

Some Inverse Problems for Burgers Equation and Related Systems

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Abstract

We consider a geometric inverse problem concerning the one-dimensional Burgers equation and some related nonlinear systems (involving heat effects and variable density). In these problems, the goal is to find the size of the spatial interval from some appropriate boundary observations. Depending on the properties of the initial and boundary data, we prove uniqueness and non-uniqueness results. On the other hand, we also solve these inverse problems numerically and compute approximations of the interval sizes. The presented work has been performed in collaboration with Jone Apraiz, Enrique Fernández-Cara and Masahiro Yamamoto.