Vanishing Viscosity Solutions for Conservation Laws with Discontinuous Fluxes

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Scalar conservation laws with a discontinuous flux with respect to the time–space variables arise in many applications where the conservation laws describe physical models in rough non homogeneous media. For example, traffic flows with rough road conditions and polymer flooding in porous media. We are interested in solutions to this type of equations obtained using vanishing viscosity approximations. We show that the Crandall Liggett theory [2, 3] of nonlinear semigroups provides a very elegant framework for proving existence and uniqueness of the vanishing viscosity limit when the flux has a single discontinuity at the origin [4]. Then we describe how this result can be generalised to fluxes with more general than BV regularity [1].

References

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