Bernoullis Tafelrunde

Graduate Student Seminar

Thursday, 25 April 2019, 12:15-13:00
Seminarraum 05.002, Spiegelgasse 5

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On numerical schemes for hyperbolic conservation laws

Abstract

Hyperbolic problems of conservation laws arise often when modeling natural phenomenon where the time-space dynamic preserves physical quantities such motion, energy and mass.

The analytical solution of those problems being most of the time unknown, we have to design numerical methods that take into account the preservation of those physical quantities through the dynamic. Furthermore, the construction of those methods is directly challenged by theoretical aspects, involving in particular the development of discontinuities within the solution.

If this concern has been wisely investigated since the 20's, the numerical solvers used in nowadays applications are still lacking efficiency, preferring stability to high performance. After pointing out the main issues arising when building numerical schemes suitable to hyperbolic conservation problems, we focus on improving or constructing new high order schemes by combining general techniques with known properties of those problems.