RANDOM MULTIPLICATIVE CHAOS

Speaker: Aihua Fan
(Picardie University)

Time：Wednesday , July 31, 2024, 16:10-17:10

Venue：Room 102, SCMS

Abstract：

The theory of Multiplicative Gaussian Chaos (GMC) was established in 1980's by Jean Pierre Kahane. GMC becomes now one of pillars of modern probability, like Brownian motion. The premices of the theory appeared in attempt modellings of intermittence in fluid mechanics (Kolmogorov, Obukhov, Mandelbrot). GMC's have been applied to turbulence, finance, number theory, random matrix, gas of Coulomb, conformal theory of Liouville fields etc.

The more general theory of Random Multiplicative Chaos (RMC) is represented by a paper of Jean Pierre Kahane published in Chin. Ann. Math. (1987). Under this general theory, the following problems can be treated: Dvoretzky covering (Kahane, Erdos, Billard, Mandelbrot, Fan, Barral), percolation on trees (Fan, Peres, Lyons), Levy chaos (Fan, Schertzer, Lovejoy), Random integers (Kahane, Katznelson), etc.

We will present GMC and RMC in order to introduce this domain of research, which is more active than when it was created. We will also present a recent joint work with Yves Meyer (2023) on trigonometric chaos, namely special random fields on torus.