

# Mathematical Sciences

Spring 2021

## Colloquium Series



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University of Texas at San Antonio

**: Friday, April 16 : 3pm : Zoom Meeting :**  
*Click on this announcement to access the Zoom link*

## Learning heterogeneity in causal inference using sufficient dimension reduction

### Abstract

Often the research interest in causal inference is to see how the covariates affect the mean difference in the potential outcomes. In this paper, we use sufficient dimension reduction to estimate a lower dimensional linear combination of the covariates that are sufficient for this purpose. To enhance interpretability of the results, we further modify the estimator using sparse sufficient dimension reduction, which selects an active set of covariates for variable selection as a by-product. The estimator can also be used to test the heterogeneity of the causal effect. Compared to the existing methods, our approach is model-free, and avoids separate regression modeling in different treatment groups. Thus it can be more applicable and effective. These advantages are supported by both simulation studies and a real data example.

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