# Estimation of Treatment Effect with Sufficient Dimension Reduction

黃名鈺

中央研究院統計科學研究所

## 摘要

In medical and social studies, investigating the causal effect of a treatment on an outcome is often the primary interest. While the estimation of average treatment effects usually involves multivariate confounders, dimension reduction is usually desirable and sometimes inevitable. In this talk, I will discuss the Neyman-Rubin model and clarify the definition of a central subspace that is relevant for the efficient estimation of average treatment effects. Under the ignorable selection, we propose a joint cross-validation type criterion to simultaneously estimate the structural dimensions, the basis matrices of the proposed central subspaces, and the optimal bandwidths for estimating the conditional treatment effects. Related large sample properties and finite sample performance will also be discussed.