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：Eigenvalues of Large Spatial Covariance Matrices

講　者：Prof. Hao Zhang (張 浩 教授)

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時　間：2023年3月13日(星期一)，10:30-12:00

地　點：統計所B1演講廳

Abstract

I present some most recent results about the covariance matrix of a stochastic process on a bounded domain. Under very mild conditions that are satisfied by any continuous covariance function (not necessarily stationary), the covariance matrix of observed variables at any n distinct locations in a bounded domain is ill conditioned as n is sufficiently large. Specifically, the smallest eigenvalue of the matrix goes to 0 as n increases to infinity. Technical tools I used to establish the results include approximation theory in Reproducing Kernel Hilbert Spaces, the spectral theory for linear operators in Hilbert spaces, and the Min-Max Theorem. I will also discuss the implication of these results to the analysis of large spatial data. For example, the Gaussian likelihood may have to be approximated, and covariance tapering does not overcome the ill condition. We may have to resort to the low-rank approximation in order to overcome the ill condition.

※ 實體與線上視訊同步進行。

※ 茶　會：上午10：10開始。