Karlsruhe Institute of Technology

Seminar of the Work Group
Nonlinear Partial Differential Equations
WS 25/26

February 18th, 2026, 11:30 - 13:00
Seminar room: SR 3.069

Stability of Discontinuous Shock Profiles in General Relaxation Systems

Joannis Alexopoulos, KIT

Abstract

The overall goal of the project I report about is to advance the nonlinear stability theory on discontinuous shock profiles for relaxation systems with scalar equilibrium equations due to Yang and Zumbrun. Their theory paradigmatically applies for the inviscid St. Venant equations. Our main extension allows for nonlinear stability whenever the equilibrium description is **not necessarily scalar** and may therefore be relevant for further important physical considerations. In my talk, I introduce and discuss central concepts, such as the "Chapman-Enskog view" or the Evans-Lopatinsky condition, which are the building blocks of our extended stability theory.

This is joint work in progress with Johannes Bärlin, Zhao Yang and Kevin Zumbrun.