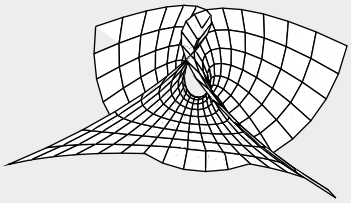

Oberseminar Mathematische Strömungsmechanik

Institut für Mathematik der Julius-Maximilians-Universität Würzburg

Hyperbolic equations - structure preserving methods & other topics

Bojan Popov

Texas A&M (USA)

Invariant-domain preserving approximation of the compressible Euler equations with tabulated equations of state

Abstract:

This work is concerned with the approximation of the compressible Euler equations supplemented with an equation of state that is either tabulated or is given by an expression that is so involved that solving elementary Riemann problems is difficult or hopeless. A robust first-order approximation technique that guarantees that the density and the internal energy are positive is proposed. A key ingredient of the method is a local approximation of the equation of state using a co-volume ansatz from which upper bounds on the maximum wave speed are derived for every elementary Riemann problem.

This is a joint work with Bennett Clayton and Jean-Luc Guermond.

via Zoom video conference (request the Zoom link from klingen@mathematik.uni-wuerzburg.de)

Friday, Apr. 30, 2021 at 3 pm CET

Zu diesem Vortrag sind Sie herzlich eingeladen.

gez. Christian Klingenberg