

Structure of solutions for general systems of conservation laws

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The theory of BV solutions to system of conservation laws

$$u_t + f(u)_x = 0, \quad u \in R^n, \quad f : R^n \rightarrow R^n,$$

which are the natural extension of the scalar equation $n = 1$ where the flux f is convex or with finitely many inflection point, is in some sense complete: there are sharp results on the well-posedness, stability and structure of the solution.

On the other hand, when the assumption on f is only the Df has n distinct eigenvalues, the well-posedness is proved only via vanishing viscosity, and the structure results reduce basically to the standard theorems for BV functions.

In this seminar I would like to address some of these questions through two recently developed tools: a Lagrangian representation of the solution u and a quadratic estimate on the variation of the speed of its characteristic fronts.

Bibliografia

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