



香港中文大學統計學系

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THE CHINESE UNIVERSITY OF HONG KONG

SEMINAR

DEPARTMENT OF STATISTICS
THE CHINESE UNIVERSITY OF HONG KONG

Signature kernels and analysis on unparameterised path space

INVITED SPEAKER

Thomas Cass

Professor

Mathematics Department

Imperial College London

TIME

August 30, 2023 (Wed) · 2:30 pm - 3:30 pm

VENUE

LT2 · LSB · CUHK

ABSTRACT

The signature is a type of non-commutative exponential that appeared in the foundational work of K-T Chen in the 1950s. It is also a fundamental object in the theory of rough paths (Lyons, 1998). More recently, it has been proposed, and used, as part of a practical methodology to give a way of summarising multimodal, possibly irregularly sampled, time-ordered data in a way that is insensitive to its parameterisation. A key property underpinning this approach is the ability of linear functionals of the signature to approximate arbitrarily closely (in the uniform topology) any compactly supported and continuous function on (unparameterised) path space. We use this context to firstly present some new results on the properties of a selection of topologies on the space of unparameterised paths. We secondly discuss various related consequences and applications in connection to signature kernel, a recent extension of classical kernel methods to paths space which use the signature as a feature map. The talk will be based on two papers: a joint work with William Turner and a further joint paper with Terry Lyons and Xingcheng Xu.