SUNDAY, JULY 9

9:00 – 9:10am  Opening remarks
9:10 – 10:10am  Sufficient dimension reduction for large regression problems: basic notions and approaches to leverage known structure across predictors and observations
Francesca Chiaromonte, Penn State University, USA

10:10 – 10:30am  Coffee break
10:30 – 11:35am  Session 1 Inverse regression and basis adaptation

10:30 – 10:50  Inverse regression-based uncertainty quantification for high-dimensional models
Weixuan Li, Pacific Northwest National Laboratory, USA; Guang Lin, Purdue University, USA; Bing Li, Penn State University, USA

10:52 – 11:12  Enhancing the efficiency of compressive sensing with sliced inverse regression
Xiu Yang, Weixuan Li, and Alexandre Tartakovsky, Pacific Northwest National Laboratory, USA

11:14 – 11:34  Domain decomposition and basis adaptation for high dimensional stochastic partial differential equations
Ramakrishnan Tipireddy, Panos Stinis, and Alexandre Tartakovsky, Pacific Northwest National Laboratory, USA

11:40 – 12:00pm  Poster blitz

Discovering non-linear active subspaces using deep neural networks
Rohit Tripathy and Ilias Bilionis, Purdue University, USA

Exploring active subspaces in neural network cost functions
Jonathan Helland and Paul Constantine, Colorado School of Mines, USA

Optimal basis rotation for high-dimensional spatial field calibration
James Salter and Daniel Williamson, University of Exeter, UK

Computing errors and uncertainties on active subspaces
Pranay Seshadri, Cambridge University, UK; Paul Constantine, Colorado School of Mines, USA

Establishing design continuity in Pareto fronts with active subspaces
Zachary Grey and Paul Constantine Colorado School of Mines, USA
**Inverse regression for ridge recovery**  
*Andrew Glaws* and Paul Constantine, Colorado School of Mines, USA; Dennis Cook, University of Minnesota, USA

**Data-driven polynomial ridge approximation using variable projection**  
*Jeffrey Hokanson* and Paul Constantine, Colorado School of Mines, USA

**Dimensionality reduction for the chemical master equation**  
*Midhun Kathanaruparambil Sukumaran* and Brian Ingalls, University of Waterloo, Canada; Marc R. Roussel, University of Lethbridge, Canada

**Parameter selection and reduction for optimizing parallel applications**  
*Murali Emani*, Lawrence Livermore National Laboratory, USA

12:00 – 1:30pm  
Lunch on your own

1:30 – 2:00pm  
Poster session 1

2:00 – 3:28pm  
Session 2 *Active subspaces*

2:00 – 2:20  
An initialization algorithm for gradient-free active subspace construction  
*Kayla Coleman* and Ralph Smith, North Carolina State University, USA; Brian Williams, Los Alamos National Laboratory, USA; Max Morris, Iowa State University, USA

2:22 – 2:42  
Learning a second-moment matrix without gradients  
*Michael Wakin* and Paul Constantine, Colorado School of Mines, USA; Armin Eftekhari, Alan Turing Institute, UK; Rachel Ward, University of Texas at Austin, USA; Ping Li, Rutgers University, USA

2:44 – 3:04  
Estimating active subspaces with randomized gradient sampling  
*Farhad Pourkamali-Anaraki* and Stephen Becker, University of Colorado Boulder, USA

3:06 – 3:26  
Modified active subspaces using the average of gradients  
*Minyong Lee* and Art Owen, Stanford University, USA

3:28 – 4:00pm  
Coffee break

4:00 – 5:28pm  
Session 3 *Bayesian inference*

4:00 – 4:20  
Bayesian inference on active subspaces  
*Allison Lewis*, Johns Hopkins University Applied Physics Laboratory, USA; Ralph Smith, North Carolina State University, USA; Brian Williams, Los Alamos National Laboratory, USA
Gradient-based methods for certified dimension reduction in nonlinear Bayesian inverse problems

Olivier Zahm and Youssef Marzouk, Massachusetts Institute of Technology, USA; Tiangang Cui, Monash University, Australia; Kody Law, Oak Ridge National Laboratory, USA

Multilevel sequential Monte Carlo with dimension-independent likelihood-informed proposals

Kody Law, Oak Ridge National Laboratory, USA

Dimension reduction methods for remote sensing of methane profile

Otto Lamminpaa, Johanna Tamminen, Marko Laine, Simo Tukiainen, and Rigel Kivi, Finnish Meteorological Institute, Finland

