Institut für Mathematik

Seminar zur Stochastik

Donnerstag, 30. Mai 2024
14 Uhr c.t.
SR 122, August-Bebel-Str. 4

Prof. Dr. Peter Imkeller
(Humboldt-Universität zu Berlin)

"Geometrie properties of some rough curves via dynamical systems and Rademacher calculus: SBR measure and local time "

Abstract: We investigate geometric properties of graphs of Takagi type functions, represented by series based on smooth functions. They are Hölder continuous, and can be embedded into smooth dynamical systems, where their graphs emerge as pullback attractors. It turns out that occupation measures and Sinai-Bowen-Ruelle (SBR) measures on their stable manifolds are dual by "time" reversal. A suitable version of approximate self similarity for deterministic functions allows to telescope" small scale properties from macroscopic ones. As one consequence, absolute continuity of the SBR measure is seen to be dual to the existence of local time. The investigation of questions of smoothness both for SBR as for occupation measures surprisingly leads us to the Rademacher version of Malliavin's calculus, Bernoulli convolutions and into probabilistic number theory. The link between the rough curves considered and smooth dynamical systems can be generalized in various ways. For instance, Gaussian randomizations of Takagi curves just reproduce the trajectories of Brownian motion. Applications to regularization of singular ODE by rough signals are on our agenda.

This is joint work with O. Pamen (U Liverpool and AIMS Ghana)

Alle Interessierte sind herzlich eingeladen

Kontakt:
Stefan Ankirchner
Professur Stochastische Analysis
Institut für Mathematik
Ernst-Abbe-Platz 2
07743 Jena