

The 26th New England Statistics Symposium

**Department of Biostatistics
Department of Mathematics and Statistics
Boston University**

April 20-21, 2012

Welcome!

The Department of Biostatistics and the Department of Mathematics and Statistics are proud to welcome you to Boston University for the 26th New England Statistics Symposium. We are thrilled to be jointly hosting this annual event this year and hope that it proves to be an intellectually stimulating and enjoyable experience for all.

The program consists of two plenary speakers, and two sets of parallel sessions, both invited and contributed. In addition, we are holding both the usual graduate student paper competition and, new this year, an undergraduate student poster competition. Finally, we are pleased to offer three short courses. Details of the program may be found on the following pages (also available at <http://math.bu.edu/ness12/program.html>).

- Program schedule (pages 3-5)
- Short courses (pages 7-9)
- Abstracts for featured keynote sessions (pages 10-11)
- Detailed program of parallel sessions (pages 12-20)
- Abstracts for parallel sessions (pages 21-44)
- Instruction for Wireless Internet Use (page 21)
- Boston University Medical Campus map (page 22)

We would like to thank all who have helped to make NESS 2012 a reality this year. In particular, we would like to thank the following industry sponsors for their generous support of the symposium and the student paper and poster competitions:

- Harvard Clinical Research Institute (HCRI)
- PROMETRIKA
- SAS Institute Inc., JMP Division

In addition, we would like to thank the College of Arts and Sciences and the Departments of Biostatistics and of Mathematics and Statistics, at Boston University, and the Boston Chapter of the American Statistical Association, for their kind support.

Welcome to NESS 2012 at Boston University and enjoy!

Josée Dupuis
Eric Kolaczyk
Co-Chairs

Schedule, Friday, April 20, 2012

1:00-5:00pm: Short Course 1

Location: Crosstown Center Room 460A

Topic: Adaptive Clinical Trial Design and Simulation

1:00-5:00pm Short Course 2

Location: Crosstown Center Room 460

Topic: Statistical Analysis of Network Data

1:00-5:00pm Short Course 3

Location: Crosstown Center Room 462

Topic: Stochastic Modeling of Limit Order Books: a Journey Across Time Scales

Schedule, Saturday, April 21, 2012

09:15am Registration & Coffee

Location: Lobby, BUSM Instructional Building L, 72 E. Concord Street

09:45 - 10:00am Welcome and Opening Remarks

Location: Bakst Auditorium, BUSM Instructional Building L

10:00 – 11:00am Keynote Presentation: Rick Durrett, Duke University

Title: Branching Process Models of Cancer

Location: Bakst Auditorium, BUSM Instructional Building L

11:00am Coffee Break**11:30am Parallel Paper Sessions AM*****Invited Sessions***

A1 Topic: Recent Advances in Multivariate and Functional Data Analysis

Location: L203

A2 Topic: Teaching Business Statistics: Best Wisdom and Biggest Challenges

Location: L201

A3 Topic: Statistics and Clinical Trials

Location: L210

A4 Topic: Sampling and Inference from Ignorable and Non-Ignorable Network Sampling Designs

Location: L206

A5 Topic: Machine Learning

Location: L209

Contributed Sessions

A6 Topic: Network Analysis and Covariance Matrix Estimate

Location: L214

A7 Topic: Applied Statistics

Location: L212

Student Paper Competition Sessions

A8 Topic: Statistical Genetics and Bioinformatics

Location: L211

A9 Topic: Applied Probability

Location: L213

1:00 – 2:30pm Lunch

Undergraduate Student Poster Competition Session

Location: L-hallway, 2nd Floor

2:30 – 3:30pm Keynote Presentation: Robert Kass, Carnegie Mellon University

Title: The Central Role of Modern Regression in Statistical Thinking about Neural Spike Trains

