



# Banff International Research Station

for Mathematical Innovation and Discovery

## **BIRS Workshop 11w5051 Current Challenges in Statistical Learning December 11 – 16, 2011**

### **ORGANIZERS**

Hugh Chipman (Acadia); Xiaotong Shen (Minnesota); Robert Tibshirani (Stanford);  
Joseph Verducci (Ohio State); Ji Zhu (Michigan); Mu Zhu (Waterloo)

### **MEALS**

\*Breakfast (Buffet): 7:00 – 9:30 am, Sally Borden Building, Monday – Friday  
\*Lunch (Buffet): 11:30 am – 1:30 pm, Sally Borden Building, Monday – Friday  
\*Dinner (Buffet): 5:30 – 7:30 pm, Sally Borden Building, Sunday – Thursday  
Coffee Breaks: As per daily schedule, foyer of TransCanada Pipeline Pavilion (TCPL)

**\*Please remember to scan your meal card at the host/hostess station in the dining room for each meal.**

### **MEETING ROOMS**

All lectures will be held in the new lecture theater in the TransCanada Pipelines Pavilion (TCPL). LCD projector, overhead projectors and blackboards are available for presentations.

### **SCHEDULE**

**(Abstracts are online.)**

#### **Sunday**

16:00 Check-in begins (Front Desk – Professional Development Centre - open 24 hours).  
Lecture rooms available after 16:00.

17:30-19:30 Dinner.

20:00 Informal gathering in 2nd floor lounge, Corbett Hall.  
*Beverages and small assortment of snacks are available on a cash honor system.*

## Monday

7:00-9:00 Breakfast.

9:00-9:15 Introduction and Welcome by BIRS Station Manager, TCPL.

9:15-9:30 Introduction and Welcome by Workshop Organizers.  
*Xiaotong Shen, University of Minnesota*

9:30-10:00 Lectures. (Chair: Xiaotong Shen, Minnesota)

Bootstrapping r-fold Tensor Data.  
*Art Owen, Stanford University*

10:00-10:30 Coffee Break, TCPL.

10:30-11:30 Lectures. (Chair: Joe Verducci, Ohio State)

Joint Statistical Modeling of Multiple High-dimensional Data.  
*Wonyul Lee and Yufeng Liu, University of North Carolina at Chapel Hill*

Adaptively Weighted Large Margin Classifiers.  
*Yichao Wu, North Carolina State University*

11:30-13:00 Lunch.

13:00-14:00 Guided Tour of The Banff Centre.  
*Meet in the 2nd floor lounge, Corbett Hall.*

14:00-14:30 Group Photo.  
*Meet on the front steps of Corbett Hall.*

14:30-15:00 Lectures. (Chair: Ji Zhu, Michigan)

Nominal Association and Dimensionality Reduction for Categorical Variable.  
*Steven Wang, York University*

15:00-15:30 Coffee Break, TCPL.

15:30-16:30 Lectures. (Chair: Jiahua Chen, UBC)

Robust Classification.  
*Ruben Zamar, University of British Columbia*

A Robust and Sparse K-means Clustering Algorithm.  
*Yumi Kondo and Matias Salibian-Barrera, University of British Columbia*

16:30-17:30 Free Group Meetings.

17:30-19:30 Dinner.

## Tuesday

7:00-9:00 Breakfast.

9:00-10:00 Lectures. (Chair: Ji Zhu, Michigan)

Long tau Paths to Detect Heterogeneity of Association in Large Populations.  
*Joe Verducci, The Ohio State University*

Perspectives on Machine Bias versus Human Bias.  
*Ejaz Ahmed, University of Windsor*

10:00-10:30 Coffee Break, TCPL.

10:30-11:30 Lectures. (Chair: Hugh Chipman, Acadia)

Statistical Learning Challenges in Astronomy and Solar Physics.  
*David van Dyk, Imperial College London*

Automatic Classification of Sunspot Groups Using SOHO/MDI Magnetogram and White-light Images.  
*David Stenning, University of California at Irvine*

11:30-13:30 Lunch.

