

中央研究院統計科學研究所

學術演講

講題：Pseudo-spectra of multivariate inhomogeneous spatial point processes

演講人：Dr. Junho Yang (梁竣豪 博士)

Institute of Statistical Science, Academia Sinica

時間：2024-09-23(Mon.) 10:30-12:00

地點：Auditorium, B1F, Institute of Statistical Science; The tea reception will be held at 10:10.

備註：Lecture in English. Online live streaming through Cisco Webex will be available.

Abstract

In this presentation, we propose a new spectral method for multivariate inhomogeneous spatial point processes. A key idea is utilizing the asymptotic behavior of the periodogram. The periodogram is an asymptotically unbiased estimator of the spectrum of a second-order stationary point process. By extending this property to the inhomogeneous case, we show that the expectation of the periodogram converges to a matrix-valued function that is Hermitian and positive definite. We call this function the pseudo-spectrum of a multivariate inhomogeneous point process. We show that the pseudo-spectrum can be interpreted in terms of the integration of the local spectrum. We derive a consistent estimator of the pseudo-periodogram through kernel smoothing and propose bandwidth selection methods. In simulations, we show that our estimator has satisfactory finite sample properties. Joint work with Qi-Wen Ding (Academia Sinica) and Joonho Shin (Sungshin Women's University).



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