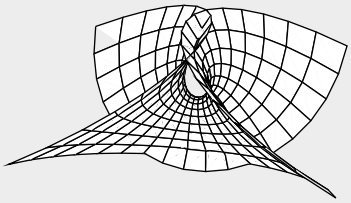

Oberseminar Mathematische Strömungsmechanik

Institut für Mathematik der Julius-Maximilians-Universität Würzburg

Hyperbolic equations - structure preserving methods & other topics

Matthias Maier

Texas A&M University, USA

Efficient parallel 3d computation of the compressible Navier-Stokes equations

Abstract:

A high-performance second-order collocation-type finite-element scheme for solving the compressible Navier-Stokes equations on unstructured meshes is presented. The method uses Strang splitting, is second-order accurate in time and space, and is based on a convex limiting technique introduced by Guermond et al. (SIAM J. Sci. Comput. 40, A3211-A3239, 2018). As such it is invariant-domain preserving, meaning, the solver maintains important physical invariants and is guaranteed to be stable without the use of ad-hoc tuning parameters.

In this talk I will introduce the discretization technique, discuss the convex limiting approach and algorithmic design of the method, and comment on a high-performance implementation utilizing SIMD (single instruction multiple data) vectorization.

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

Friday, May 28, 2021 at 3 pm CET

Zu diesem Vortrag sind Sie herzlich eingeladen.

gez. Christian Klingenberg