

One-side controllability of the p -system

Fabio Ancona

Università di Padova, Italy
E-mail: ancona@math.unipd.it

Abstract

We consider the p -system on an interval, in the context of weak entropy solutions. On one side of the interval is imposed a boundary condition (for instance the null velocity), while on the other side of the interval, the boundary conditions are left as a control, that is, as a parameter that one can choose to influence the system. We prove a result of controllability toward constants states, that is, we prove that it is possible, starting from an initial state small in BV , to reach any constant state compatible with the boundary conditions. This is in sharp contrast with some other 2×2 strictly hyperbolic systems with genuinely nonlinear characteristics fields for which a result by Bressan and Coclite shows that this is not possible, even when controlling on both sides.

This is a joint work with O. Glass (Université Paris-Dauphine) and K. T. Nguyen (North Carolina State University).