Universität zu Köln

Department Mathematik/Informatik
Prof. Dr. Angela Kunoth

Einladung zum
Oberseminar
Numerische Analysis

Am Donnerstag, 25.06.2026 um 12:00 Uhr, im Seminarraum 2 (Raum 204)
der Abteilung Mathematik, Weyertal 86 – 90, 50931 Köln, spricht

Sophia Horak
(Universität zu Köln)

zum Thema

Data-driven numerical methods for solving hyperbolic PDEs

This talk focuses on the simulation of hyperbolic PDEs with the finite volume method, where discontinuities can arise and evolve during the computation. High-order methods offer greater accuracy, but they may produce unphysical oscillations and, in turn, nonphysical quantities. Low-order methods are more robust, but often require very fine grids to achieve comparable accuracy. We ask whether machine learning can help combine robustness near discontinuities with accuracy in smooth regions.

In the first part, we learn an optimal limiter function in a TVD setting. In the second part, we optimize the parameters of a CWENO scheme. Together, these approaches aim to improve the balance between stability and resolution in shock-capturing simulations.

Interessenten sind herzlich eingeladen.

Angela Kunoth