ARZ-type model of vehicular traffic with local constrained flow

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Davide Meroni
University of Milano-Bicocca

The Aw–Rascle–Zhang traffic model is a 2×2 system of conservation laws developed to provide a more accurate representation of traffic flow. In particular, we are interested in the evolution of cars' density subjected to a local constraint representing the presence of a traffic light.

In this talk, we begin with a brief introduction to the theory of systems of conservation laws. We then introduce the ARZ model and study the associated Riemann problem, namely the Cauchy problem with initial data consisting of two constant states separated by a single jump discontinuity. Then, we turn to the constrained Riemann problem and analyze its solutions. Finally, we describe some results and open questions for the Cauchy problem when the classical ARZ flux is replaced by a more general function, which encompasses a broader class of models.