-9:00	Welcome **Bruce Pitman,** University at Buffalo; **David Banks**, SAMSI
9:00-12:00	Data Fusion Working Group **Mengyang Gu**, Johns Hopkins University *"A Review of Model Calibration Methods with an Application by Fusing Multiple Sources of Data from the Eruption of the Kilauea Volcano in 2018"* **Zhuoqiong He**, University of Missouri *"Bayesian CUSP Catastrophe Model for Sudden Changes"* **Paul Speckman**, University of Missouri *"Data Fusion for Correlated, Shape-Restricted Curves with Varying Support"* Break **Dongchu Sun**, University of Missouri *"Bayesian Model Selection for a Linear Model with Grouped Covariates"* **Chengyuan Song**, ECNU *"Bayesian Analysis for one-way MANOVA and a 3-Level Hierarchical Model"* **Cong Lin**, ECNU *"Bayesian Smoothing Spline with a Generalized Constraint Operator"*
12:00-1:30	Lunch
1:30-2:15	UQ in Materials Working Group **Ralph Smith**, NCSU *"SAMSI/NSF SEAS Materials Science Hackathon Results*
2:15-5:15	Prediction Uncertainty and Extrapolation Working Group **Evan Baker**, University of Exeter *"Stochastic Simulators: Issues, Methods, Unresolved Questions"* **Pierre Barbillon**, AgroParisTech *"Embedding a Discrepancy in the Computer Model"* Break

Aaron Danielson, Simon Fraser University
"Some Strategies to Quantify Uncertainty for Extrapolation in Physical Systems"

Radu Herbei, Ohio State University
"Estimating Ocean Circulation Structure: Deterministic and Stochastic Simulators"

Laura Schultz and **Vadim Sokolov**, George Mason University
"Practical Bayesian Optimization for Agent Based Transportation Simulators"

5:30 Shuttle to Hotel

Wednesday May 15th
MUMS Transition Workshop
Sitterson Hall, Room 014, UNC

9:00-11:45 Reduced Order Models Working Group
Mansoor Haider, NCSU
"*Reduced Order Modeling of a Biphasic Cartilage Mixture Model under Dynamic Compressive Loading"*

Sue Minkoff, University of Texas
"Parameter Subset Selection for Coupled Flow and Deformation Modeling"

Hyunjung Lee, Marquette University
"Dimension Reduction and Global Sensitivity Metrics using Active Subspaces for Coupled Flow and Deformation Modeling"

Break

Elaine Spiller, Marquette University
"A Coupled Parallel Partial Emulator for Flow and Deformation Modeling"

Nikolas Bravo, NCSU
"Parameter-Dependent Surrogate Model Development and Control Design for PZT Bimorph Actuators Employed for Micro-Air Vehicles"

11:45-1:15 Lunch (Working Group Leaders in Room **FB009** - to Discuss Final Report)

1:15-3:30 Storm Surge Hazard and Risk Working Group
Taylor Asher, UNC
"Surge Hazards WG Issues and Efforts"

Whitney Huang, University of Victoria
"Some Thoughts on Estimating Input Distribution of Storm Surge Simulations"

Matthew Plumlee, Northwestern University
"Emulation for Forecasting Storm Surge"

Won Chang, University of Cincinnati
"Emulation for Large Storm Surge Simulation Ensemble"

Pulong Ma, SAMSI
"An Emulator Approach for Quantifying the Risk Due to Storm Surge"

3:30-4:00 Break

4:00-5:45 Foundations of Model Uncertainty Working Group
Pierre Barbillon, AgroParis Tech
"Variable Selection in the Discrepancy Function Associated with a Simulator"

Jan Hannig, University of North Carolina
"Are Reported Likelihood Ratios Well Calibrated?"

Gang Li, University of North Carolina
"Deep Fiducial Inference and Approximate Fiducial Computation"

Rui Paulo, Universidade de Lisboa
"Model Selection in the Context of Computer Models"

6:00 Shuttle to Hotel

Thursday, May 16th
SPUQ Workshop
Sitterson Hall, Room 014, UNC

8:50-9:00 Opening Remarks SPUQ
Elaine Spiller, Marquette University/SAMSI and **Roshan Joseph**, Georgia Tech University

9:00-10:00 Keynote Address
Jeff Wu, Georgia Tech University
"Navier-Stokes, Spatial-temporal Kriging and Combustion Stability: a prominent example of physics-based analytics"

10:00-10:30 Break

10:30-12:00 Invited Session on Exascale and Dimensional Analysis
William Brenneman, Proctor and Gamble
"Robust Experimental Design for Model Calibration"

Devon Lin, Queens University
"A Sequential Design Approach for Calibrating a Dynamic Population Growth Model."

David Woods, University of Southampton
"Design of Experiments for Calibration of Computational Models"

12:00-1:30 Lunch

1:30-3:00	Invited Session on Design in UQ **Earl Lawrence**, Los Alamos National Laboratory *"Some Pieces of Exascale Uncertainty Quantification"* **Will Welch,** University of British Columbia *"Dimensional Analysis in Computer Experiments"* **Brian Williams**, Los Alamos National Laboratory *"Gradient-Free Construction of Active Subspaces for Dimension Reduction"*
3:00-3:30	Break
3:30-5:00	Invited Session on "Perspectives on Sensitivity in UQ" **Pierre Gremaud**, North Carolina State University *"Mathematical Perspective"* **Max Morris,** Iowa State University *"Sensitivity Analysis of Computer Models: A Statistical Perspective"*
5:00-5:15	Discussion **Ralph Smith,** North Carolina State University
5:15-5:30	Floor Discussion
5:30 – 7:00	Poster Session and Reception
7:15	Shuttle to Hotel

Friday, May 17th
SPUQ Workshop
Sitterson Hall, Room 014 UNC

9:00-10:30	Invited Session on Modeling and Learning in UQ **Ying Hung**, Rutgers University *"Computer Experiments with Binary Time Series and Applications to Cell Biology: modeling, estimation, and calibration."* **Emily Kang**, University of Cincinnati *"Simulation Experiments and Uncertainty Quantification in Remote Sensing"* **Lulu Kang**, Illinois Institute of Technology *"Gaussian Process Model Assisted Active Learning of Physical Laws"*
10:30-11:00	Break
11:00-12:30	Invited Session on Getting Inside the Black Box **Oksana Chkrebtii**, Ohio State University *"Adaptive Step-Size Selection for State-Space Probabilistic Differential Equation Solvers"*

	Rebecca Morrison, Massachusetts Institute of Technology *"Representing Model Inadequacy in Reduced Models of Interacting Systems"*
	***Matthias Tan**, City University of Hong Kong* *"Opening Up the Black Box: Gaussian Process Modeling Using Information from Partial Differential Equation Models"*
12:30-2:00	Lunch
2:00-3:00	Invited Session on Emulation and Calibration **Simon Cotter**, University of Manchester *"Competing Complexities in Bayesian Inverse Problems: Models and Distributions"*
	Roshan Joseph, Georgia Institute of Technology *"Transformation and Additivity in Gaussian Process"*
3:00-3:30	Break
3:30-4:50	New Researchers Invited Session: **Arindam Fadikar,** Virginia Tech University *"Clustering Based Gaussian Process Emulation and Calibration of a Stochastic Agent Based Model"*
	Michael Grosskopf, Los Alamos National Laboratory *"Structural Model Discrepancy in Nuclear Energy Density Functional Simulators"*
	Simon Mak, Georgia Institute of Technology *"cmenet: a new method for bi-level variable selection of conditional main effects"*
4:50-5:00	Farewell and Shuttle to Airport