



Sommersemester 2022

Dresdner Mathematisches Seminar

Prof. Dr. Markus Riedle

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Cylindrical Lévy processes

Cylindrical Lévy processes are a natural extension of cylindrical Brownian motion which has been the standard model of random perturbations of partial differential equations and other models in infinite dimensions for the last 50 years. Here, the attribute *cylindrical* refers to the fact that cylindrical Brownian motions are not classical stochastic processes attaining values in the underlying space but are generalised objects. The reasons for the choice of cylindrical but not classical Brownian motion can be found in the facts that there does not exist a classical Brownian motion with independent components in an infinite dimensional Hilbert space, and that cylindrical processes enable a very flexible modelling of random noise in time and space.

In this talk, we present some aspects of the rich theory of cylindrical measures and cylindrical random variables, and discuss their relation to other areas such as harmonic analysis and operator theory. We introduce cylindrical Lévy processes and present some specific examples in detail and discuss their relations to other models of random perturbations in the literature. We present a theory of stochastic integration with respect to cylindrical random variables, which cannot rely on the classical approach, as cylindrical Lévy processes do not enjoy an appropriate semi-martingale decomposition. We finish the talk by investigating some specific stochastic evolution equations driven by cylindrical Lévy processes, such as the Ornstein-Uhlenbeck model.

Mittwoch, 04.05.2022, 17:00 Uhr – Willers-Bau, Raum C 129

Leitung: Prof. Dr. Anita Behme

Vor dem Vortrag findet **ab 16:30 Uhr** ein gemeinsames **Kaffee-/Teetrinken** vor Hörsaal **WIL C 307 (!)** statt.

**Bereich Mathematik und
Naturwissenschaften**

Fakultät Mathematik