Location: Bakst Auditorium, BUSM Instructional Building L

3:30 – 4:00pm Coffee Break

4:00 – 5:30pm Parallel Paper Sessions PM

Invited Sessions

B1 Topic: Operation Research and Statistics: At the Interface

Location: L209

B2 Topic: Recent Advances in Survival Analysis

Location: L206

B3 Topic: Inequalities in Probability and Statistics

Location: L203

B4 Topic: Over-dispersion and Measurement Error

Location: L201

B5 Topic: Statistical Genetics

Location: L210

Contributed Sessions

B6 Topic: Statistical Genetics and Computational Statistics

Location: L214

B7 Topic: Time series, Applied Probability

Location: L212

Student Paper Competition Sessions

B8 Topic: Network/Clinical Trial

Location: L211

B9 Topic: Bayesian, statistical inference

Location: L213

5:30pm

Closing Session

Location: Bakst Auditorium, BUSM Instructional Building L

Short Courses

Short Course 1 **Adaptive Clinical Trial Design and Simulation**

Instructor: Mark Chang

Executive Director, AMAG Pharmaceuticals

1:00-5:00pm, April 20, 2012, Crosstown Center Room 460/462

Summary: In this short course, we will review the basic concepts and methods for adaptive clinical trial designs, including the group sequential, sample-size re-estimation, dose-escalation, and dose-finding trials. Commonly used statistical methods for adaptive design will be introduced and compared, including the error spending approach, various methods using combinations of stagewise p-values. We will discuss implementations of adaptive trials, including interim monitoring, dynamic randomization, and analyses of adaptive trials. Practical examples using SAS and ExpDesign Studio will be provided. The FDA guidance on adaptive clinical trial designs and challenges will be discussed with recommendations. After the class, the attendees are expected to have basic knowledge to start his/her own adaptive trial design with confidence.

Biography: Dr. Mark Chang, the executive director, leads the Department of Biostatistics and Data Management with 16 years of experience as a statistician in the field of clinical trials. In addition, he has over 4 years of teaching experience as assistant professor. Before joining AMAG, Chang held various positions in Millennium Pharmaceuticals, including Director of Biostatistics and Scientific Fellow. He is a co-founder of the International Society for Biopharmaceutical Statistics, an executive member of the ASA Biopharmaceutical Section, and a member of the Expert Panel for the Networks of Centres of Excellence (NCE), Canada. He is a co-chair of the Biotechnology Industry Organization (BIO) Adaptive Design Working Group and member of the PhRMA Adaptive Design and Biomarker Working Groups. Dr. Chang is an associate editor for *Statistic Journals* and has over 40 publications including five books. He also serves on the Editorial Boards for the *Journal of Biopharmaceutical Statistics*, *Statistics in Biopharmaceutical Research (ASA Journal)*, and the *Open Public Health Journal*. He has been invited to serve as a co-chair on the scientific advisory and organization committees for national and international professional/academic conferences on statistics and clinical trial designs. He has edited special issues for *Journal of Biopharmaceutical Statistics*, discussing the FDA guidance (Draft) on adaptive designs and has been invited twice to present statistical topics to the US Food and Drug Administration. He was invited by international medical journals to write opinion papers on clinical trials. He has taught over ten statistical short courses recently. He was recently interviewed by Journalists from the Nature Group and other Scientific Journals on innovative trial designs. Dr. Chang is an adjunct professor of Boston University and an elected fellow of the American Statistical Association.

Short Course 2 **Statistical Analysis of Network Data**

Instructor: Eric Kolaczyk

Professor, Department of Mathematics and Statistics, Boston University

1:00-5:00pm, April 20, 2012, Crosstown Center Room 460/462

Summary: Over the past decade, the study of so-called "complex networks" that is, network-based representations of complex systems - has taken the sciences by storm.

Researchers from biology to physics, from economics to mathematics, and from computer science to sociology, are more and more involved with the collection, modeling and analysis of network-indexed data. With this enthusiastic embrace of networks across the disciplines comes a multitude of statistical challenges of all sorts - many of them decidedly non-trivial. In this short course, we will cover a brief overview of the foundations common to the statistical analysis of network data across the disciplines, from a statistical perspective, in the context of topics like network summary and visualization, network sampling, network modeling and inference, and network processes. Concepts will be illustrated drawing on examples from bioinformatics, computer network traffic analysis, neuroscience, and social networks.

