

Seminar of the Work Group
Nonlinear Partial Differential Equations
SS 24

May 15th, 2024, 12:15 - 13:00
Seminar room: SR 3.069

Global Existence and Decay of Small Solutions for Quasi-linear Second-order Uniformly Dissipative Hyperbolic-Hyperbolic Systems

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Abstract

We consider quasilinear systems of partial differential equations consisting of two hyperbolic operators interacting dissipatively. Global-in-time existence and asymptotic stability of strong solutions to the Cauchy problem close to homogeneous reference states are shown in space dimensions larger or equal to 3. The dissipation is characterized by algebraic conditions, previously developed by Freistühler and the speaker, equivalent to the uniform decay of all Fourier modes at the reference state. As a main technical tool para-differential operators are used. The result applies to recent formulations for the relativistic dynamics of viscous, heat-conductive fluids such as notably that of Bemfica, Disconzi and Noronha (2019.).