



統計科學研究所

INSTITUTE OF  
STATISTICAL SCIENCE



統計所學術演講



中研院統計所

## 學 術 演 講

講 題：Adaptive Inference in Sequential Experiments

講 者：Prof. Cun-Hui Zhang (張存惠教授)

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時 間：2023年10月12日(星期四)，15:30-17:00

地 點：統計所B1演講廳

### 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.

※ 實體與線上視訊同步進行。

※ 茶 會：15：10開始。