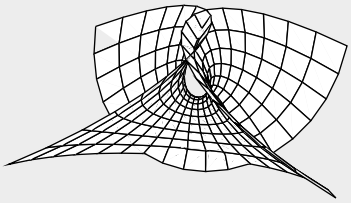

Oberseminar Mathematische Strömungsmechanik

Institut für Mathematik der Julius-Maximilians-Universität Würzburg

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A new convex integration approach for the compressible Euler equations and failure of the local maximal dissipation criterion

Abstract:

In this lecture we establish a new convex integration approach for the barotropic compressible Euler equations in two space dimensions. In contrast to existing literature, our new method generates not only the momentum for given density, but also the energy and the energy flux. This allows for a simple way to construct admissible solutions, i.e. solutions which satisfy the energy inequality.

Moreover using the convex integration method developed in this paper, we show that the local maximal dissipation criterion fails in the following sense: There exist wild solutions which beat the self-similar solution of the one-dimensional Riemann problem extended to two dimensions. Hence entropy solutions which satisfy the local maximal dissipation criterion do not rule out convex integration solutions.

The convex integration machinery itself is carried out in a very general way. Hence this paper provides a general framework for convex integration which not even specifies the form of the partial differential equations under consideration. Therefore this general framework is applicable in many different situations.

room 40.03.003 (Emil Fischer Str. 40)

Thursday, Nov. 9 at 12:30 pm

Zu diesem Vortrag sind Sie herzlich eingeladen.

gez. Christian Klingenberg