

**“Causal Inference with Networked Treatment Diffusion”**

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# Abstract

Causal inference under treatment interference (i.e., one unit’s potential outcomes depend on other units’ treatment) is a challenging but important problem. Past studies usually make strong assumptions on the structure of treatment interference. In this talk, I will highlight the importance of collecting data on actual treatment diffusion in order to more accurately measure treatment interference. Furthermore, I will show that with accurate measures of treatment interference, we can identify and estimate a series of causal effects that are previously unavailable, including the direct treatment effect, the treatment interference effect, and the treatment effect on interference. Last, I will zoom in on treatment diffusion and use exponential random graph models to model the treatment diffusion networks in order to reveal covariates and network processes that correlate with treatment diffusion. I will illustrate the methods through a case study of a social network-based smoking prevention intervention. The findings provide an empirical basis to evaluate previous assumptions on the structure of treatment interference, are informative for imputing treatment diffusion when it is unavailable and help improve designs of future interventions that aim to optimize treatment diffusion.

# 12:00 Noon, Tuesday, March 31, 2020

# 47 College Street, 106B

# 11:45 AM Lunch served outside Rm. 106B