Biography: Eric Kolaczyk is Professor of Statistics, and Director of the Program in Statistics, in the Department of Mathematics and Statistics at Boston University, where he also is an affiliated faculty member in the Program in Bioinformatics, the Program in Neuroscience, and the Division of Systems Engineering. Before coming to Boston University, he was faculty in the Department of Statistics at the University of Chicago. In addition, he has been a visiting faculty at Harvard University, the Universite de Paris VII, and l'Ecole Nationale de la Statistique et de l'Administration Economique (ENSAE) in Paris. Prof. Kolaczyk's main research interests currently revolve around the statistical analysis of network-indexed data, and include both the development of basic methodology and inter-disciplinary work with collaborators in bioinformatics, computer science, geography, neuroscience, and sociology. Besides various research articles on these topics, he has also authored a book in this area - *Statistical Analysis of Network Data: Methods and Models* (Springer, 2009). He has given various short courses on material from his book in recent years, including for the Center for Disease Control (CDC) and the Statistical and Applied Mathematical Sciences Institute (SAMSI) in the US as well as similar venues in Belgium, England, and France. Prior to his working in the area of networks, Prof. Kolaczyk spent a decade working on statistical multi-scale modeling. Prof. Kolaczyk has served as associate editor on several journals, including currently the *Journal of the American Statistical Association*. He has also served as co-organizer for workshops focused on networks and network data. He is an elected fellow of the American Statistical Association (ASA), an elected senior member of the Institute for Electrical and Electronics Engineers (IEEE), and an elected member of the International Statistical Institute (ISI).

Short Course 3 **Stochastic Modeling of Limit Order Books: a Journey Across Time Scales**

Instructor: Rama Cont

Professor, Columbia University

1:00-5:00pm, April 20, 2012, Crosstown Center Room 460/462

Summary: An increasing proportion of financial transactions take place in electronic markets where buy and sell orders submitted by market participants are centralized in a limit order book and executed according to precise time and price priority rules. The availability of (TeraBytes of) high-frequency data on limit order books offer a fascinating glimpse into the dynamics prices, supply and demand in financial markets and pose interesting challenges in terms of statistical modeling, both for market participants and for those - regulators and economists - who seek to understand the consequences of high frequency trading. This course will serve as an introduction to the statistical modeling of limit order books: after describing the nature of the data and the time scales involved and reviewing some of the statistical properties of

limit order books, we will argue that a limit order book has a natural description in terms of a spatial point process or queueing system, and provide various examples of point process models proposed in the recent literature. Applications of such models involve time scales ranging from the millisecond (interval between orders) and the day (time needed to liquidate a large batch of shares). In the second part of the lectures, we show how functional limit theorems may be used as a useful tool to link high-frequency behavior of order flow to features such as price volatility and autocorrelation of price movements at lower frequencies. We will use fluid limits and functional central limit theorems to show that, in liquid markets where orders arrive with high frequency, the dynamics of buy and sell queues may be approximated by a Markovian jump-diffusion process. This approximation provides an analytically tractable description of the dynamics of the order book and the market price and yields a quantitative link between statistical properties of the price process and properties of the order flow. Finally, we will sketch some open problems and challenges posed by large high-frequency data sets and discuss the potential for statistical learning methods for studying these issues.

Biography: Rama Cont is Associate professor at Columbia University (New York), director of the Columbia Center for Financial Engineering and CNRS Research Scientist at Laboratoire de probabilités (Université de Paris VI). His research deals with stochastic analysis and stochastic modeling of financial risks, with a focus on the modelling of extreme risks - market discontinuities, systemic risk and endogenous risk - in financial markets. He was awarded the Louis Bachelier Prize by the French Academy of Sciences in 2010 for his research on mathematical modeling in finance. He is co-author of *Financial Modeling with Jump Processes* (CRC Press, 2003) and the Editor-in-chief of the *Encyclopedia of Quantitative Finance* (Wiley, 2010) and has served as a consultant to numerous financial institutions and regulatory bodies in Europe and the US.

Featured Keynote Speakers

Session 1

Branching Process Models of Cancer

Speaker: Rick Durrett

Duke University

10:00-11:00am, April 21, 2012, Bakst Auditorium, Instructional Building L

Abstract: It is common to use a multitype branching process to model the accumulation of mutations that leads to cancer progression, metastasis, and resistance to treatment. In this talk I will describe results from multitype branching processes that are useful in evaluating possible screening strategies for ovarian cancer, and in quantifying the amount of heterogeneity in a tumor.

