

Conference Pathwise Stochastic Analysis and Applications

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The non-commutative signature of a path

Introduced almost in the same years, non-commutative probability theory and rough paths have been two intensive research fields in probability, showing interesting connections to quite different subjects in mathematics. However, these two subjects rarely spoke between each other, with relatively few applications of rough paths in the non-commutative world. Some recent constructions by Deya-Schotts have proved the existence of a new object: the product Lévy area, which is more suitable to describe rough evolutions in a non-commutative context as the Lévy area. After reviewing this approach, we will explain in this talk how to extend it by proposing a new notion of signature to cover the non-commutative equivalent of higher-order iterated integral. Surprisingly these operators yield a trajectory in a group associated with a Hopf Algebra type structure.

Joint work with N. GILLIERS (Universität Greifswald)
