

國立中央大學

統計研究所

學術演講

主 講 人：張志浩 教授（國立高雄大學統計學研究所）

講 題：**Structural Change Detection in Polynomial Regression for Dependent Data with Heterogeneous Variance**

時 間：108年10月22日（星期二）上午11：00 ~ 12：00

地 點：中央大學鴻經館M429室

茶 會：上午 10：30 ~ 11：00 地 點：鴻經館 510 室

ABSTRACT

In this talk, we introduce a nonlinear polynomial regression model with two breakpoints, where within the two breakpoints, the mean trend of the data is a constant function. This model, denoted by M_2 , includes models with one or no breakpoints, denoted by M_1 and M_0 , respectively, as special cases. We apply a quick algorithm to estimate parameters of models M_k ; $k=1,2$, where the square-root-n consistency of breakpoint estimators are established under some mild conditions. We then apply a model selection procedure to selecting M_k ; $k=0,1,2$, for dependent data with heterogeneous variance, where the structural changes in variance are allowed at any locations. When the underlying model exists, the selection consistency is also established under the aforementioned conditions. This method can be easily applied to detect single/multiple breakpoints for univariate/multivariate dependent data with homogeneous/heterogeneous variance. Some simulation experiments are conducted to demonstrate the finite-sample performance of our asymptotic results.

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