

Analysis Seminar

Speaker: Lutz Weis (KIT, Karlsruher Institut für Technologie)
Title: Random field solutions of stochastic evolution equations
Date: Friday April 7, 2015
Time: 2:05 pm
Room: LC 317R

Abstract

There are several approaches to stochastic evolution equations

$$dY(t) = AY(t) dt + B(Y(t)) dW(t)$$

where A generates an analytic semigroup on a space $L^P(U)$, B is a non-linearity and $W(t)$ is a Wiener process on $L^P(U)$. The functional analytic approach leads to $L^P(U)$ -valued solution processes

$$Y(\cdot) : [0, T] \times \Omega \rightarrow L^P(U),$$

whereas the classical PDE methods often consider “random field” solutions

$$y(\cdot, u) : [0, T] \times \Omega \rightarrow \mathbb{C},$$

depending on the “state space” variable $u \in U$ and study the time regularity of the scalar paths $y(\cdot, u)$ instead.

In this talk we describe a modified functional analytic approach which leads to strong time regularity results for the scalar paths $y(\cdot, u)$ for $u \in U$, and compare them to the literature.