Biography: Richard (Rick) Durrett received his PhD in Operations Research from Stanford University in 1976. After tens years at UCLA, he joined the Department of Mathematics at Cornell University, where he remained until recently, when he moved to Duke University. Durrett is a probabilist who has made fundamental contributions to a variety of areas, with a particular emphasis on applications in biology. There his work has involved the development of models related to spatial ecology, genetics, and, most recently, cancer biology. He is the author of nine books and close to 200 papers, and has produced over 40 PhD students. He is a past editor of the *Annals of Applied Probability*. Among the many honors he has received are Sloan, AMS Centennial, and Guggenheim Fellowships, election as fellow of the Institute of Mathematical Statistics (IMS) and the American Academy of Arts and Sciences (AAAS), and election to the National Academy of Science.

Session 2

The Central Role of Modern Regression in Statistical Thinking about Neural Spike Trains

Speaker: Robert Kass

Carnegie Mellon University

2:30-3:30pm, April 21, 2012, Bakst Auditorium, Instructional Building L

Abstract: One of the most important techniques in learning about the functioning of the brain has involved examining neural activity in laboratory animals under differing experimental conditions. Neural information is represented and communicated through series of action potentials, or spike trains, which are represented probabilistically as point processes. Because repeated presentations of stimuli often produce quite variable neural responses, statistical models have played an important role in advancing neuroscientific knowledge. In my talk I will outline some of the progress made, by many people, over roughly the past 10 years using point process regression models, and I will highlight recent work on neural synchrony (Kass, Kelly, and Loh, 2011, *Annals of Applied Statistics*). I will also use this body of work as a starting point for remarks about the central role of regression in statistical thinking more generally.

Biography: Robert E. (Rob) Kass received his Ph.D. in Statistics from the University of Chicago in 1980. His early work formed the basis for his book *Geometrical Foundations of Asymptotic Inference*, co-authored with Paul Vos. His subsequent research has been in Bayesian inference and, most recently, in the application of statistics to neuroscience. Kass is known not only for his methodological contributions, but also for several major review articles, including one with Adrian Raftery

on Bayes factors (JASA, 1995) one with Larry Wasserman on prior distributions (JASA, 1996), and a pair with Emery Brown on statistics in neuroscience (Nature Neuroscience, 2004, also with Partha Mitra; J. Neurophysiology, 2005, also with Valerie Ventura). Brown and Kass have recently attempted to stir debate about statistical education in an article entitled "What is Statistics?" (American Statistician, 2009). Kass has served as Chair of the Section for Bayesian Statistical Science of the American Statistical Association, Chair of the Statistics Section of the American Association for the Advancement of Science, Executive Editor of the international review journal Statistical Science, and founding Editor-in-Chief of the journal Bayesian Analysis. He is an elected Fellow of the American Statistical Association, the Institute of Mathematical Statistics, and the American Association for the Advancement of Science. He has been recognized by the Institute for Scientific Information as one of the 10 most highly cited researchers, 1995-2005., in the category of mathematics. In 1991 he began the series of workshops Case Studies in Bayesian Statistics, which are held at Carnegie Mellon every odd year, and was co-editor of the six proceedings volumes that were published by Springer. He is coorganizer of the workshop series Statistical Analysis of Neuronal Data, which began in 2002 and is held at Carnegie Mellon on even years. Kass has been on the faculty of the Department of Statistics at Carnegie Mellon since 1981 and served as Department Head from 1995 to 2004; he joined the Center for the Neural Basis of Cognition in 1997, and the Machine Learning Department in 2007.

