Departmental Colloquia

Department of Mathematics
香港城市大學
City University of Hong Kong

DEPARTMENT OF MATHEMATICS

City University of Hong Kong

Higher Rank Signatures and Filtrations

by

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Date: 8 March. 2023 (Wednesday)
Time: 4:00 – 5:00 pm
Venue: B5-309 (Yeung Kin Man Academic Building)

ABSTRACT

Filtration is an abstract and important notion that appears naturally in stochastic analysis, which models the information flow generated by underlying stochastic processes. However, many well-known statistical methods cannot detect filtrations as they are based on weak topology, and consequently they may lead to significant errors for those circumstances where the evolution of information plays a crucial role. In this talk we will introduce a new methodology based on the signature kernel learning approach developed by Terry Lyons which can be used for giving a precise description of filtrations hidden behind observed signals. We will then illustrate that this method provides a feasible statistical tool for lots of filtration-sensitive cases; in particular, it allows to reduce highly non-linear path-and-filtration dependent functionals (e.g. the pricing of American option) to a linear regression problem, which reveals an interesting combination of (Hopf) algebra and kernel learning.

~ALL ARE WELCOME~