

Im

Oberseminar Analysis

hält

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im Rahmen eines **Kolloquiums** zu seiner **Masterarbeit** einen Vortrag zum Thema

A generalized Hartman-Grobman theorem for skew-product flows

Abstract:

Linear differential equations are among the most accessible classes of ODEs and serve as a fundamental tool for understanding the local behavior of more complex, nonlinear systems. A central question in the qualitative theory of differential equations is whether a nonlinear system can be (locally) topologically conjugate to a linear one—at least in the neighborhood of trivial or equilibrium solutions. For autonomous systems, this is addressed by the classical Hartman-Grobman theorem, developed in the 1960s. Its extension to non-autonomous systems was pioneered by Palmer in the 1970s and further developed in recent decades, notably by Barreira and Valls in 2011.

In this talk, we revisit the result of Barreira and Valls and extend it to a broader class of non-autonomous systems – namely, skew-product flows. After introducing this class of systems and motivating its relevance, we present a novel concept of equivalence adapted to this setting. Using this framework, we prove a generalized version of the Hartman-Grobman type theorem by Barreira and Valls, allowing for more flexibility and future extensions. We conclude with a brief outlook on potential directions for further research, including extended notions of hyperbolicity, applications to infinite-dimensional dynamics and extensions to the theory motivated by category theory.

Datum: **Donnerstag, 10. Juli 2025**

Zeit: **16:40 Uhr**

Raum: **WIL A 124**

Kontakt: Prof. Dr. Stefan Siegmund

Alle Interessent:innen sind herzlich eingeladen.