Detailed Program of Parallel Sessions

- Session A1** **Recent Advances in Multivariate and Functional Data Analysis**
 (Invited Session) L203 11:30-1:00pm
Organizer: Surajit Ray
- Talks:
1. Finite Mixture Models for Biomedicine at the Single Cell Level
Saumyadipta Pyne
 Department of Medical Oncology, Dana-Farber Cancer Institute, Harvard Medical School
 2. Identification and Estimation in Semiparametric Mixtures
Daniel Hohmann, Hajo Holzmann
 Marburg University, Germany
 3. Functional Factor Analysis for Periodic Remote Sensing Data
Chong Liu(1) Surajit Ray(1) Giles Hooker(2) Mark Friedl(1)
 (1)Boston University (2)Cornell University
- Session A2** **Panel Discussion**
Topic: Teaching Business Statistics: Best Wisdom and Biggest Challenges
Organizer: Erol Pekoz, L201 11:30-1:00pm
- Discussants: John McKenzie, Tevfik Aktekin, Keith Ord and Erol Pekoz
- Session A3** **Statistics and Clinical Trials**
 (Invited Session) L210 11:30-1:00pm
Organizer: Gheorghe Doros
- Talks:
1. Interim Sample Size Reassessment to Fixed Duration Trials
Joe Massaro (1) and Alison Pedley (2)
 (1) Department of Mathematics and Statistics, Boston University, (2) Merck
 2. Considerations for a Career as a Statistician in the Pharmaceutical Industry
Ronald Menton
 Pfizer
 3. Network Mega Analysis: Application to Historically Controlled Clinical Trials
A James O'Malley
 Department of Health Care Policy, Harvard Medical School
- Session A4** **Sampling and Inference from Ignorable and Non-Ignorable Network Sampling Designs**
 (Invited Session) L206 11:30-1:00pm
Organizer: Edo Airoldi
- Talks:

1. New Methods for Inference from Respondent-Driven Sampling Data
Krista J. Gile
Department of Mathematics and Statistics, University of Massachusetts, Amherst
2. Model-Based Estimation for Respondent-Driven Sampling
Sergiy Nesterko
Harvard University
3. Sampling on Networks: A Model-Based Approach
Simon Lunagomez
Harvard University

Session A5**Machine Learning**

(Invited Session) L209 11:30-1:00pm

Organizer: Cynthia Rudin

Talks:

1. Ordered Rules for Classification
Dimitris Bertsimas, Allison Chang, Cynthia Rudin
Massachusetts Institute of Technology
2. Simultaneous Dimension Reduction and Variable Selection in Multivariate Regression
Lisha Chen(1), Jianhua Huang(2)
(1) Yale University (2) Texas A&M University
3. Spectral Methods for Learning Graphical Models
Sham Kakade
Microsoft Research, New England

Session A6**Network Analysis and Covariance Matrix Estimate**

(Contributed Paper Session) L214 11:30-1:00pm

Chair: Luis Carvalho

Talks:

1. Multi-Factor Social Model for Cuda-based Bayes Estimator
Alan Lenarcic(1), Edoardo Airoldi(2), William Valdar(1)
(1)UNC Genetics, (2)Harvard Statistics
2. Estimating Network Degree Distributions from Sampled Networks: An Inverse Problem
Yaonan Zhang(1), Eric D. Kolaczyk(1) and Bruce D. Spencer(2)
(1) Department of Mathematics and Statistics, Boston University (2) Department of Statistics, Northwestern University.
3. Bayesian Degree-corrected Stochastic Block Models for Community Detection
Lijun Peng, Luis E. Carvalho
Department of Mathematics and Statistics, Boston University
4. Risky Business: Considering the Risk Set in the Business of Generative Dynamic Network Model Estimation
Alexander D'Amour, Edoardo Airoldi
Department of Statistics, Harvard University

5. Comparing Block Kronecker and Unstructured Covariance Matrix Estimation in a Hierarchical Model for Health Care Quality

Laura A Hatfield, Alan M Zaslavsky

Department of Health Care Policy, Harvard Medical School

Session A7

Applied Statistics

(Contributed Paper Session) L212 11:30-1:00pm

Chair: Robert Smith

Talks:

1. A Class of Discrete Transformation Survival Models with Application to Default Probability Prediction

A. Adam Ding(1) Shaonan Tian(2), Yan Yu(2) and Hui Guo(2)

(1)Northeastern University, (2)University of Cincinnati

2. Nutritional Label Use and Causal Effects on Body Mass Index

Michael Lopez, MS Roe Gutman

Department of Biostatistics, Brown University

3. Modeling Mortality and Longevity Risk

Mary M. Louie Greta M. Ljung

AIR Worldwide Corporation

4. Introducing the Hierarchical Spherical Radial R Package

Jacob Gagnon (1), Anna Liu(2)

(1) Worcester Polytechnic Institute (2) UMASS Amherst

5. Aspects of Presidential Voting (and Implications for 2012)

Robert B. Smith

Social Structural Research Inc.

