Einladung zum

Würzburger Mathematischen Kolloquium

Julius-Maximilians-Universität Würzburg • Fakultät für Mathematik und Informatik

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Stable numerical methods for conservation laws

Dienstag, der 8. Juni 2021 • 14:15 Uhr

Der Vortrag findet als Zoom-Videokonferenzen statt.
Bitte fordern Sie den Zoom-Link an bei klingenberg@mathematik.uni-wuerzburg.de

Inhaltsangabe:

Hyperbolic evolution partial differential equations cannot be discretized in a stable way by central derivatives. Instead, they need to be *upwinded* with suitable one-sided finite differences, a procedure that can be also interpreted as adding numerical diffusion. This treatment, inspired mostly by one-dimensional situations, provides the necessary stability there. But this prevents the numerical discretization from being accurate in multiple spatial dimensions.

In multiple space dimensions systems of conservation laws possess many interesting additional properties compared to one space dimension. The aim in this lecture is to identify truly multi-dimensional construction principles for numerical methods that do not suffer such limitations (these new methods satisfy so-called *structure preserving* properties). I will show possible ways how this can be achieved.