



統計科學研究所

INSTITUTE OF
STATISTICAL SCIENCE



S E M I N A R



S T A T A S

Seminar

Title : Adaptive Inference in Sequential Experiments

Speaker : Prof. Cun-Hui Zhang (張存惠教授)

(Department of Statistics, Rutgers University)

Time : 15:30 ~ 17:00, Thursday, October 12, 2023

Place : Auditorium, B1F, Institute of Statistical Science

Abstract

Sequential data collection has emerged as a widely adopted technique for enhancing the efficiency of data gathering processes. Despite its advantages, such data collection mechanism often introduces complexities to the statistical inference procedure. For instance, the ordinary least squares estimator in an adaptive linear regression model can exhibit non-normal asymptotic behavior, posing challenges for accurate inference and interpretation. We propose a general method for constructing debiased estimator which remedies this issue. The idea is to make use of adaptive linear estimating equations. We establish theoretical guarantees of asymptotic normality, supplemented by discussions on achieving near-optimal asymptotic variance. A salient feature of our estimator is that in the context of multi-armed bandits, our estimator retains the non-asymptotic performance of the least square estimator while obtaining asymptotic normality property. Consequently, this work helps connect two fruitful paradigms of adaptive inference: a) non-asymptotic inference using concentration inequalities and b) asymptotic inference via asymptotic normality.

※ Online live streaming through Cisco Webex will be available.

※ The tea reception will be held at 15:10.