Session A8

Statistical Genetics and Bioinformatics

(Student Paper Competition Session) L211 11:30-1:00pm

Chair: Josée Dupuis

Talks:

1. Template-Based Methods for Analyzing Chromatin Structure Dynamics Genome-Wide

Alexander W Blocker (1), Edoardo M Airoidi (1,2)

(1) Harvard University (2) The Broad Institute of MIT & Harvard

2. Identifying the Most Informative Base Pairs to Characterize the Posterior Space of RNA Secondary Structure

Luan Lin, Charles Lawrence

Division of Applied Mathematics, Brown University

3. Probabilistic Refinement of Cellular Pathway Models

Alexander Franks, Edo Airoidi

Department of Statistics, Harvard University

4. A Novel Method to Include Phenotyped but Ugenotyped Relatives in Genetic Association Tests

Wei Vivian Zhuang(1), Ching-Ti Liu(1), Gyungah Jun(1), Kathryn L. Lunetta(1,2,3)

(1)Department of Biostatistics, Boston University School of Public Health (2)Sections of General Internal Medicine, Preventive Medicine and Epidemiology, Department of Medicine, Boston University School of Medicine (3)National Heart, Lung and Blood Institute Framingham Heart Study

5. Absolute Protein Quantitation: Inference with Non-Ignorable Missing Data in High Throughput Proteomics

Eric Solis(1,2,3,4) and Edoardo Airoldi(2,3,4)

(1)Harvard University Program in Systems Biology (2)Harvard University Department of Statistics (3)Harvard FAS Center for Systems Biology (4)The Broad Institute of MIT and Harvard

Session A9

Applied Probability

(Student Paper Competition Session) L213 11:30-1:00pm

Chair: Henry Lam

Talks:

1. A Point Process Model for The High-Frequency Dynamics of a Limit Order Book
Allan Andersen, Rama Cont, Ekaterina Vinkovskaya

Department of Finance, Copenhagen Business School IEOR Department, Columbia University Department of Statistics, Columbia University

2. Optimal Stopping Time for the Last Passage Time and Maximum Time

Dan Ren, Kostas Kardaras

Department of Mathematics and Statistics, Boston University

3. Do Jumps Lead to Clusters?

Karthik Bharath, Vladimir Pozdnyakov and Dipak. K. Dey

Department of Statistics, University of Connecticut

4. Capturing Semantic Content with Word Frequency and Exclusivity

Jonathan Bischof and Edoardo Airoldi

Department of Statistics, Harvard University

Poster Session

Undergraduate Student Poster Competition Session L-hallway, 2nd Floor
1:00-2:30pm

1. Assessing Value-Added Models (VAM) for teacher effectiveness

Cortley Logan and Kathleen Zarnitz

Stonehill College

2. Modeling Neural Spiking Activity in Patients with Parkinson's Disease During Movement and at Rest

Thien Tai T. Nguyen Uri T. Eden

Boston University, Mathematics and Statistics Department Undergraduate Research Opportunity Program (UROP)

Session B1

Operations Research and Statistics: At the Interface

(Invited Session) L209 4:00-5:30pm

Organizer: Henry Lam / Erol Pekoz

Talks:

1. Generalized Kiefer Process and Queues
Guodong Pang(1) Ward Whitt(2)
(1)Penn State University (2)Columbia University
2. Robust Risk Measurement and Model Risk
Paul Glasserman and Xingbo Xu
Columbia University
3. Dynamic Portfolio Execution
Chun Wang
Department of IE and OR, Columbia University

Session B2**Recent Advances in Survival Analysis**

(Invited Session) L206 4:00-5:30pm

Organizer: Sangwook Kang / Jun Yan

Talks:

1. Joint Modeling of Survival Time and Longitudinal Outcomes with Flexible Random Effects
Jaeun Choi(1), Jianwen Cai(2), Donglin Zeng(2), Andrew F. Olshan(2)
(1) Harvard Medical School; (2) University of North Carolina at Chapel Hill
2. Omnibus Risk Assessment via Accelerated Failure Time Kernel Machine Modeling
Jennifer A. Sinnott and Tianxi Cai
Department of Biostatistics, Harvard School of Public Health
3. Fast Accelerated Failure Time Modeling for Case-Cohort Data
Sy Han Chiou(1), Sangwook Kang(1), and Jun Yan(1,2,3)
(1) Department of Statistics, University of Connecticut (2) Institute for Public Health Research, University of Connecticut Health Center (3) Center for Environmental Sciences & Engineering, University of Connecticut
4. Model Selection for Cox Models with Time-varying Coefficients
Jun Yan and Jian Huang
University of Connecticut and University of Iowa

Session B3**Inequalities in Probability and Statistics**

(Invited Session) L203 4:00-5:30pm

Organizer: Mokshay Madiman

Talks:

1. Optimalities in Estimation of Large Precision Matrices
Harrison Zhou
Department of Statistics, Yale University
2. On Combinatorial Width and Uniform Donsker Classes
Ramon van Handel
Princeton University

3. Insufficiency and the Preservation of Fisher Information

David Pollard

Yale University

Session B4**Over-dispersion and Measurement Error**

(Invited Session) L201 4:00-5:30pm

Organizer: Krishna Saha

Talks:

1. Testing for the Homogeneity of the Dispersions in the Clustered Count Data

Krishna K. Saha

Department of Mathematical Sciences, Central Connecticut State University

2. Profile Likelihood Based Confidence Interval for the Difference Between Two Correlated Proportions

Vivek Pradhan, Krishna K Saha, Tathagata Banerjee, Yuanye Zhang, and John C Evans

(1) Boston Scientific Corporation 2. Department of Mathematical Sciences, Central Connecticut State University 3. Indian Institute of Management, India 4. Department of Statistics, University of Connecticut

3. Confidence Intervals for the Dispersion Parameter in the Clustered Count Data

Debaraj Sen(1), Krishna K. Saha(2), Chun Jin(2)

(1) Department of Mathematics and Statistics, Concordia University, Canada (2) Department of Mathematical Sciences, Central Connecticut State University

4. A Functional Method for Conditional Logistic Regression with Errors-in-Covariates

Samiran Sinha

Texas A&M University

Session B5**Statistical Genetics**

(Invited Session) L210 4:00-5:30pm

Organizer: Josée Dupuis / Ching-Ti Liu

Talks:

1. Bayesian Analysis of Gene-Environment Interactions with Error in Measurement of Environmental Covariates and Missing Genetic Data

Iryna Lobach(1), Bani Mallick(2), Raymond Carroll(2)

(1)New York University, (2)Texas A&M University

2. Mathematical Modeling for Dendritic Cells in the Immune System

Xiangtao Liu(1), Kang Liu(2), Alan Wu(1), Michel Nusenzweig(3), Anita Wang(1), Josephine Hoh(1)

(1)Yale University; (2) Columbia University; (3) Rockefeller University

3. Mixed Modeling of Meta-Analysis P-values (MixMAP) Identifies Multiple Gene Loci for Low Density Lipoprotein Cholesterol

A. S. Foulkes(1), U. Das(1), J.F. Ferguson(2), G. Matthews(1), R. Lin(1) and M.P. Reilly(2)

(1) Division of Biostatistics, University of Massachusetts, Amherst (2) Cardiovascular Institute, Perelman School of Medicine at the University of Pennsylvania

Session B6 **Statistical Genetics and Computational Statistics**

(Contributed Paper Session) L212 4:00-5:30pm

Chair: Luis Carvalho

Talks:

1. New Statistical Approaches to Missing Heritability

Or Zuk(1), Eliana Hechter(1), Shamil Sunyaev(1,2), Eric Lander(1)

(1) Broad Institute of MIT and Harvard (2) Brigham and Women's Hospital, Harvard Medical School