MONDAY, JULY 10

9:00 – 9:10am Opening remarks
9:10 – 10:10am Sloppy models and effective theories in physics, biology, and beyond
Mark Transtrum, Brigham Young University, USA
10:10 – 10:30am Coffee break
10:30 – 11:35am Session 4 Applications

10:30 – 10:50 Sensitivity analysis For stochastic models Of biochemical reaction networks
Monjur Morshed and Brian Ingalls, University of Waterloo, Canada; Silvana Ilie, Ryerson University, Canada
10:52 – 11:12 Active subspace analysis of chemical kinetic models for combustion
Kyle Niemeyer, Oregon State University, USA; Paul Constantine, Colorado School of Mines, USA
11:14 – 11:34 Inherent limitations to parameter estimation in cancer incidence data: practical identifiability of multistage clonal expansion models
Andrew Brouwer, Rafael Meza, and Marisa Eisenberg, University of Michigan, USA

11:40 – 12:00pm Poster blitz

Offline-enhanced reduced basis method through adaptive construction of the surrogate parameter domain
Jiahua Jiang and Yanlai Chen, University of Massachusetts Dartmouth, USA; Akil Narayan, University of Utah, USA
Multifidelity augmented surrogates for uncertainty quantification with application to fusion plasmas
*Varis Carey*, University of Colorado Denver, USA; *Robert Moser*, University of Texas at Austin, USA; *C.S. Chang*, Princeton Plasma Physics Laboratory, USA

Simultaneous empirical interpolation and reduced collocation method for nonlinear steady-state PDEs
*Chris Bresten* and *Yanlai Chen*, University of Massachusetts Dartmouth, USA

Calculating transient neutron flux using the proper generalized decomposition
*Anthony Alberti* and *Todd Palmer*, Oregon State University, USA

Data-driven parameterization of the generalized Langevin equation
*Huan Lei* and *Nathan Baker*, Pacific Northwest National Laboratory, USA; *Xiantao Li*, Penn State University, USA

Model reduction for uncertainty quantification via Mori-Zwanzig formulaism
*Jing Li* and *Panos Stinis*, Pacific Northwest National Laboratory, USA

Multigrid-based optimization approach for tomographic reconstruction
*Zichao Wendy Di*, *Sven Leyffer*, and *Stefan Wild*, Argonne National Laboratory, USA

Detection of unusual input-output associations
*Charmgil Hong*, *Siqi Liu*, and *Milos Hauskrecht*, University of Pittsburgh, USA

Feature selection of support vector regression based on information theoretic criteria
*Ryuei Nishii* and *Ryosuke Kikuyama*, Kyushu University, Japan; *Pan Qin*, Dalian University of Technology, China

---

12:00 – 1:30pm
Lunch on your own

1:30 – 2:00pm
Poster session 2

2:00 – 3:28pm
Session 5 *Beyond linear and global*

2:00 – 2:20
Uniform sampling from a feasible set
*Michael Frenklach*, *Wenyu Li*, *Arun Hedge*, *James Oreluk*, and *Andrew Packard*, University of California Berkeley, USA

2:22 – 2:42
Multiscale dimension reduction of data concentrated near a low-dimensional manifold
*Stefano Vigogna*, *Wenjing Liao*, and *Mauro Maggioni*, Johns Hopkins University, USA

2:44 – 3:04
Reparameterization techniques and extensions to classes of variables
FINAL SCHEDULE FOR DR17, July 9-10, Pittsburgh, PA

Zachary del Rosario, Aaron Towne, and Gianluca Iaccarino, Stanford University, USA

3:06 – 3:26  Local active subspaces for dimension reduction
Ahmad Rushdi, Mohamed Ebeida, Laura Swiler, and Eric Phipps, Sandia National Laboratories, USA

3:28 – 4:00pm  Coffee break

4:00 – 5:28pm  Session 6 Model reduction and response surfaces

4:00 – 4:20  Interpolation of functions with parameter dependent jumps by transformed snapshots
Gerrit Welper, University of Southern California, USA

4:00 – 4:20  A generalized polynomial chaos algorithm accelerated by parametric random space dimension reduction
Yanlai Chen and Jiahua Jiang, University of Massachusetts Dartmouth, USA; Akil Narayan, University of Utah, USA

4:44 – 5:04  Compressed sparse tensor based approximation for vibrational quantum mechanics integrals
Prashant Rai, Khachik Sargsyan, and Habib Najm, Sandia National Laboratories, USA

5:06 – 5:26  Probabilistic coarse-graining: from molecular dynamics to stochastic PDEs
Phaedon-Stelios Koutsourelakis, Markus Shoebert, Constantin Grigo, Technical University of Munich, Germany; Nicholas Zabaras, University of Notre Dame, USA