



Causal Inference Program Opening Workshop

December 9-11, 2019

SCHEDULE

(Organizers: **Fan Li**, Duke; **Alexander Volfovsky**, Duke; **Ilya Shpitser**, Johns Hopkins; **Michael Hudgens**, UNC)

Monday, December 9th

Penn Pavilion, Duke University

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| 8:30 | Registration |
| 9:00-9:05 | Opening Remarks: Greg Forest , UNC or David Banks , Duke |
| 9:10-10:40 | Session 1: Machine Learning and High-dimensional
Jarred Murray , University of Texas
<i>Bayesian Nonparametric Models for Treatment Effect Heterogeneity: model parameterization, prior Choice, and posterior summarization</i>

Stefan Wager , Stanford University
<i>Experimenting in Equilibrium</i>

Alexander D'Amour , Google Research
<i>Latent Variable Models, Causal Inference, and Sensitivity Analysis</i>

Mark van der Laan , University of California, Berkeley
<i>Targeted Learning for Causal Inference Based on Real World Data</i> |
| 10:40-11:00 | Break |
| 11:00-12:30 | Session 2: Designs of Causal Studies
Michael Rosenblum , Johns Hopkins
<i>Adaptive Design in Surveys and Clinical Trials: similarities, differences and opportunities for cross-fertilization</i>

Tirthankar Dasgupta , Rutgers
<i>Fisher Randomization Test: A Confidence Distribution Perspective and Applications to Large Experiments</i>

Jose Zubizarreta , Harvard
<i>Complex Discontinuity Designs Using Covariates</i>

Dean Eckles , MIT |
| 12:30-1:30 | Lunch (on own) |

- 1:30-3:00 **Session 3: Theory and Foundation**
Edoardo Airoldi, Temple University
Designing Experiments on Social and Information Networks
- Ed Kennedy**, Carnegie Mellon
Optimal Causal Inference with High-Dimensional Discrete Data
- Thomas Richardson**, University of Washington
On Testing Marginal versus Conditional Independence
- Caroline Uhler**, MIT
From Causal Inference to Gene Regulation
- 3:00-3:30 Break
- 3:30-5:00 **Session 4: Young Researchers**
Georgia Papadogeorgou, Duke
Mitigating Unobserved Spatial Confounding Bias with Mixed Models
- Lihua Lei**, University of California, Berkeley
Model-Free Assessment of Population Overlap in Observational Studies
- Jingshen Wang**, University of California, Berkeley
Inference on Treatment Effects after Model Selection with Application to Subgroup Analysis
- Jennifer Starling**, University of Texas
Smooth Extensions to BART for Heterogeneous Treatment Effect Estimation, with Applications to Women's Healthcare Practice and Policy
- 5:00-7:00 Poster Session and Reception

Tuesday, December 10th
Penn Pavilion, Duke University

- 9:00-10:30 **Panel: Bridging Theory and Practice**
Elizabeth Stuart, Johns Hopkins
Laine Thomas, Duke
Beth Ann Griffin, RAND
Michael Daniels, U Florida
- 10:30-11:00 Break
- 11:00-12:30 **Session 5: Applications to Social and Biological Sciences**
Michael Sobel, Columbia
Estimating Causal Effects in Studies of Human Brain Function: new Models, methods and estimands
- Luke Keele**, University of Pennsylvania
Bracketing Bounds for Differences-in-Differences Methods

Cory Zigler, University of Texas

Bipartite Causal Inference with Interference for Evaluating Air Pollution Regulations

Avi Feller, University of California, Berkeley

Synthetic Control and Weighted Event Study Models with Staggered Adoption

12:30-1:30 Lunch (on own)

1:30-3:00 **Session 6: Dynamic Treatment Regimes**

Lu Wang, Michigan

New Statistical Learning Methods for Estimating the Optimal Dynamic Treatment Regime

Yanxuan Xu, Johns Hopkins

When and How to Treat Patients?

Michael Kosorok, University of North Carolina at Chapel Hill

Some Applications of Reinforcement Learning in Precision Medicine

Eric Tchetgen Tchetgen, University of Pennsylvania

A Semiparametric Instrumental Variable Approach to Optimal Treatment Regimes under Endogeneity

3:00-3:30 Break

3:30-5:00 **Session 7: Interference and Networks**

Betsy Ogburn, Johns Hopkins

Social Network Dependence, the Replication Crisis, and (In)Valid Inference

Guillaume Basse, Stanford

Estimating Displacement Effects in a Hot Spot Policing Intervention in Medellin, Colombia

Michael Leung, University of Southern California

Causal Inference under Approximate Neighborhood Interference

Laura Forastiere, Yale

À Heterogeneous Causal Effects under Network Interference

Wednesday, December 11th

Penn Pavilion, Duke University

9-10:30 **Session 8: Unmeasured Confounders and Natural Experiments**

Laura Hatfeld, Harvard

Difference-in-differences: more than meets the eye

Peng Ding, University of California, Berkeley

A Bracketing Relationship between Difference-in-Differences and Lagged-Dependent-Variable Adjustment

Colin Fogarty, MIT

Testing Weak Nulls in Matched Observational Studies

Qingyuan Zhao, University of Cambridge

Bootstrapping Sensitivity Analysis for Inverse Probability Weighting Estimators

10:30-11:00 Break

11-12:30 **Session 9: Causal Discovery**

Kun Zhang, Carnegie Mellon

Learning Hidden Causal Variables and Relations

Peter Spirtes, Carnegie Mellon

Simplicity Concepts for Causal Inference

Frederick Eberhardt, Cal Tech

Causal Discovery in Neuroimaging Data

12:30-1:30 Lunch (on own)

1:30-3:00 Formal Working Groups

3:00 Conclude

3:15 Shuttle to RDU Airport