Scalar Approach to ARZ-Type Systems of Conservation Laws

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We are interested in 2 × 2 systems of conservation laws of special structure, including generalized Aw-Rascle and Zhang (GARZ) models for road traffic. The simplest representative is the Keytz-Kranzer system, where one equation is nonlinear and not coupled to the other, and the second equation is a linear transport which coefficients depend on the solution of the firstequation. In GARZ systems, the coupling is stronger, they do not have the "triangular"structure of Keytz-Kranzer.

In our setting, we claim that it makes sense to address these systems via a kind of splitting approach. Indeed, in 2008, Panov proposed a robust framework for solving linear transport equations with divergence free coefficients. Our idea is to use this theory for the second equation of GARZ systems, and to exploit discontinuous flux theory advances for the first equation of the system.

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