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：Exploration of Random Objects With Depth Profiles and Fréchet Regression

講　者：Prof. Hans-Georg Müller
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地　點：統計所B1演講廳

Abstract

Random objects, i.e., random variables that take values in a separable metric space, pose many challenges for statistical analysis, as vector operations are not availablein general metric spaces. Examples include random variables that take values in the space of distributions, covariance matrices or surfaces, graph Laplacians to represent networks, trees and in other spaces. The increasing prevalence of samples of random objects has stimulated the development of metric statistics, an emerging collection of statistical tools to characterize, infer and relate samples of random objects. Recent developments include depth profiles, which are useful for the exploration of random objects. The depth profile for any given object is the distribution of distances to all other objects (joint work with P. Dubey, Y. Chen 2022). These distributions can then be subjected to statistical analysis. Their mutual transports lead to notions of transport ranks, quantiles and centrality. Another useful tool is global or local Fréchet regression (joint work with A. Petersen 2019) where random objects are responses and scalars or vectors are predictors and one aims at modeling conditional Fréchet means. Recent theoretical advances for local Fréchet regression provide a basis for object time warping (joint work with Y. Chen 2022). These approaches are illustrated with distributional and other data.

※ 實體與線上視訊同步進行。