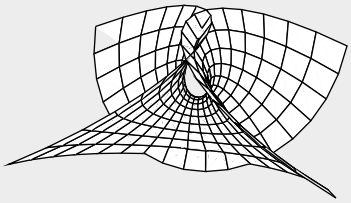

Oberseminar Mathematische Strömungsmechanik

Institut für Mathematik der Julius-Maximilians-Universität Würzburg

Dan Ling

Xi'an Jiaotong University, China

Local discontinuous Galerkin methods for diffusive - viscous wave equations

Abstract:

Numerical simulation of seismic wave equations has attracted much attention and plays a significant role in exploration seismology. As one of seismic wave models, the diffusive-viscous wave theory usually describes the attenuation of seismic wave propagating in fluid-saturated medium. In this talk, we focus on the design of numerical methods for the diffusive-viscous wave equations with variable coefficients:

$$\frac{\partial^2 u}{\partial t^2} + \alpha(x)\frac{\partial u}{\partial t} - \frac{\partial}{\partial t}\mathrm{div}(\beta(x)^2\nabla u) - \mathrm{div}(\gamma(x)^2\nabla u) = f$$

We develop a local discontinuous Galerkin (LDG) method, in which numerical fluxes are chosen carefully to maintain stability and accuracy. Moreover, we also prove the optimal error estimates for both the energy norm and the L^2 norm. Numerical experiments are provided to demonstrate the optimal convergence rate and effectiveness of the proposed LDG method.

This is joint work among others with Chi-Wang Shu.

the speaker lectures via Zoom, we will be in room 40.03.003 (Emil Fischer Str. 40)

Thursday, Nov. 2 at 12:30 pm

Zu diesem Vortrag sind Sie herzlich eingeladen.

gez. Christian Klingenberg