

Seminar of the Work Group
Nonlinear Partial Differential Equations
SS 26

June 17th, 2026, 11:30 - 13:00
Seminar room: SR 3.069

Nonlocalized Damping Estimates for Hyperbolic Relaxation Systems in One Space Dimension

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Abstract

In this talk, a new approach to obtain so-called damping estimates for self-similar solutions to general hyperbolic relaxation systems in one space dimension is presented. Such estimates play an important role when closing nonlinear stability arguments for shock profiles with and without subshock (c.f. Yang and Zumbrun (2020) and Mascia and Zumbrun (2005)) while also appearing in the study of periodic roll waves (Rodrigues and Zumbrun (2025)). Previously obtained damping estimates for localized perturbations of shock profiles are extended to the non-symmetric and nonlocalized case utilizing the method of characteristics. The results open the door to a nonlocalized stability theory of self-similar solutions of hyperbolic relaxation systems.