ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

Invitation to the Doctoral Seminar

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"Linearization of random dynamical systems in infinite dimensions"

S.0.05 | Wednesday, 6 October 2021 | 12:30 p.m.

Abstract

Mathematical models of real-life problems often lead to nonlinear differential or difference equations. In general, they cannot be solved explicitly and even a qualitative analysis might be difficult. At the same time we have a well-studied and quite complete theory of linear systems. A very powerful and useful tool for investigating the qualitative properties of systems of nonlinear differential equations is the Hartman-Grobman theorem, also known as linearization theorem. It states that the behavior of a given dynamical system near a hyperbolic fixed point is qualitatively the same as a behavior of its linearization close to origin.

Our goal is to investigate the assumptions when the homeomorphism between a nonlinear system and its linearization satisfies a Hölder condition and how is the Hölder exponent related to the spectrum of the linear operator. We are also interested in obtaining the smoothness (or differentiable) properties of topological equivalence between the system and its linearization in the infinite-dimensional Banach spaces and in extending this to the random dynamical systems.

Christian Pötzsche and the Department of Mathematics look forward to seeing you at the talk!