2. A Gene-SNP Hierarchical Bayesian Model for Genome-Wide Association Studies

Ian Johnston, Luis E. Carvalho

Department of Mathematics and Statistics, Boston University

3. Bayesian Centroid Estimation for De-Novo Motif Discovery

Luis E. Carvalho

Department of Mathematics and Statistics, Boston University

4. MODIS Land Cover Classification using Mutual Information Spanning Trees

Hunter Glanz, Luis Carvalho

Department of Mathematics and Statistics, Boston University

Session B7 **Time Series, Applied Probability**

(Contributed Paper Session) L214 4:00-5:30pm

Chair: Mamikon Ginovyan

Talks:

1. Wavelet-based Testing For Serial Correlation of Unknown Form Using Fan's Adaptive Neyman Method

Linyuan Li(1), Shan Yao(1) and Pierre Duchesne(2)

(1) University of New Hampshire, (2) University of Montreal

2. Incidental Parameter Problems Arising from the Analysis of Nonstationary Neural Point Processes

Matthew T Harrison

Division of Applied Mathematics, Brown University

3. Asymptotic Behavior of the Prediction Error for Stationary Models with Memory

Mamikon Ginovyan

Boston University

4. Order Statistics Probability Rates and Some New Results for Statistical Inference for Queues

Lee Jones

Department of Mathematical Sciences, University of Massachusetts at Lowell

5. On Fan's Adaptive Neyman Tests for Comparing Two Spectral Densities

Kewei Lu Linyuan Li

Department of Mathematics and Statistics, University of New Hampshire

Session B8 **Networks/Clinical Trials**

(Student Paper Competition Session) L211 4:00-5:30pm

Chair: Eric Kolaczyk

Talks:

1. Graphlet Decomposition of a Weighted Network
Hossein Azari Soufiani, Edoardo M. Airoidi
Department of Statistics, Harvard University
2. Uncertainty Propagation from Network Inference to Characterization
Weston Viles, Prakash Balachandran, Eric D. Kolaczyk
Department of Mathematics and Statistics, Boston University
3. Multivariate B-value: a Tool for Monitoring Data with Multiple Co-Primary Endpoints
Yansong Cheng(1), Surajit Ray(1) and Ying Zhu(2)
(1) Boston University (2) Biogen Idec
4. Identifiability of Subgroup Causal Effects in Randomized Experiments with Non-ignorable Missing Covariates
Peng Ding(1) and Zhi Geng(2)
(1) Department of Statistics, Harvard University, (2) China and Center for Statistical Science, Peking University

Session B9**Bayesian, Statistical Inference**

(Student Paper Competition Session) L213 4:00-5:30pm

Chair: *Michael LaValley*

Talks:

1. Variable Selection for High-Dimensional Multivariate Outcomes with Application to Genetic Pathway/Network Analysis
Tamar Sofer(1), Lee Dicker(2) and Xihong Lin(1)
(1) Department of Biostatistics, Harvard School of Public Health (2) Department of Statistics, Rutgers University.
2. Generalized Species Sampling Priors with Latent Beta Reinforcements
Thiago Costa(1), Michele Guindani(2), Federico Bassetti(3), Fabrizio Leisen(4), Edoardo M. Airoidi(5)
(1)Department of Statistics and School of Engineering and Applied Sciences, Harvard University, (2) T. MD Anderson Cancer Center, Department of Biostatistics, (3) University of Pavia, Department of Mathematics, Italy. (4) Departamento de Estadística, Universidad Carlos III de Madrid, Calle Madrid, Spain. (5) Department of Statistics, Harvard University
3. Bayesian Framework for the Incorporation of Multiple Data Sources with the Analysis of Infectious Disease Outbreaks
Carlee B. Moser(1), Mayetri Gupta(2), Brett N. Archer(2), and Laura F. White(1)
(1) Department of Biostatistics, Boston University School of Public Health, (2) National Institute for Communicable Diseases (NICD), a division of the National Health Laboratory Service (NHLS), South Africa
4. Analysis of Catch Counts with Excess Zeros and Over-Dispersion in Bayesian Approach
Rengui Qiao, Liliana Gonzalez
Department of Computer Science and Statistics, University of Rhode Island

5. Semiparametric Multivariate Accelerated Failure Time Model with Generalized Estimating Equations

Sy Han Chiou

Department of Statistics, University of Connecticut

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Figure 1: Boston University Medical Campus

