ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

Invitation to the Doctoral Seminar

Univ.-Prof. Dr. Gunther Leobacher / Dipl-Ing. Alexander Steinicke PhD

"Permeable Sets"

S.0.05 | Friday, 20 May 2022 | 10:00 a.m.

Abstract

We discuss the elementary notion of one-dimensional piecewise Lipschitz continuous functions and how this notion can be generalized to the multidimensional case. The original motivation comes from the study of stochastic differential equations with irregular coefficients such as discontinuous drifts, which in recent years has attracted increasing attention. A special class of methods for deriving numerical methods for such equations is the "transformation method", which turns the given problem into one with Lipschitz continuous coefficients, provided sufficient regularity of the drift outside the set of discontinuities.

At the core of this method is an innocuous lemma with which Lipschitz continuity can be concluded from continuity and piecewise Lipschitz continuity with a finitely permeable exception set. This notion together with the lemma is generalized to permeable exception sets.

We give a number of examples and properties, and we illustrate that the concept of permeability leads to a rich theory in metric topology.

Michaela Hitz and the Department of Statistics look forward to seeing you at the talk!