



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

## **SEMINAR ON STATISTICS**

# **Constraint varying-coefficient models with applications to agri-environmental research**

By

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### **Abstract**

Functional-coefficient models with a periodic component are proposed for short-term streamflow forecasting. Traditionally, analyses are conducted for anomaly data after removing an annual pattern or detrending the data after data differencing. Alternatively, periodic models establish separate models for individual seasons. However, the setting of periodic models cannot guarantee the smoothness in model coefficients which is necessary when the time scale is small (for example, daily). In this talk, we propose the use of functional-coefficient models with a periodic component, which extend the periodic regression for short-term forecasting. Unlike the traditional functional-coefficient models which extend the threshold regression model, our functional-coefficient model with a periodic component enjoys an invariance property under data differencing. As case studies, the models are applied to Australian streamflows. The proposed idea can be applied to statistical trend analysis which considers data dependence, and to regression for canopy temperature prediction using ambient variables.

**Date : 17 May 2023 (Wednesday)**

**Time : 3:00pm**

**Venue : Room 1409 (Lifts 25/26)**

*All are Welcome!*