13:30-14:30 Lectures. (Chair: Helen Zhang, Arizona)

Data-driven Functional Estimation on Irregular Regions.  
*Xiaoming Huo, Georgia Institute of Technology*

On Weak and Strong Oracle Property.  
*Yongdai Kim, Seoul National University*

14:30-15:00 Coffee Break, TCPL.

15:00-16:00 Lectures. (Chair: Duncan Murdoch, Western Ontario)

Inference of Correlated Hidden Markov Models w/ Application to Genome-wide Studies.  
*Zhaohui Qin, Emory University*

Patterns of Delirium: Latent Classes and Hidden Markov Chains as Modeling Tools.  
*Antonio Ciampi, McGill University*

16:00-17:30 Free Group Meetings.

17:30-19:30 Dinner.

## Wednesday

7:00-9:00 Breakfast.

9:00-10:00 Lectures. (Chair: Mu Zhu, Waterloo)

Text Networks.  
*David Banks, Duke University*

Network Granger Causality with Inherent Grouping Structure.  
*George Michailidis, University of Michigan*

10:00-10:30 Coffee Break, TCPL.

10:30-12:00 Lectures. (Chair: Joe Verducci, Ohio State)

Maximum Likelihood Estimation over Multiple Undirected Graphs.  
*Yunzhang Zhu, University of Minnesota*

On Positive-definite Estimation of Covariance and Precision Matrices.  
*Junhui Wang, University of Illinois at Chicago*

Statistical Causal Inference for Peer Effects in Online Behavior.  
*Dean Eckles, Stanford University*

12:00-13:30 Lunch.

13:30-17:30 Free Afternoon.

17:30-19:30 Dinner.

## Thursday

7:00-9:00 Breakfast.

9:00-10:00 Lectures. (Chair: Xiaotong Shen, Minnesota)

Robust Detection & Identification of Sparse Segments in Ultra-high-dimensional Data Analysis.  
*Hongzhe Li, University of Pennsylvania*

High-dimensional Variable Selection for Grouped Covariates w/ Applications to Cancer Genomics.  
*Bret Hanlon, University of Wisconsin*

10:00-10:30 Coffee Break, TCPL.

10:30-11:30 Lectures. (Chair: Adele Cutler, Utah State)

Model Selection for Correlated Data w/ Diverging Number of Parameters.  
*Annie Qu, University of Illinois at Urbana-Champaign*

Conditional Inference Functions for Mixed-Effects Models w/ Unspecified Random-effects Distribution.  
*Peng Wang, Bowling Green State University*

11:30-13:30 Lunch.

13:30-14:30 Lectures. (Chair: Mu Zhu, Waterloo)

Assessing Variable Importance in Environmental Observational Studies.  
*S. Stanley Young, National Institute of Statistical Sciences*

Bayesian Models for Variable Selection that Incorporate Biological Information.  
*Marina Vannucci, Rice University*

14:30-15:00 Coffee Break, TCPL.

15:00-16:30 Lectures. (Chair: Hugh Chipman, Acadia)

New Approach to Spectral Clustering.  
*Jiashun Jin, Carnegie Mellon University*

The Penalized Plaid Bi-clustering Model.  
*Alejandro Murua and Thierry Chekouo Tekougang, University of Montréal*

Clustering Stability: Impossibility and Possibility.  
*Bertrand Clarke, University of Miami*

16:30-17:00 Summary and Agenda for Friday.  
*Hugh Chipman, Acadia University*

17:00-17:30 Free Group Meetings.

17:30-19:30 Dinner.

## **Friday**

7:00-9:00 Breakfast.

9:00-10:00 Informal Discussions and/or Free Group Meetings.

10:00-10:30 Coffee Break, TCPL.

10:30-11:30 Informal Discussions and/or Free Group Meetings.

11:30-13:30 Lunch.

### **Checkout by 12 noon.**

\*\* 5-day workshop participants are welcome to use BIRS facilities (BIRS Coffee Lounge, TCPL, and Reading Room) until 3 pm on Friday, although participants are still required to checkout of the guest rooms by 12 noon. \*\*