



Analysis Seminar

Title: Brownian Blancmange and Other Well-Tuned Fractals

Speaker: Andrew Smith

Date: Tue 12th October 2021 at 3:00PM

Location: Seminar Room SCN 1.25

Abstract: The quadratic variation of Fractional Brownian Motion (FBM) on the unit interval behaves like n^{1-2H} where n (a large integer) is the number of partitions and H is the Hurst exponent. This work considers non-stochastic continuous functions whose quadratic variation behaves like the expected quadratic variation of FBM for certain sets of integers n . As a special case we investigate Brownian Blancmange, a generalisation of the Takagi-Landsberg blancmange functions, whose quadratic variation fits the expected quadratic variation of Brownian motion when n is either a power of 2, or 3 times a power of 2. We construct similar examples for other Hurst exponents. Financial applications include the construction of stress tests for delta-hedging of investment guarantees.

This seminar will be face-to-face and online at <https://ucd-ie.zoom.us/j/64359336449?pwd=RSStYWGPpOaDB3U2tsQjQrQWptck1sUT0>

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