Seminar of Probability and Stochastic Process

Tuesday, 4th April from 16h15
MA B2 485, EPFL, Ecublens

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Intermittency and moment growth indices for stochastic PDEs driven by Lévy noise.

Abstract:

We investigate the behavior of moments at large times for the stochastic heat equation driven by multiplicative Lévy noise. Unlike the case of Gaussian noise, moments only exist up to the order $1 + 2/d$, where d is the spatial dimension. Weak intermittency of order p, that is, the exponential growth of the pth moment of the solution as time tends to infinity, is established for values of p that are sufficiently close to the critical exponent $1 + 2/d$. Crucial to the proof is a new moment lower bound for stochastic integrals driven by compensated Poisson random measures. Moreover, again in contrast to the Gaussian case, we show that the exponential growth rates themselves increase at a superexponential speed as p approaches $1 + 2/d$, indicating extreme fluctuations of the solution at large times. Results are reported for non-vanishing as well as for compactly supported initial values. (This is joint work with Péter Kevei, University of Szeged.)

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